THE SPECIALISTS

FOR FREQUENCY CONTROL AND BATTERY TECHNOLOGY

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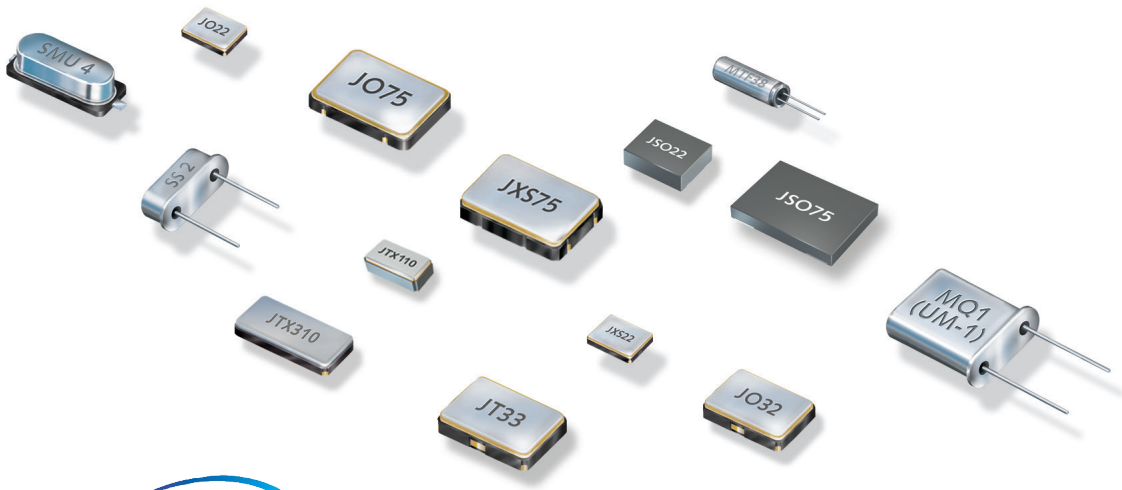

BCE. ELECTRONICS

FREQUENCY CONTROL PRODUCTS

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Jauch
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The Specialist
for frequency control products

Worldwide Presence
expert advice by
quartz crystal specialists

Technical Customer Support
by field application engineers




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components in stock

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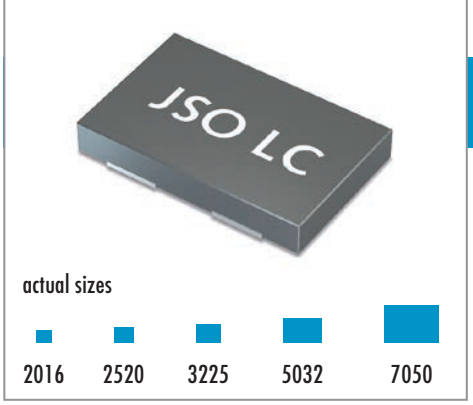


MEMS-Oscillator · JSO LC series · 3.3 V

- low power oscillator with HCMOS/LVCMOS output
- compatible to industry standard packages 2016 – 7050
- configured to customer's specification
- extended shock & vibration resistance
- very fast delivery service
- 500 million hours MTBF

General Data

type		JSOxxCxLC 3.3 V
frequency range		1.0 ~ 110.0 MHz (temp. range T0 ~ T8)
		115.0 ~ 137.0 MHz (temp. range T0 ~ T1)
frequency stability over all		±20 ppm ~ ±50 ppm (see table 1)
current consumption		see table 2
supply voltage V_{DC}		3.3 V ± 10%
temperature	operating	T0 = -20°C ~ +70°C
		T1 = -40°C ~ +85°C
		T2 = -40°C ~ +105°C
		T3 = -40°C ~ +125°C
		T8 = -55°C ~ +125°C
	storage	-55°C ~ +150°C
output	logic	HCMOS/LVCMOS
	rise & fall time	3 ns max. at 15 pF / 6 ns max. at 30 pF (see table 4)
	load max.	30 pF max. recommended (≤ 83.0 MHz)
		15 pF max. recommended (> 83.0 MHz)
		other load capacitances possible, see supplementary document
	current max.	4 mA
	low level max.	0.1 x V_{DC}
	high level min.	0.9 x V_{DC}
standby function (e/d)		stop (S), tristate-only (T) or none (N), see table 3
output enable time max.		5 ms (S) / 150 ns (T)
output disable time max.		150 ns
start-up time max.		5 ms
standby current max.		5 µA (for stop (S), see table 3)
phase jitter 12 kHz ~ 20 MHz		< 3.0 ps RMS
symmetry at 0.5 x V_{DC}		45% ~ 55% (standard)

note: some frequencies can't be configured, see table 5.

Packing Note / Marking

QTY < 250 pcs. → cut tape
QTY 250/500/1K/3K pcs. → tape and reel
Marking: lot code only

RoHS compliant · Pb free · REACH compliant · Conflict mineral free

Table 1: Frequency Stability Code

stability code / temp. code*		B ±50 ppm	G ±30 ppm	C ±25 ppm	D ±20 ppm	
-20°C ~ +70°C	T0	○	○	○	○	
-40°C ~ +85°C	T1	○	○	○	○	
-40°C ~ +105°C	T2	○	○	○	○	
-40°C ~ +125°C	T3	○	○	○	○	
-55°C ~ +125°C	T8	○	○	○		
○ available						

* includes stability at 25°C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption typ. (for max. add 30%)

current at load	5 pF	15 pF	30 pF	60 pF	unit
output disabled	4.0	4.0	4.0	4.0	mA
1.0 ~ 19.9 MHz	4.0	4.6	5.6	7.6	mA
20.0 ~ 29.9 MHz	4.6	5.7	7.4	10.9	mA
30.0 ~ 49.9 MHz	5.1	6.7	9.2	14.3	mA
50.0 ~ 79.9 MHz	6.4	9.0	13.2		mA
80.0 ~ 110.0 MHz	7.7	11.2	17.0		mA
115.0 ~ 137.0 MHz	(10.0)	(14.5)			mA

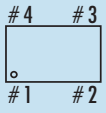
note: current at default edge control setting "D", also refer to table 4.

Table 3: Configurable Standby Function Options (e/d)

pin #1 (e/d control)	option	functionality
low "0" ($V_{IL} \leq 0.2\ V_{DC}$)	S = Stop	output weakly pulled down, oscillator in sleep mode
	T = TriState	output high impedance, oscillator operates
	N = None	oscillator output active
high "1" ($V_{IH} \geq 0.8\ V_{DC}$)	all	oscillator output active
open*	all	oscillator output active

* a pull up resistor is recommended in EMI stressed circuit environments.

Pin Connection



#4: V_{DC} · #3: output
#1: e/d · #2: GND

note: a capacitor of 0.1 µF between V_{DC} and GND is recommended.

Jauch MEMS – Uses SiTime's MEMS First™ technology

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full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Table 4: Max. Rise & Fall Time vs. Load Capacitance

C_L	5 pF	15 pF	30 pF	5 pF	15 pF	30 pF
edge control	at 10% ~ 90% of V_{DC} (ns)			at 20% ~ 80% of V_{DC} (ns)		
0	1.0	1.7	3.6	0.7	1.2	2.6
1	1.1	1.8	4.4	0.7	1.3	3.0
2	1.2	2.6	5.0	0.8	1.8	3.3
D = 3*	1.3	3.0	6.0	0.9	2.0	3.8
4	2.6	5.4	9.4	1.5	3.8	6.4
5	3.4	6.6	12.0	2.4	5.0	8.6
6	5.2	10.0	17.0	3.6	7.0	12.4
7	10.4	21.0	35.0	7.4	14.0	25.0

* default edge control setting "D" at V_{DC} = 3.3 V, please also refer to the supplementary information on our homepage for typical values and more details.

Table 5: Non-Configurable Frequencies

operating temperature option		operating temperature option	
T2 – (-40°C ~ +105°C) T3 – (-40°C ~ +125°C)		T8 – (-55°C ~ +125°C)	
from (MHz)	to (MHz)	from (MHz)	to (MHz)
61.223	61.674	61.223	61.974
69.796	70.485	69.240	70.827
79.063	79.162	78.715	79.561
81.428	82.232	80.160	80.174
91.834	92.155	80.780	82.632
94.249	94.430	91.834	95.474
94.875	94.994	96.192	96.209
97.714	98.679	96.936	99.158
110.0	115.194	110.0	119.342
117.811	118.038	–	–
118.594	118.743	120.239	120.262
122.142	122.705	121.170	121.243
123.022	123.348	121.601	123.948

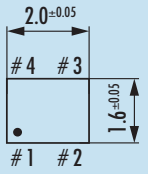
Order Information

Example: O 26.123456 – JSO 75 C1 L C – B – 3.3 – T0 – S – D

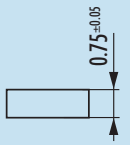
- 0 = Oscillator
- **frequency (8 digits),** see also table 5
  1.0 ~ 110.0 MHz
  115.0 ~ 137.0 MHz
- JSO = Jauch Silicon Oscillator
- **package**
  75 = 7050
  53 = 5032
  32 = 3225
  22 = 2520
  21 = 2016
- **frequency range**
  C1 = 1.0 ~ 110.0 MHz
  C2 = 115.0 ~ 137.0 MHz
- **function/feature**
  L = lowpower
- **output I/F**
  C = (H)CMOS
- **edge control**
  D = default
  0 – 7, see table 4
- **standby function options**
  S = Stop
  T = TriState
  N = None
- **temperature range**
  T0 = -20°C ~ +70°C
  T1 = -40°C ~ +85°C
  T2 = -40°C ~ +105°C
  T3 = -40°C ~ +125°C
  T8 = -55°C ~ +125°C
- **supply voltage**
  3.3 = 3.3 V
  3.0 = 3.0 V
  2.8 = 2.8 V
  2.5 = 2.5 V
  1.8 = 1.8 V
  2V3 = 2.5 V ~ 3.3 V
- **frequency stability overall**
  B = ± 50 ppm
  G = ± 30 ppm
  C = ± 25 ppm
  D = ± 20 ppm

Dimensions

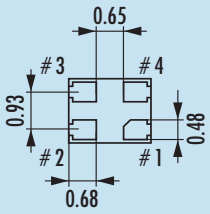
2.0 x 1.6 x 0.75
JSO21



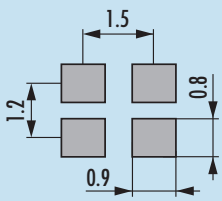
top view



side view

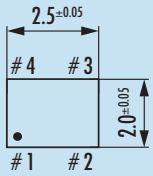


bottom view



pad layout

2.5 x 2.0 x 0.75
JSO22



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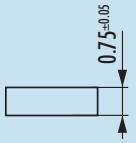

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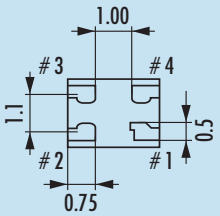
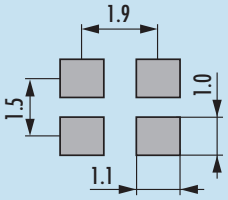
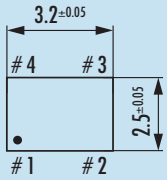


bottom view

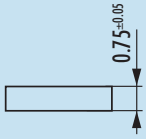


pad layout

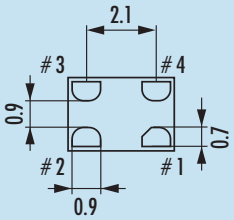
3.2 x 2.5 x 0.75
JSO32



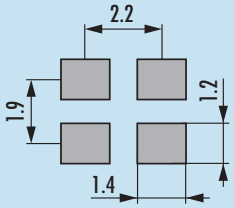
top view



side view

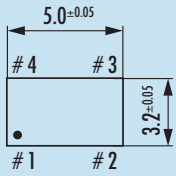


bottom view

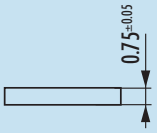


pad layout

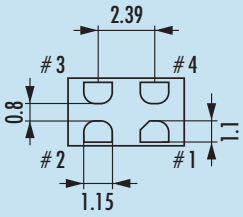
5.0 x 3.2 x 0.75
JSO53



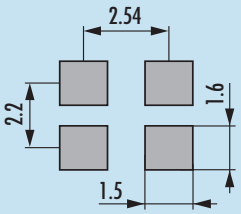
top view



side view

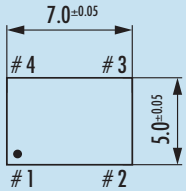


bottom view

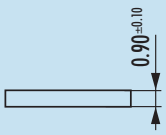


pad layout

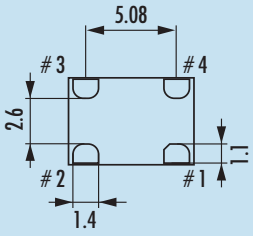
7.0 x 5.0 x 0.90
JSO75



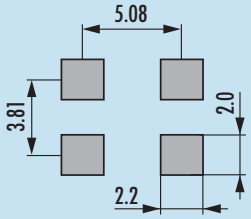
top view



side view



bottom view



pad layout

Pin connection	# 1: e/d	# 2: GND	# 3: output	# 4: V_{DC}	note: a capacitor of 0.1 µF between V_{DC} and GND is recommended

in mm

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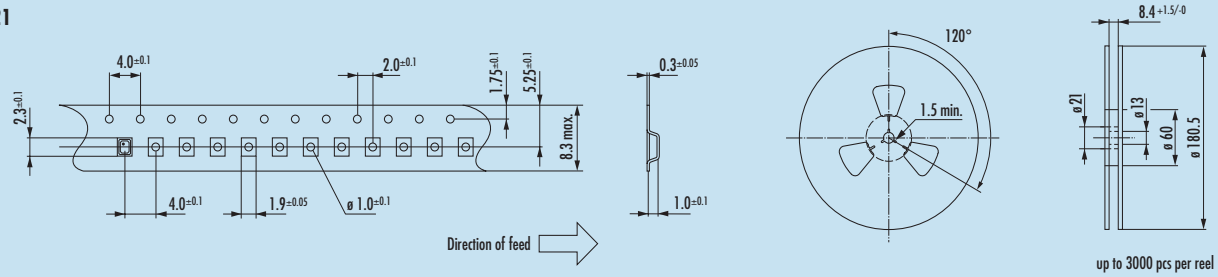
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

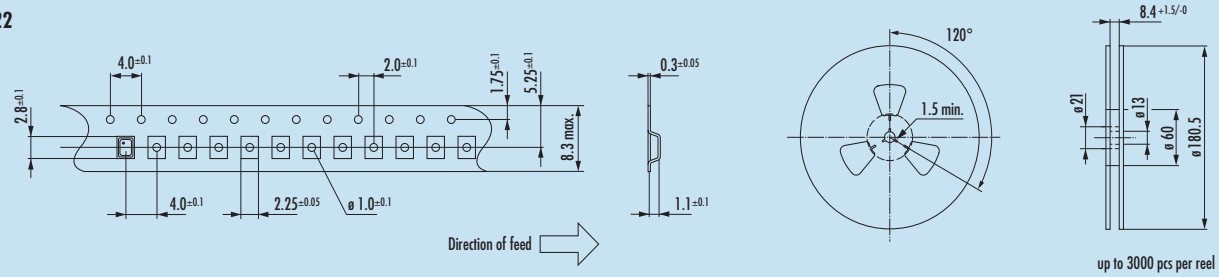
Taping Specification

2.0 x 1.6 x 0.75
JSO21



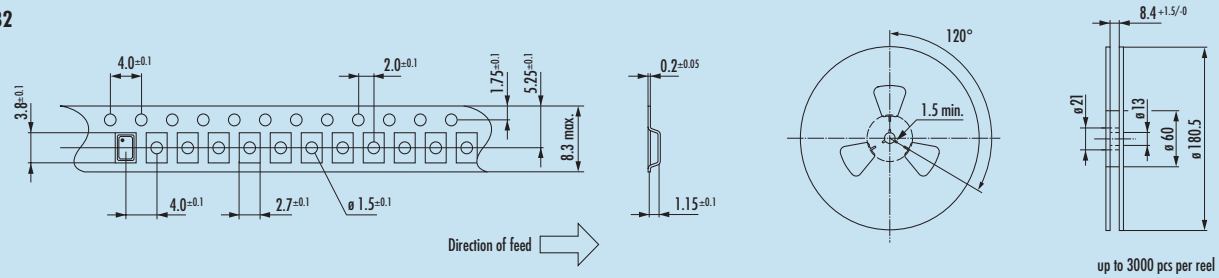
up to 3000 pcs per reel

2.5 x 2.0 x 0.75
JSO22



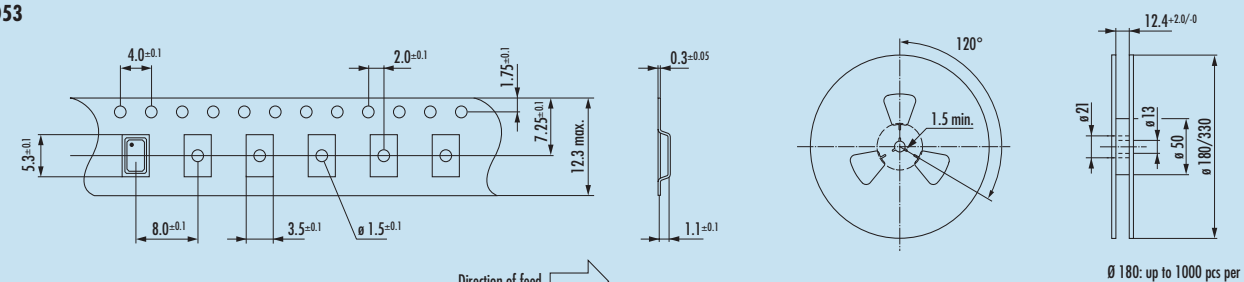
up to 3000 pcs per reel

3.2 x 2.5 x 0.75
JSO32



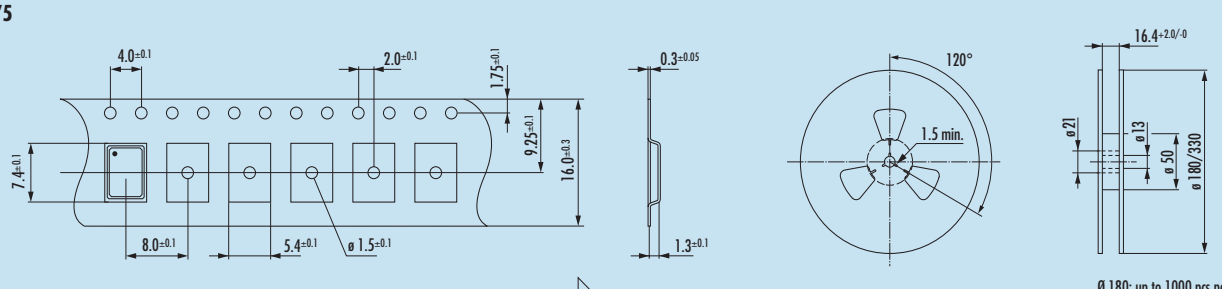
up to 3000 pcs per reel

5.0 x 3.2 x 0.75
JSO53



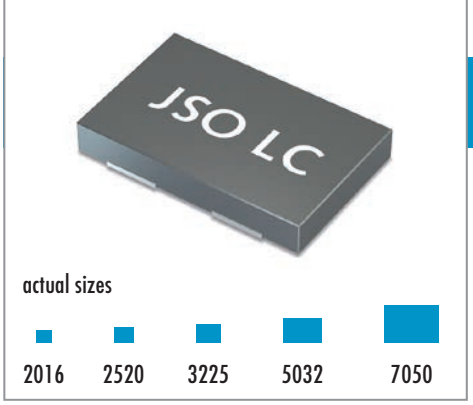
Ø 180: up to 1000 pcs per reel
Ø 330: up to 3000 pcs per reel

7.0 x 5.0 x 0.90
JSO75



Ø 180: up to 1000 pcs per reel
Ø 330: up to 3000 pcs per reel

in mm



MEMS-Oscillator · JSO LC series · 3.0 V

- low power oscillator with HCMOS/LVCMOS output
- compatible to industry standard packages 2016 – 7050
- configured to customer's specification
- extended shock & vibration resistance
- very fast delivery service
- 500 million hours MTBF

General Data

type		JSOxxCxLC 3.0 V
frequency range		1.0 ~ 110.0 MHz (temp. range T0 ~ T8)
		115.0 ~ 137.0 MHz (temp. range T0 ~ T1)
frequency stability over all		±20 ppm ~ ±50 ppm (see table 1)
current consumption		see table 2
supply voltage V_{DC}		3.0 V ± 10%
temperature	operating	T0 = -20°C ~ +70°C
		T1 = -40°C ~ +85°C
		T2 = -40°C ~ +105°C
		T3 = -40°C ~ +125°C
		T8 = -55°C ~ +125°C
	storage	-55°C ~ +150°C
output	logic	HCMOS/LVCMOS
	rise & fall time	3.3 ns max. at 15 pF / 6.2 ns max. at 30 pF (see table 4)
	load max.	30 pF max. recommended (≤ 81.0 MHz)
		15 pF max. recommended (> 81.0 MHz)
		other load capacitances possible, see supplementary document
	current max.	4 mA
	low level max.	0.1 x V_{DC}
	high level min.	0.9 x V_{DC}
standby function (e/d)		stop (S), tristate-only (T) or none (N), see table 3
output enable time max.		5 ms (S) / 150 ns (T)
output disable time max.		150 ns
start-up time max.		5 ms
standby current max.		5 µA (for stop (S), see table 3)
phase jitter 12 kHz ~ 20 MHz		< 3.0 ps RMS
symmetry at 0.5 x V_{DC}		45% ~ 55% (standard)

note: some frequencies can't be configured, see table 5.

Packing Note / Marking

QTY < 250 pcs. → cut tape
QTY 250/500/1K/3K pcs. → tape and reel
Marking: lot code only

RoHS compliant | Pb free | REACH compliant | Conflict mineral free

Table 1: Frequency Stability Code

stability code / temp. code*		B ±50 ppm	G ±30 ppm	C ±25 ppm	D ±20 ppm	
-20°C ~ +70°C	T0	○	○	○	○	
-40°C ~ +85°C	T1	○	○	○	○	
-40°C ~ +105°C	T2	○	○	○	○	
-40°C ~ +125°C	T3	○	○	○	○	
-55°C ~ +125°C	T8	○	○	○		
○ available						

* includes stability at 25°C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption typ. (for max. add 30%)

current at load	5 pF	15 pF	30 pF	60 pF	unit
output disabled	3.9	3.9	3.9	3.9	mA
1.0 ~ 19.9 MHz	4.1	4.5	5.4	7.2	mA
20.0 ~ 29.9 MHz	4.5	5.4	6.9	10.1	mA
30.0 ~ 49.9 MHz	4.9	6.3	8.6	13.2	mA
50.0 ~ 79.9 MHz	6.1	8.4	12.2		mA
80.0 ~ 110.0 MHz	7.3	10.5	15.5		mA
115.0 ~ 137.0 MHz	(9.5)	(14.0)			mA

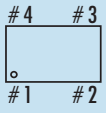
note: current at default edge control setting "D", also refer to table 4.

Table 3: Configurable Standby Function Options (e/d)

pin #1 (e/d control)	option	functionality
low "0" (V_{IL} ≤ 0.2 V_{DC})	S = Stop	output weakly pulled down, oscillator in sleep mode
	T = TriState	output high impedance, oscillator operates
	N = None	oscillator output active
high "1" (V_{IH} ≥ 0.8 V_{DC})	all	oscillator output active
open*	all	oscillator output active

* a pull up resistor is recommended in EMI stressed circuit environments.

Pin Connection



#4: V_{DC} #3: output
#1: e/d #2: GND

note: a capacitor of 0.1 µF between V_{DC} and GND is recommended.

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full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Table 4: Max. Rise & Fall Time vs. Load Capacitance

C_L	5 pF	15 pF	30 pF	5 pF	15 pF	30 pF
edge control	at 10% ~ 90% of V_{DC} (ns)			at 20% ~ 80% of V_{DC} (ns)		
0	1.1	2.0	4.2	0.7	1.4	2.8
1	1.2	2.2	4.8	0.8	1.6	3.3
2	1.3	2.8	5.4	0.9	1.9	3.6
D = 3*	1.5	3.3	6.2	1.0	2.2	4.0
4	2.8	5.8	10.0	1.8	4.0	6.8
5	3.8	7.4	13.0	2.6	5.2	9.0
6	5.5	11.0	19.0	3.8	7.6	13.4
7	11.4	22.0	40.0	7.8	14.6	27.0

* default edge control setting "D" at V_{DC} = 3.0 V, please also refer to the supplementary information on our homepage for typical values and more details.

Table 5: Non-Configurable Frequencies

operating temperature option		operating temperature option	
T2 – (-40°C ~ +105°C) T3 – (-40°C ~ +125°C)		T8 – (-55°C ~ +125°C)	
from (MHz)	to (MHz)	from (MHz)	to (MHz)
61.223	61.674	61.223	61.974
69.796	70.485	69.240	70.827
79.063	79.162	78.715	79.561
81.428	82.232	80.160	80.174
91.834	92.155	80.780	82.632
94.249	94.430	91.834	95.474
94.875	94.994	96.192	96.209
97.714	98.679	96.936	99.158
110.0	115.194	110.0	119.342
117.811	118.038	–	–
118.594	118.743	120.239	120.262
122.142	122.705	121.170	121.243
123.022	123.348	121.601	123.948

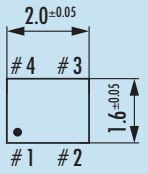
Order Information

Example: O 26.123456 – JSO 75 C1 L C – B – 3.0 – T0 – S – D

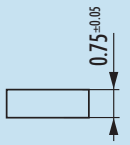
- 0 = Oscillator
- **frequency (8 digits),** see also table 5
  1.0 ~ 110.0 MHz
  115.0 ~ 137.0 MHz
- JSO = Jauch Silicon Oscillator
- **package**
  75 = 7050
  53 = 5032
  32 = 3225
  22 = 2520
  21 = 2016
- **frequency range**
  C1 = 1.0 ~ 110.0 MHz
  C2 = 115.0 ~ 137.0 MHz
- **function/feature**
  L = lowpower
- **output I/F**
  C = (H)CMOS
- **frequency stability overall**
  B = ± 50 ppm
  C = ± 25 ppm
  G = ± 30 ppm
  D = ± 20 ppm
- **supply voltage**
  3.3 = 3.3 V
  3.0 = 3.0 V
  2.8 = 2.8 V
  2.5 = 2.5 V
  1.8 = 1.8 V
  2V3 = 2.5 V ~ 3.3 V
- **temperature range**
  T0 = -20°C ~ +70°C
  T1 = -40°C ~ +85°C
  T2 = -40°C ~ +105°C
  T3 = -40°C ~ +125°C
  T8 = -55°C ~ +125°C
- **standby function options**
  S = Stop
  T = TriState
  N = None
- **edge control**
  D = default
  0 – 7, see table 4

Dimensions

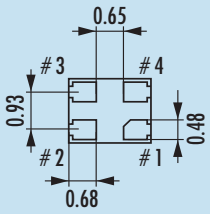
2.0 x 1.6 x 0.75
JSO21



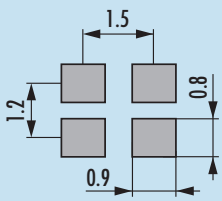
top view



side view

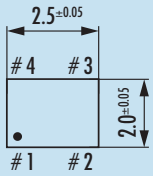


bottom view

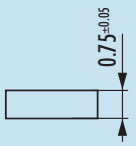


pad layout

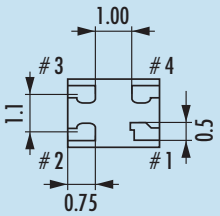
2.5 x 2.0 x 0.75
JSO22



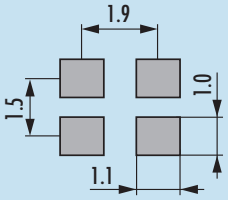
top view



side view

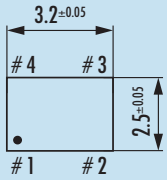


bottom view

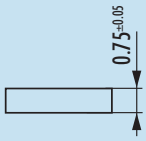


pad layout

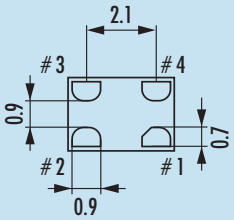
3.2 x 2.5 x 0.75
JSO32



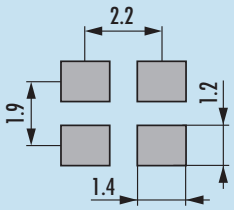
top view



side view

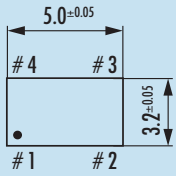


bottom view

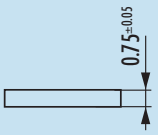


pad layout

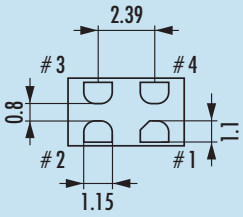
5.0 x 3.2 x 0.75
JSO53



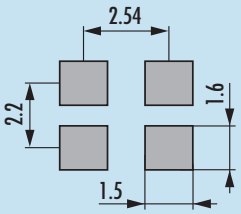
top view



side view

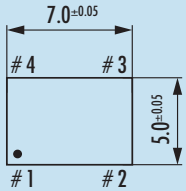


bottom view

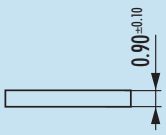


pad layout

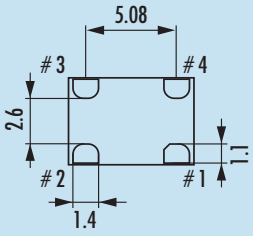
7.0 x 5.0 x 0.90
JSO75



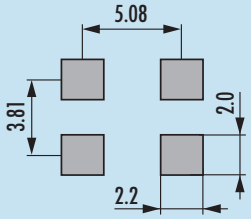
top view



side view



bottom view



pad layout

Pin connection	# 1: e/d	# 2: GND	# 3: output	# 4: V_{DC}	note: a capacitor of 0.1 µF between V_{DC} and GND is recommended

in mm

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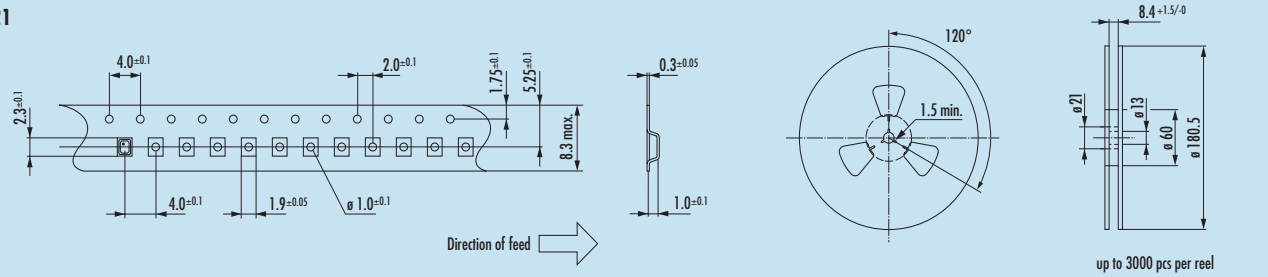
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

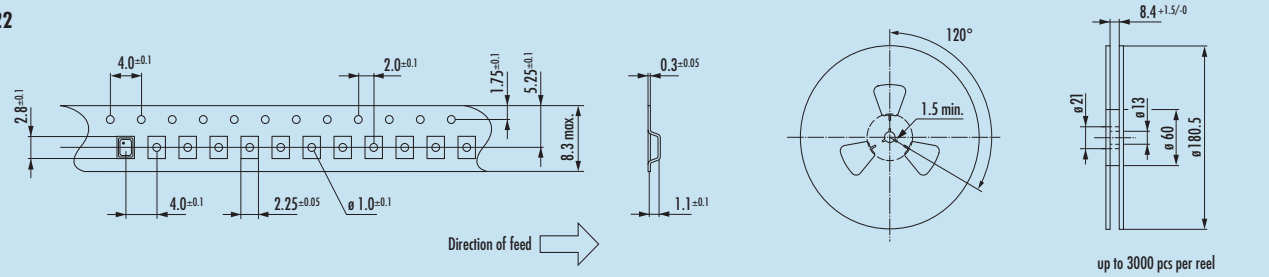
Taping Specification

2.0 x 1.6 x 0.75
JSO21



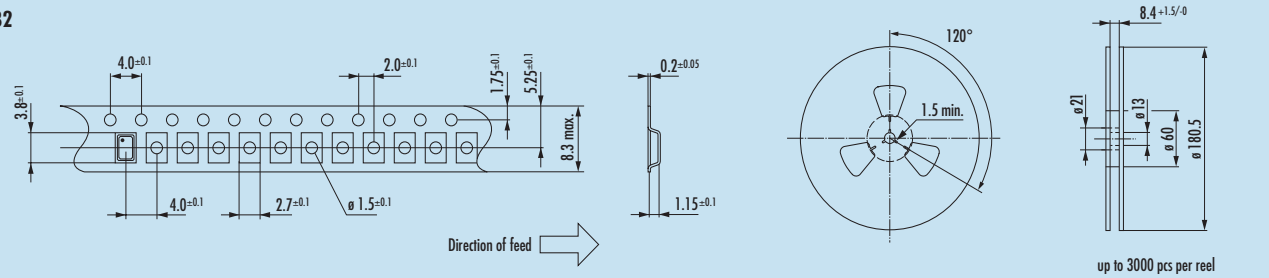
up to 3000 pcs per reel

2.5 x 2.0 x 0.75
JSO22



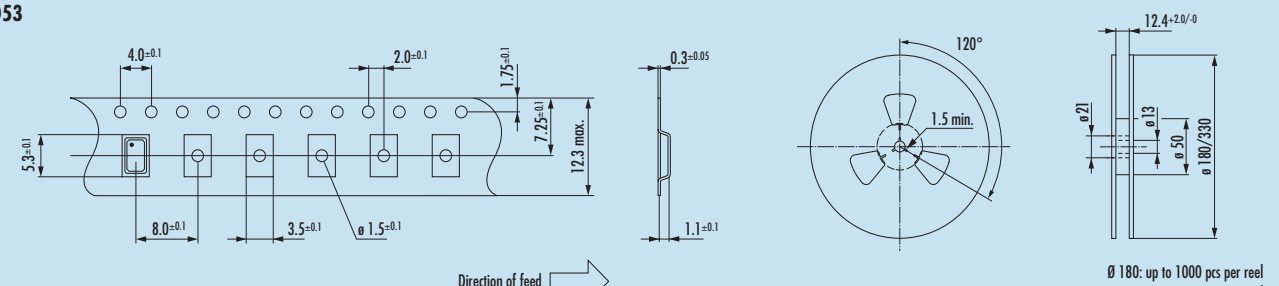
up to 3000 pcs per reel

3.2 x 2.5 x 0.75
JSO32



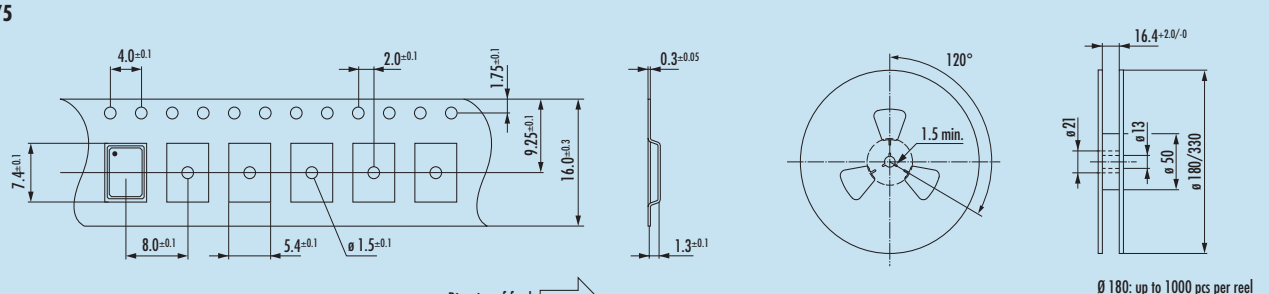
up to 3000 pcs per reel

5.0 x 3.2 x 0.75
JSO53



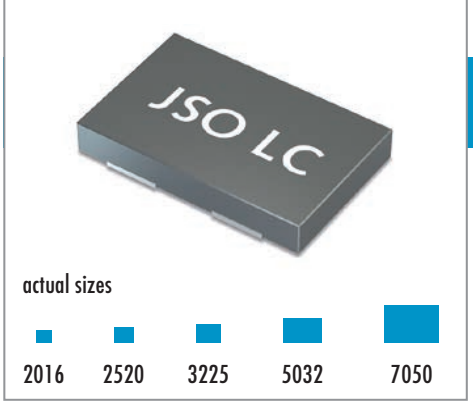
Ø 180: up to 1000 pcs per reel
Ø 330: up to 3000 pcs per reel

7.0 x 5.0 x 0.90
JSO75



Ø 180: up to 1000 pcs per reel
Ø 330: up to 3000 pcs per reel

in mm



MEMS-Oscillator · JSO LC series · 2.8 V

- low power oscillator with HCMOS/LVCMOS output
- compatible to industry standard packages 2016 – 7050
- configured to customer's specification
- extended shock & vibration resistance
- very fast delivery service
- 500 million hours MTBF

General Data

type		JSOxxCxLC 2.8 V
frequency range		1.0 ~ 110.0 MHz (temp. range T0 ~ T8)
		115.0 ~ 137.0 MHz (temp. range T0 ~ T1)
frequency stability over all		±20 ppm ~ ±50 ppm (see table 1)
current consumption		see table 2
supply voltage V_{DC}		2.8 V ± 10%
temperature	operating	T0 = -20°C ~ +70°C
		T1 = -40°C ~ +85°C
		T2 = -40°C ~ +105°C
		T3 = -40°C ~ +125°C
		T8 = -55°C ~ +125°C
	storage	-55°C ~ +150°C
output	logic	HCMOS/LVCMOS
	rise & fall time	2.9 ns max. at 15 pF / 5.7 ns max. at 30 pF (see table 4)
	load max.	30 pF max. recommended (≤ 88.0 MHz)
		15 pF max. recommended (> 88.0 MHz)
		other load capacitances possible, see supplementary document
	current max.	3 mA
	low level max.	0.1 x V_{DC}
	high level min.	0.9 x V_{DC}
standby function (e/d)		stop (S), tristate-only (T) or none (N), see table 3
output enable time max.		5 ms (S) / 150 ns (T)
output disable time max.		150 ns
start-up time max.		5 ms
standby current max.		4 µA (for stop (S), see table 3)
phase jitter 12 kHz ~ 20 MHz		< 3.0 ps RMS
symmetry at 0.5 x V_{DC}		45% ~ 55% (standard)

note: some frequencies can't be configured, see table 5.

Packing Note / Marking

QTY < 250 pcs. → cut tape
QTY 250/500/1K/3K pcs. → tape and reel
Marking: lot code only

RoHS compliant · Pb free · REACH compliant · Conflict mineral free

Table 1: Frequency Stability Code

stability code / temp. code*		B ±50 ppm	G ±30 ppm	C ±25 ppm	D ±20 ppm	
-20°C ~ +70°C	T0	○	○	○	○	
-40°C ~ +85°C	T1	○	○	○	○	
-40°C ~ +105°C	T2	○	○	○	○	
-40°C ~ +125°C	T3	○	○	○	○	
-55°C ~ +125°C	T8	○	○	○		
○ available						

* includes stability at 25°C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption typ. (for max. add 30%)

current at load	5 pF	15 pF	30 pF	60 pF	unit
output disabled	3.8	3.8	3.8	3.8	mA
1.0 ~ 19.9 MHz	4.1	4.3	5.2	6.9	mA
20.0 ~ 29.9 MHz	4.4	5.2	6.7	9.8	mA
30.0 ~ 49.9 MHz	4.8	6.2	8.3	12.7	mA
50.0 ~ 79.9 MHz	6.1	8.1	11.7		mA
80.0 ~ 110.0 MHz	7.0	10.0			mA
115.0 ~ 137.0 MHz	(9.0)	(14.0)			mA

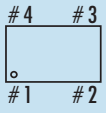
note: current at default edge control setting "D", also refer to table 4.

Table 3: Configurable Standby Function Options (e/d)

pin #1 (e/d control)	option	functionality
low "0" (V_{IL} ≤ 0.2 V_{DC})	S = Stop	output weakly pulled down, oscillator in sleep mode
	T = TriState	output high impedance, oscillator operates
	N = None	oscillator output active
high "1" (V_{IH} ≥ 0.8 V_{DC})	all	oscillator output active
open*	all	oscillator output active

* a pull up resistor is recommended in EMI stressed circuit environments.

Pin Connection



#4: V_{DC} · #3: output
#1: e/d · #2: GND

note: a capacitor of 0.1 µF between V_{DC} and GND is recommended.

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full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Table 4: Max. Rise & Fall Time vs. Load Capacitance

C_L	5 pF	15 pF	30 pF	5 pF	15 pF	30 pF
edge control	at 10% ~ 90% of V_{DC} (ns)			at 20% ~ 80% of V_{DC} (ns)		
0	1.2	2.2	4.6	0.8	1.6	3.0
1	1.3	2.4	5.2	0.9	1.8	3.5
D = 2*	1.5	2.9	5.7	1.0	2.0	3.8
3	1.6	3.6	6.4	1.1	2.4	4.4
4	3.0	6.2	10.4	2.0	4.2	7.4
5	4.0	7.6	13.6	2.8	5.4	9.4
6	5.8	11.6	21.0	4.0	8.0	14.2
7	12.0	23.0	42.0	8.2	15.2	28.0

* default edge control setting "D" at V_{DC} = 2.8 V, please also refer to the supplementary information on our homepage for typical values and more details.

Table 5: Non-Configurable Frequencies

operating temperature option		operating temperature option	
T2 – (-40°C ~ +105°C) T3 – (-40°C ~ +125°C)		T8 – (-55°C ~ +125°C)	
from (MHz)	to (MHz)	from (MHz)	to (MHz)
61.223	61.674	61.223	61.974
69.796	70.485	69.240	70.827
79.063	79.162	78.715	79.561
81.428	82.232	80.160	80.174
91.834	92.155	80.780	82.632
94.249	94.430	91.834	95.474
94.875	94.994	96.192	96.209
97.714	98.679	96.936	99.158
110.0	115.194	110.0	119.342
117.811	118.038	–	–
118.594	118.743	120.239	120.262
122.142	122.705	121.170	121.243
123.022	123.348	121.601	123.948

Order Information

Example: O 26.123456 – JSO 75 C1 L C – B – 2.8 – T0 – S – D

O = Oscillator

frequency (8 digits), see also table 5
1.0 ~ 110.0 MHz
115.0 ~ 137.0 MHz

JSO = Jauch Silicon Oscillator

package
75 = 7050
53 = 5032
32 = 3225
22 = 2520
21 = 2016

frequency range
C1 = 1.0 ~ 110.0 MHz
C2 = 115.0 ~ 137.0 MHz

function/feature
L = lowpower

output I/F
C = (H)CMOS

edge control
D = default
0 – 7, see table 4

standby function options
S = Stop
T = TriState
N = None

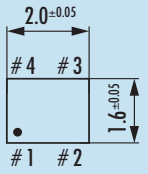
temperature range
T0 = -20°C ~ +70°C
T1 = -40°C ~ +85°C
T2 = -40°C ~ +105°C
T3 = -40°C ~ +125°C
T8 = -55°C ~ +125°C

supply voltage
3.3 = 3.3 V
3.0 = 3.0 V
2.8 = 2.8 V
2.5 = 2.5 V
1.8 = 1.8 V
2V3 = 2.5 V ~ 3.3 V

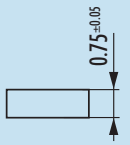
frequency stability overall
B = ± 50 ppm
G = ± 30 ppm
C = ± 25 ppm
D = ± 20 ppm

Dimensions

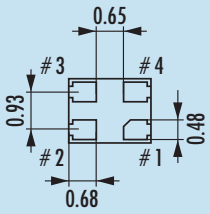
2.0 x 1.6 x 0.75
JSO21



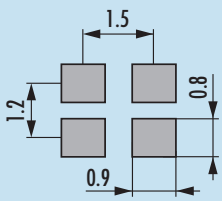
top view



side view

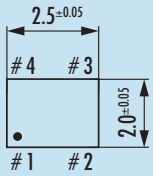


bottom view

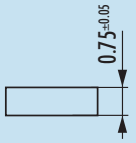


pad layout

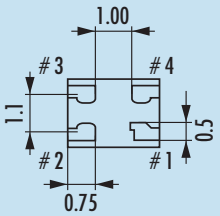
2.5 x 2.0 x 0.75
JSO22



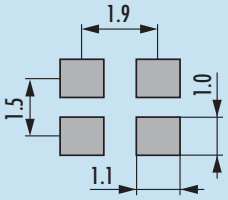
top view



side view

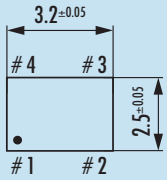


bottom view

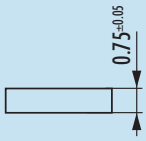


pad layout

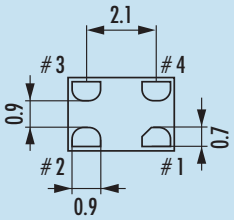
3.2 x 2.5 x 0.75
JSO32



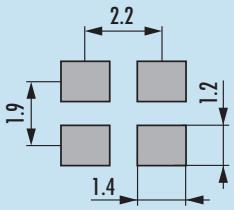
top view



side view

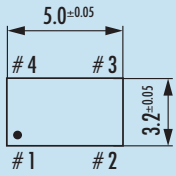


bottom view

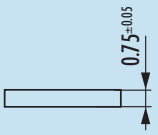


pad layout

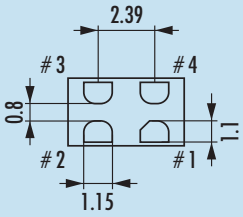
5.0 x 3.2 x 0.75
JSO53



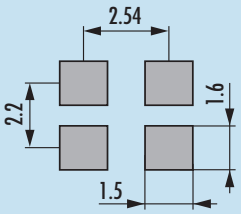
top view



side view

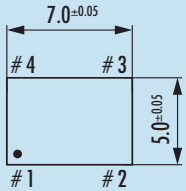


bottom view

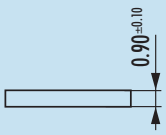


pad layout

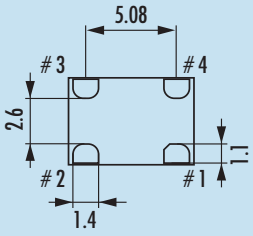
7.0 x 5.0 x 0.90
JSO75



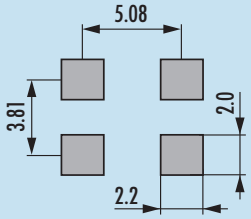
top view



side view



bottom view



pad layout

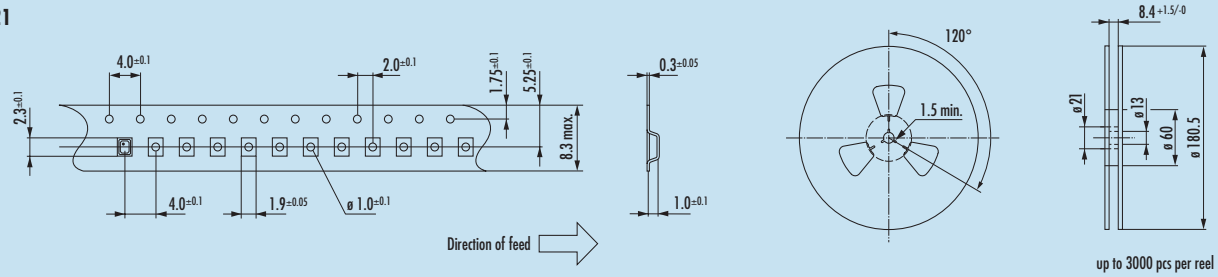
Pin connection # 1: e/d # 2: GND # 3: output # 4: V_{DC} note: a capacitor of 0.1 µF between V_{DC} and GND is recommended

in mm

Jauch Quartz GmbH • e-mail: info@jauch.de
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

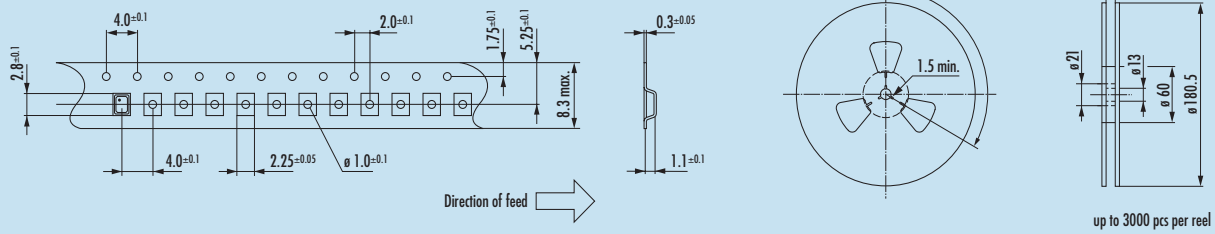
Taping Specification

2.0 x 1.6 x 0.75
JSO21



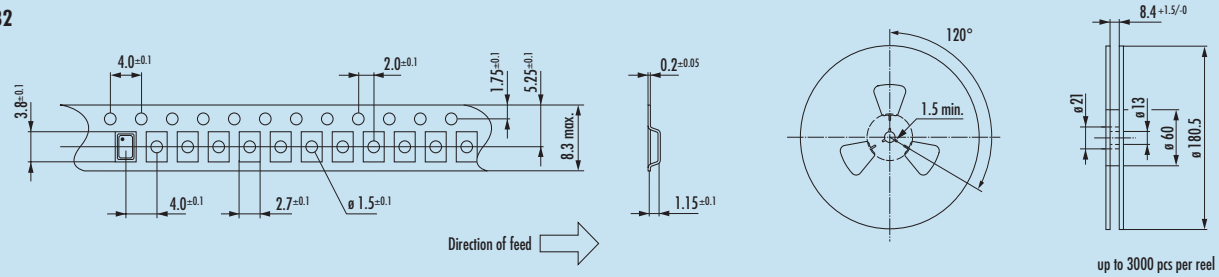
up to 3000 pcs per reel

2.5 x 2.0 x 0.75
JSO22



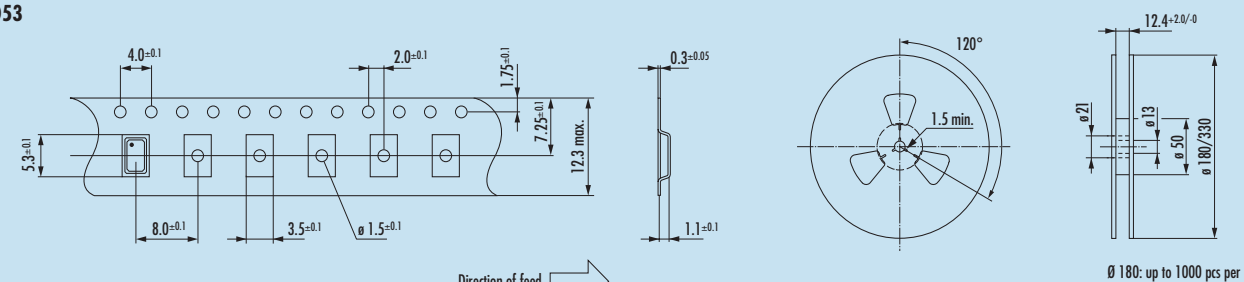
up to 3000 pcs per reel

3.2 x 2.5 x 0.75
JSO32



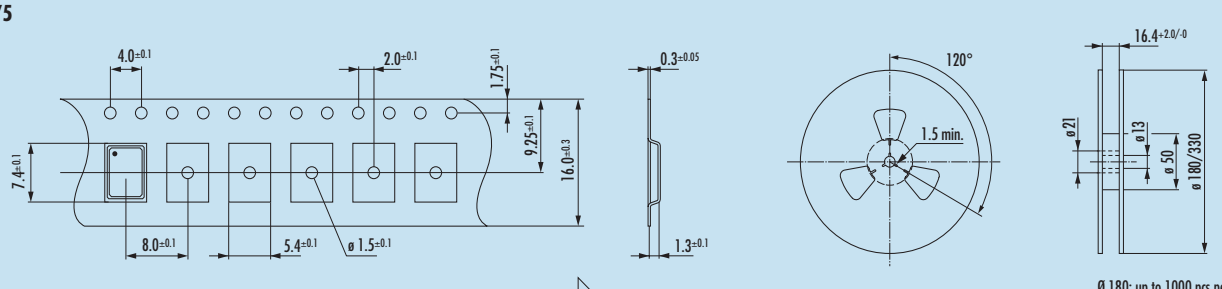
up to 3000 pcs per reel

5.0 x 3.2 x 0.75
JSO53



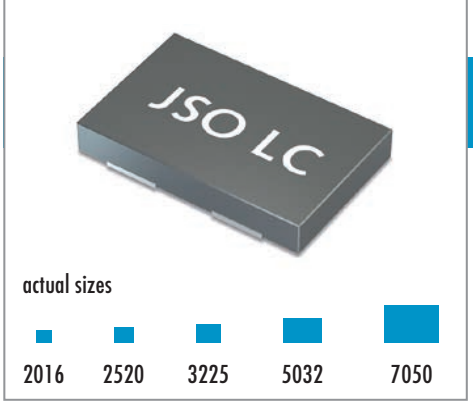
Ø 180: up to 1000 pcs per reel
Ø 330: up to 3000 pcs per reel

7.0 x 5.0 x 0.90
JSO75



Ø 180: up to 1000 pcs per reel
Ø 330: up to 3000 pcs per reel

in mm



MEMS-Oscillator · JSO LC series · 2.5 V

- low power oscillator with HCMOS/LVCMOS output
- compatible to industry standard packages 2016 – 7050
- configured to customer's specification
- extended shock & vibration resistance
- very fast delivery service
- 500 million hours MTBF

General Data

type		JSOxxCxLC 2.5 V
frequency range		1.0 ~ 110.0 MHz (temp. range T0 ~ T8)
		115.0 ~ 137.0 MHz (temp. range T0 ~ T1)
frequency stability over all		±20 ppm ~ ±50 ppm (see table 1)
current consumption		see table 2
supply voltage V_{DC}		2.5 V ± 10%
temperature	operating	T0 = -20°C ~ +70°C
		T1 = -40°C ~ +85°C
		T2 = -40°C ~ +105°C
		T3 = -40°C ~ +125°C
		T8 = -55°C ~ +125°C
	storage	-55°C ~ +150°C
output	logic	HCMOS/LVCMOS
	rise & fall time	3.0 ns max. at 15 pF / 6.0 ns max. at 30 pF (see table 4)
	load max.	30 pF max. recommended (≤ 83.0 MHz)
		15 pF max. recommended (> 83.0 MHz)
		other load capacitances possible, see supplementary document
	current max.	3 mA
	low level max.	0.1 x V_{DC}
	high level min.	0.9 x V_{DC}
standby function (e/d)		stop (S), tristate-only (T) or none (N), see table 3
output enable time max.		5 ms (S) / 150 ns (T)
output disable time max.		150 ns
start-up time max.		5 ms
standby current max.		3 µA (for stop (S), see table 3)
phase jitter 12 kHz ~ 20 MHz		< 3.0 ps RMS
symmetry at 0.5 x V_{DC}		45% ~ 55% (standard)

note: some frequencies can't be configured, see table 5.

Packing Note / Marking

QTY < 250 pcs. → cut tape
QTY 250/500/1K/3K pcs. → tape and reel
Marking: lot code only

RoHS compliant | Pb free | REACH compliant | Conflict mineral free

Table 1: Frequency Stability Code

stability code / temp. code*		B ±50 ppm	G ±30 ppm	C ±25 ppm	D ±20 ppm	
-20°C ~ +70°C	T0	○	○	○	○	
-40°C ~ +85°C	T1	○	○	○	○	
-40°C ~ +105°C	T2	○	○	○	○	
-40°C ~ +125°C	T3	○	○	○	○	
-55°C ~ +125°C	T8	○	○	○		
○ available						

* includes stability at 25°C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption typ. (for max. add 30%)

current at load	5 pF	15 pF	30 pF	60 pF	unit
output disabled	3.7	3.7	3.7	3.7	mA
1.0 ~ 19.9 MHz	3.8	4.2	5.0	6.4	mA
20.0 ~ 29.9 MHz	4.3	5.0	6.4	9.0	mA
30.0 ~ 49.9 MHz	4.7	5.8	7.8	11.6	mA
50.0 ~ 79.9 MHz	5.6	7.6	10.7		mA
80.0 ~ 110.0 MHz	6.6	9.2			mA
115.0 ~ 137.0 MHz	(8.5)	(13.0)			mA

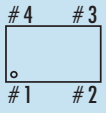
note: current at default edge control setting "D", also refer to table 4.

Table 3: Configurable Standby Function Options (e/d)

pin #1 (e/d control)	option	functionality
low "0" ($V_{IL} \leq 0.2\ V_{DC}$)	S = Stop	output weakly pulled down, oscillator in sleep mode
	T = TriState	output high impedance, oscillator operates
	N = None	oscillator output active
high "1" ($V_{IH} \geq 0.8\ V_{DC}$)	all	oscillator output active
open*	all	oscillator output active

* a pull up resistor is recommended in EMI stressed circuit environments.

Pin Connection



#4: V_{DC} #3: output
#1: e/d #2: GND

note: a capacitor of 0.1 µF between V_{DC} and GND is recommended.

Jauch MEMS – Uses SiTime's MEMS First™ technology

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full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Table 4: Max. Rise & Fall Time vs. Load Capacitance

C_L	5 pF	15 pF	30 pF	5 pF	15 pF	30 pF
edge control	at 10% ~ 90% of V_{DC} (ns)			at 20% ~ 80% of V_{DC} (ns)		
0	1.2	2.4	5.2	0.8	1.7	3.4
1	1.4	2.6	5.8	0.9	1.9	3.8
D = 2*	1.6	3.0	6.0	1.1	2.1	4.0
3	1.8	4.0	6.6	1.2	2.6	4.6
4	3.2	6.4	11.0	2.2	4.4	7.8
5	4.4	8.4	14.6	2.9	5.8	10.4
6	6.6	12.4	23.0	4.4	8.6	15.2
7	12.8	25.0	46.0	8.6	16.6	30.0

* default edge control setting "D" at V_{DC} = 2.5 V, please also refer to the supplementary information on our homepage for typical values and more details.

Table 5: Non-Configurable Frequencies

operating temperature option		operating temperature option	
T2 – (-40°C ~ +105°C) T3 – (-40°C ~ +125°C)		T8 – (-55°C ~ +125°C)	
from (MHz)	to (MHz)	from (MHz)	to (MHz)
61.223	61.674	61.223	61.974
69.796	70.485	69.240	70.827
79.063	79.162	78.715	79.561
81.428	82.232	80.160	80.174
91.834	92.155	80.780	82.632
94.249	94.430	91.834	95.474
94.875	94.994	96.192	96.209
97.714	98.679	96.936	99.158
110.0	115.194	110.0	119.342
117.811	118.038	–	–
118.594	118.743	120.239	120.262
122.142	122.705	121.170	121.243
123.022	123.348	121.601	123.948

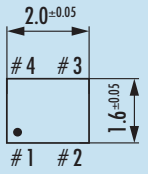
Order Information

Example: O 26.123456 – JSO 75 C1 L C – B – 2.5 – T0 – S – D

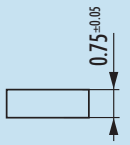
- **O** = Oscillator
- **frequency (8 digits),** see also table 5
  1.0 ~ 110.0 MHz
  115.0 ~ 137.0 MHz
- **JSO** = Jauch Silicon Oscillator
- **package**
  75 = 7050
  53 = 5032
  32 = 3225
  22 = 2520
  21 = 2016
- **frequency range**
  C1 = 1.0 ~ 110.0 MHz
  C2 = 115.0 ~ 137.0 MHz
- **function/feature**
  L = lowpower
- **output I/F**
  C = (H)CMOS
- **edge control**
  D = default
  0 – 7, see table 4
- **standby function options**
  S = Stop
  T = TriState
  N = None
- **temperature range**
  T0 = -20°C ~ +70°C
  T1 = -40°C ~ +85°C
  T2 = -40°C ~ +105°C
  T3 = -40°C ~ +125°C
  T8 = -55°C ~ +125°C
- **supply voltage**
  3.3 = 3.3 V
  3.0 = 3.0 V
  2.8 = 2.8 V
  2.5 = 2.5 V
  1.8 = 1.8 V
  2V3 = 2.5 V ~ 3.3 V
- **frequency stability overall**
  B = ± 50 ppm
  G = ± 30 ppm
  C = ± 25 ppm
  D = ± 20 ppm

Dimensions

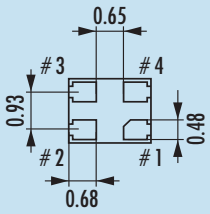
2.0 x 1.6 x 0.75
JSO21



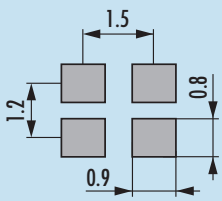
top view



side view

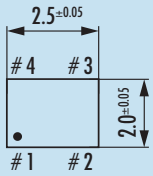


bottom view

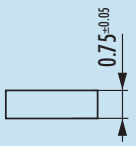


pad layout

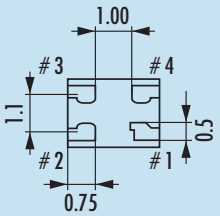
2.5 x 2.0 x 0.75
JSO22



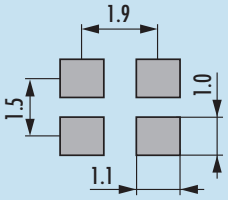
top view



side view

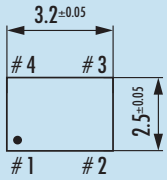


bottom view

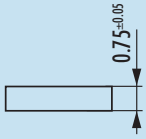


pad layout

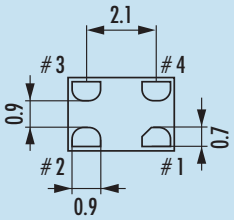
3.2 x 2.5 x 0.75
JSO32



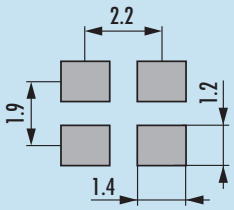
top view



side view

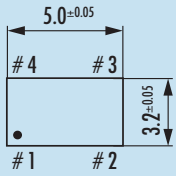


bottom view

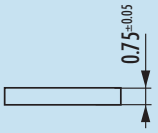


pad layout

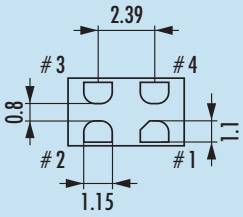
5.0 x 3.2 x 0.75
JSO53



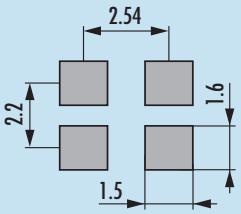
top view



side view

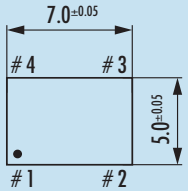


bottom view

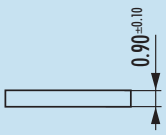


pad layout

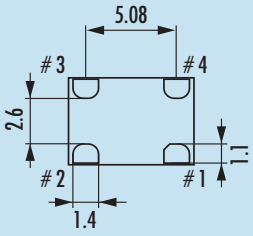
7.0 x 5.0 x 0.90
JSO75



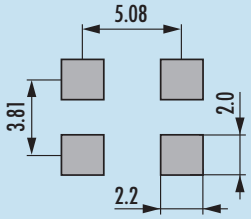
top view



side view



bottom view



pad layout

Pin connection	# 1: e/d	# 2: GND	# 3: output	# 4: V_{DC}	note: a capacitor of 0.1 µF between V_{DC} and GND is recommended

in mm

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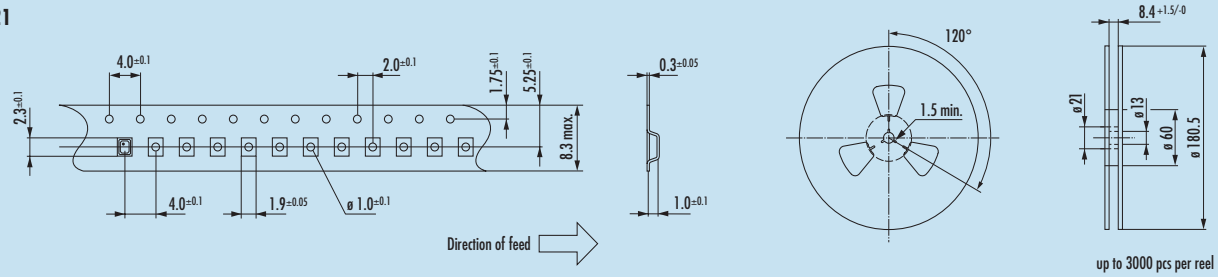
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

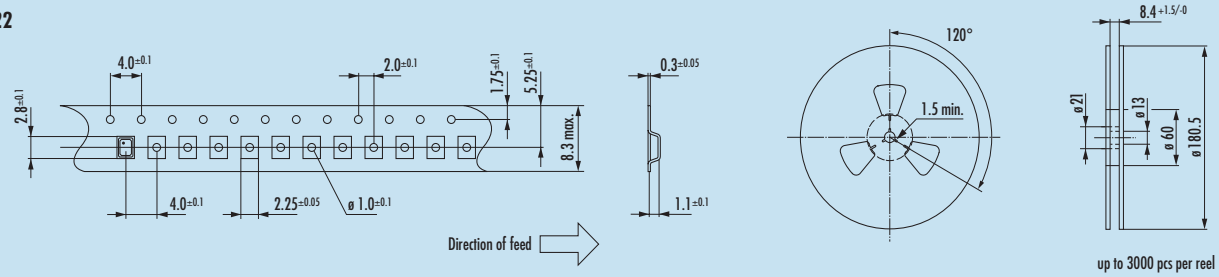
Taping Specification

2.0 x 1.6 x 0.75
JSO21



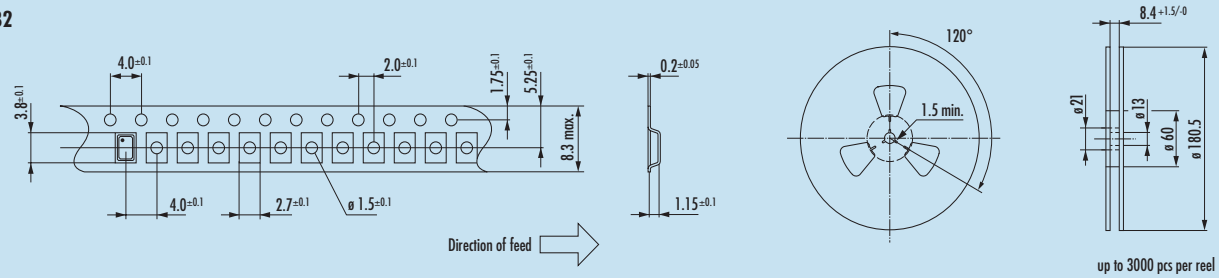
up to 3000 pcs per reel

2.5 x 2.0 x 0.75
JSO22



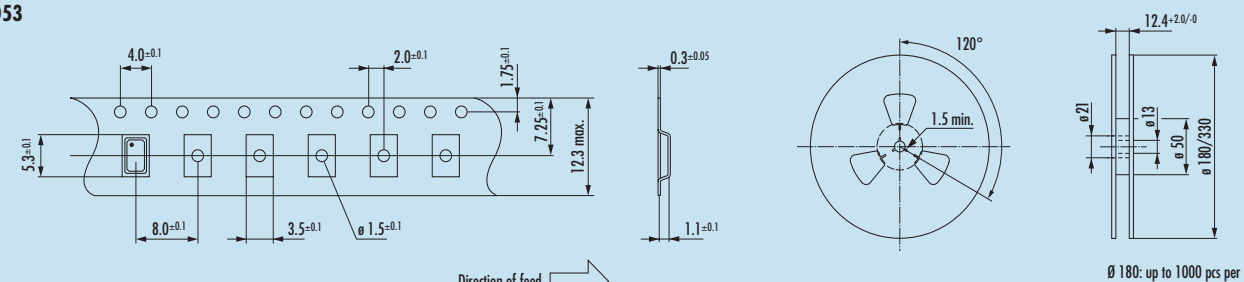
up to 3000 pcs per reel

3.2 x 2.5 x 0.75
JSO32



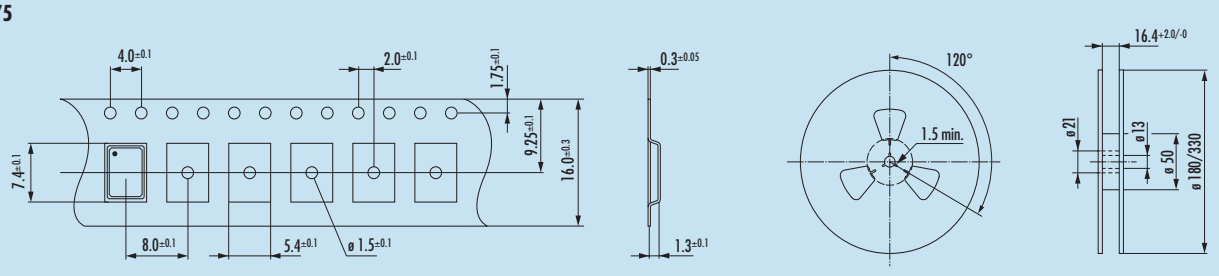
up to 3000 pcs per reel

5.0 x 3.2 x 0.75
JSO53



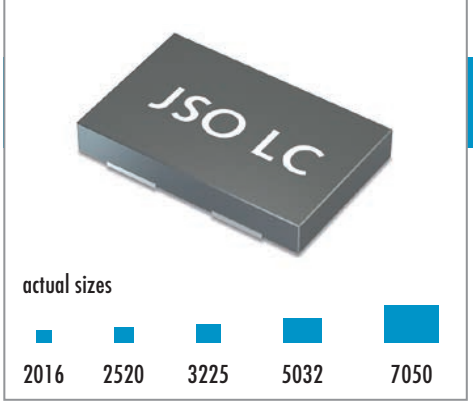
Ø 180: up to 1000 pcs per reel
Ø 330: up to 3000 pcs per reel

7.0 x 5.0 x 0.90
JSO75



Ø 180: up to 1000 pcs per reel
Ø 330: up to 3000 pcs per reel

in mm



MEMS-Oscillator · JSO LC series · 1.8 V

- low power oscillator with HCMOS/LVCMOS output
- compatible to industry standard packages 2016 – 7050
- configured to customer's specification
- extended shock & vibration resistance
- very fast delivery service
- 500 million hours MTBF

General Data

type		JSOxxCxLC 1.8 V
frequency range		1.0 ~ 110.0 MHz (temp. range T0 ~ T8)
		115.0 ~ 137.0 MHz (temp. range T0 ~ T1)
frequency stability over all		±20 ppm ~ ±50 ppm (see table 1)
current consumption		see table 2
supply voltage V_{DC}		1.8 V ± 10%
temperature	operating	T0 = -20°C ~ +70°C
		T1 = -40°C ~ +85°C
		T2 = -40°C ~ +105°C
		T3 = -40°C ~ +125°C
		T8 = -55°C ~ +125°C
	storage	-55°C ~ +150°C
output	logic	HCMOS/LVCMOS
	rise & fall time	4.2 ns max. at 15 pF / 6.8 ns max. at 30 pF (see table 4)
	load max.	30 pF max. recommended (≤ 74.0 MHz)
		15 pF max. recommended (> 74.0 MHz)
		other load capacitances possible, see supplementary document
	current max.	2 mA
	low level max.	0.1 x V_{DC}
	high level min.	0.9 x V_{DC}
standby function (e/d)		stop (S), tristate-only (T) or none (N), see table 3
output enable time max.		5 ms (S) / 150 ns (T)
output disable time max.		150 ns
start-up time max.		5 ms
standby current max.		2 µA (for stop (S), see table 3)
phase jitter 12 kHz ~ 20 MHz		< 3.0 ps RMS
symmetry at 0.5 x V_{DC}		45% ~ 55% (standard)

note: some frequencies can't be configured, see table 5.

Packing Note / Marking

QTY < 250 pcs. → cut tape
QTY 250/500/1K/3K pcs. → tape and reel
Marking: lot code only

RoHS compliant · Pb free · REACH compliant · Conflict mineral free

Table 1: Frequency Stability Code

stability code / temp. code*		B ±50 ppm	G ±30 ppm	C ±25 ppm	D ±20 ppm	
-20°C ~ +70°C	T0	○	○	○	○	
-40°C ~ +85°C	T1	○	○	○	○	
-40°C ~ +105°C	T2	○	○	○	○	
-40°C ~ +125°C	T3	○	○	○	○	
-55°C ~ +125°C	T8	○	○	○		
○ available						

* includes stability at 25°C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption typ. (for max. add 30%)

current at load	5 pF	15 pF	30 pF	60 pF	unit
output disabled	3.5	3.5	3.5	3.5	mA
1.0 ~ 19.9 MHz	3.6	3.9	4.4	5.5	mA
20.0 ~ 29.9 MHz	4.2	4.5	5.4	6.5	mA
30.0 ~ 49.9 MHz	4.5	5.1	6.5		mA
50.0 ~ 79.9 MHz	4.9	6.3			mA
80.0 ~ 110.0 MHz	5.7	7.6			mA
115.0 ~ 137.0 MHz	(8.0)	(13.0)			mA

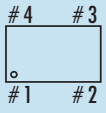
note: current at default edge control setting "D", also refer to table 4.

Table 3: Configurable Standby Function Options (e/d)

pin #1 (e/d control)	option	functionality
low "0" ($V_{IL} \leq 0.2\ V_{DC}$)	S = Stop	output weakly pulled down, oscillator in sleep mode
	T = TriState	output high impedance, oscillator operates
	N = None	oscillator output active
high "1" ($V_{IH} \geq 0.8\ V_{DC}$)	all	oscillator output active
open*	all	oscillator output active

* a pull up resistor is recommended in EMI stressed circuit environments.

Pin Connection



#4: V_{DC} · #3: output
#1: e/d · #2: GND

note: a capacitor of 0.1 µF between V_{DC} and GND is recommended.

Jauch MEMS – Uses SiTime's MEMS First™ technology

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Table 4: Max. Rise & Fall Time vs. Load Capacitance

C_L	5 pF	15 pF	30 pF	5 pF	15 pF	30 pF
edge control	at 10% ~ 90% of V_{DC} (ns)			at 20% ~ 80% of V_{DC} (ns)		
D = 0*	1.8	4.2	6.8	1.2	2.8	4.8
1	2.2	5.0	7.6	1.4	3.4	5.2
2	2.4	5.6	8.8	1.6	3.8	6.0
3	2.8	6.0	10.0	1.8	4.2	6.8
4	4.8	9.8	17.0	3.4	6.6	11.6
5	6.6	12.6	21.0	4.4	8.6	15.0
6	10.0	18.0	32.0	6.6	12.0	22.0
7	18.0	34.0	62.0	12.4	24.0	44.0

* default edge control setting "D" at V_{DC} = 1.8 V, please also refer to the supplementary information on our homepage for typical values and more details.

Table 5: Non-Configurable Frequencies

operating temperature option		operating temperature option	
T2 – (-40°C ~ +105°C) T3 – (-40°C ~ +125°C)		T8 – (-55°C ~ +125°C)	
from (MHz)	to (MHz)	from (MHz)	to (MHz)
61.223	61.674	61.223	61.974
69.796	70.485	69.240	70.827
79.063	79.162	78.715	79.561
81.428	82.232	80.160	80.174
91.834	92.155	80.780	82.632
94.249	94.430	91.834	95.474
94.875	94.994	96.192	96.209
97.714	98.679	96.936	99.158
110.0	115.194	110.0	119.342
117.811	118.038	–	–
118.594	118.743	120.239	120.262
122.142	122.705	121.170	121.243
123.022	123.348	121.601	123.948

Order Information

Example: O 26.123456 – JSO 75 C1 L C – B – 1.8 – T0 – S – D

O = Oscillator

frequency (8 digits), see also table 5
1.0 ~ 110.0 MHz
115.0 ~ 137.0 MHz

JSO = Jauch Silicon Oscillator

package
75 = 7050
53 = 5032
32 = 3225
22 = 2520
21 = 2016

frequency range
C1 = 1.0 ~ 110.0 MHz
C2 = 115.0 ~ 137.0 MHz

function/feature
L = lowpower

output I/F
C = (H)CMOS

edge control
D = default
0 – 7, see table 4

standby function options
S = Stop
T = TriState
N = None

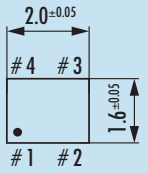
temperature range
T0 = -20°C ~ +70°C
T1 = -40°C ~ +85°C
T2 = -40°C ~ +105°C
T3 = -40°C ~ +125°C
T8 = -55°C ~ +125°C

supply voltage
3.3 = 3.3 V
3.0 = 3.0 V
2.8 = 2.8 V
2.5 = 2.5 V
1.8 = 1.8 V
2V3 = 2.5 V ~ 3.3 V

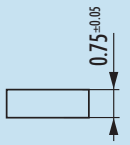
frequency stability overall
B = ± 50 ppm
G = ± 30 ppm
C = ± 25 ppm
D = ± 20 ppm

Dimensions

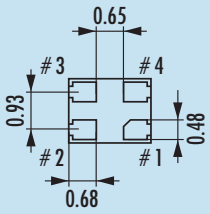
2.0 x 1.6 x 0.75
JSO21



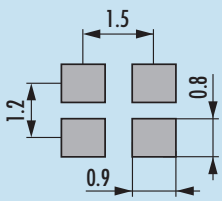
top view



side view

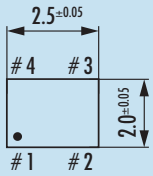


bottom view

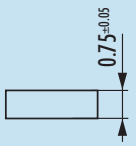


pad layout

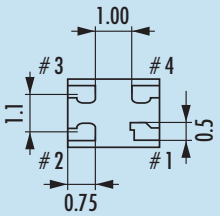
2.5 x 2.0 x 0.75
JSO22



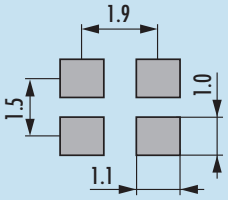
top view



side view

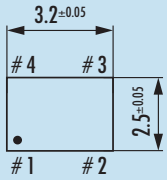


bottom view

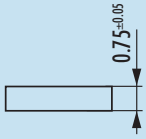


pad layout

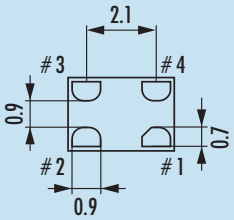
3.2 x 2.5 x 0.75
JSO32



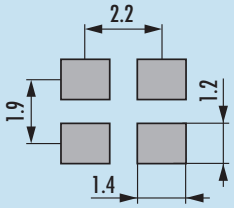
top view



side view

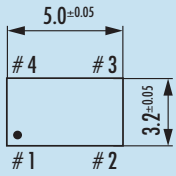


bottom view

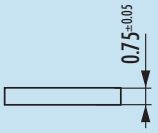


pad layout

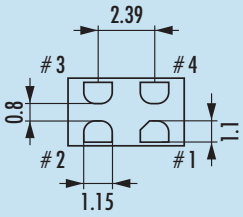
5.0 x 3.2 x 0.75
JSO53



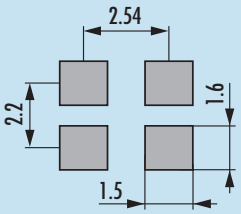
top view



side view

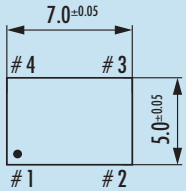


bottom view

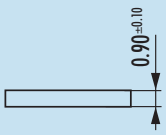


pad layout

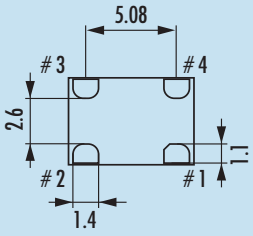
7.0 x 5.0 x 0.90
JSO75



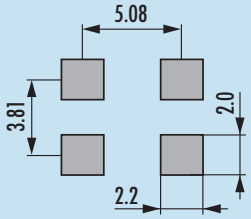
top view



side view



bottom view



pad layout

Pin connection	# 1: e/d	# 2: GND	# 3: output	# 4: V_{DC}	note: a capacitor of 0.1 µF between V_{DC} and GND is recommended

in mm

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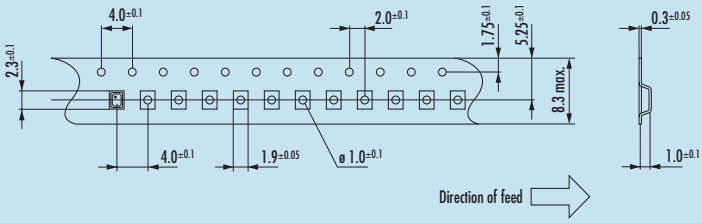
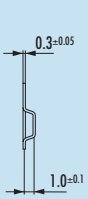
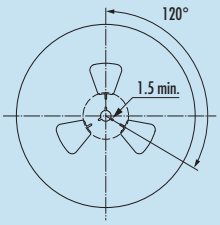
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

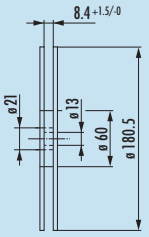
Taping Specification

2.0 x 1.6 x 0.75
JSO21



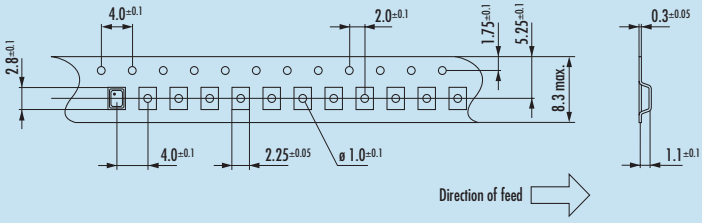


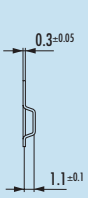


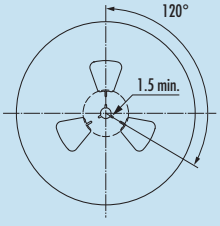


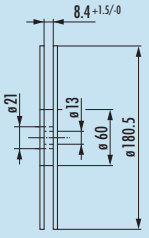
up to 3000 pcs per reel

2.5 x 2.0 x 0.75
JSO22



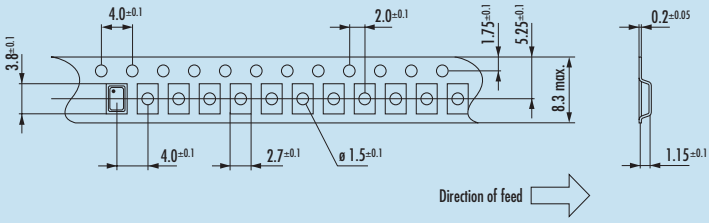


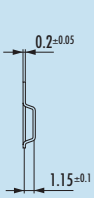


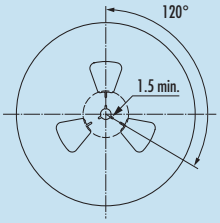


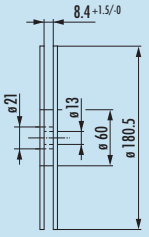
up to 3000 pcs per reel

3.2 x 2.5 x 0.75
JSO32



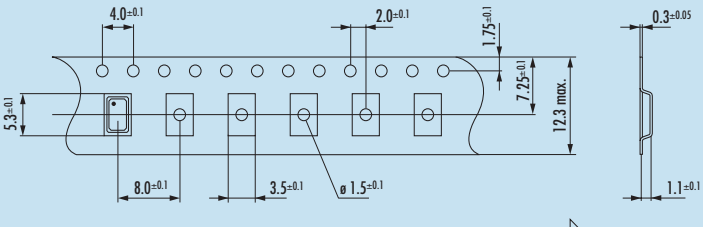


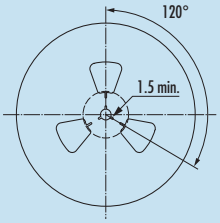


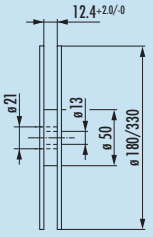


up to 3000 pcs per reel

5.0 x 3.2 x 0.75
JSO53

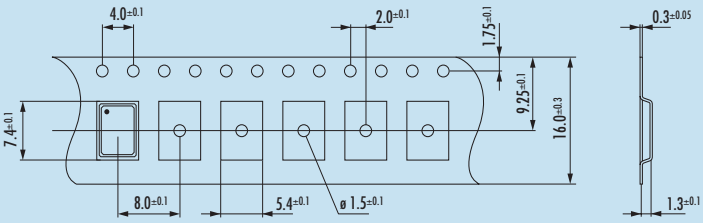


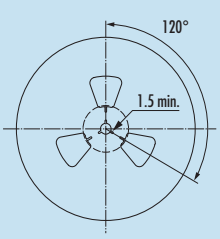


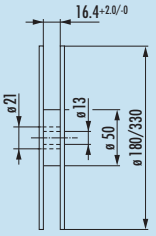


Ø 180: up to 1000 pcs per reel
Ø 330: up to 3000 pcs per reel

7.0 x 5.0 x 0.90
JSO75

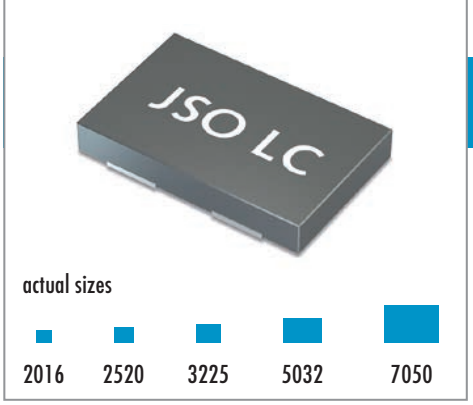






Ø 180: up to 1000 pcs per reel
Ø 330: up to 3000 pcs per reel

in mm



MEMS-Oscillator · JSO LC series · 2.5 V ~ 3.3 V

- low power oscillator with HCMOS/LVCMOS output
- compatible to industry standard packages 2016 – 7050
- configured to customer's specification
- extended shock & vibration resistance
- very fast delivery service
- 500 million hours MTBF

General Data

type		JSOxxCxLC 2.5 V ~ 3.3 V
frequency range		1.0 ~ 110.0 MHz (temp. range T0 ~ T8)
		115.0 ~ 137.0 MHz (temp. range T0 ~ T1)
frequency stability over all		±20 ppm ~ ±50 ppm (see table 1)
current consumption		see table 2
supply voltage V_{DC}		2.5 V – 10% ~ 3.3 V + 10%
temperature	operating	T0 = -20°C ~ +70°C
		T1 = -40°C ~ +85°C
		T2 = -40°C ~ +105°C
		T3 = -40°C ~ +125°C
		T8 = -55°C ~ +125°C
	storage	-55°C ~ +150°C
output	logic	HCMOS/LVCMOS
	rise & fall time	4.0 ns max. at 15 pF / 6.6 ns max. at 30 pF (see table 4)
	load max.	30 pF max. recommended (≤ 76.0 MHz)
		15 pF max. recommended (> 76.0 MHz)
		other load capacitances possible, see supplementary document
	current max.	3 mA
	low level max.	0.1 x V_{DC}
	high level min.	0.9 x V_{DC}
standby function (e/d)		stop (S), tristate-only (T) or none (N), see table 3
output enable time max.		5 ms (S) / 150 ns (T)
output disable time max.		150 ns
start-up time max.		5 ms
standby current max.		3 µA (for stop (S), see table 3)
phase jitter 12 kHz ~ 20 MHz		< 3.0 ps RMS
symmetry at 0.5 x V_{DC}		45% ~ 55% (standard)

note: some frequencies can't be configured, see table 5.

Packing Note / Marking

QTY < 250 pcs. → cut tape
QTY 250/500/1K/3K pcs. → tape and reel
Marking: lot code only

RoHS compliant · Pb free · REACH compliant · Conflict mineral free

Table 1: Frequency Stability Code

stability code / temp. code*		B ±50 ppm	G ±30 ppm	C ±25 ppm	D ±20 ppm	
-20°C ~ +70°C	T0	○	○	○	○	
-40°C ~ +85°C	T1	○	○	○	○	
-40°C ~ +105°C	T2	○	○	○	○	
-40°C ~ +125°C	T3	○	○	○	○	
-55°C ~ +125°C	T8	○	○	○		
○ available						

* includes stability at 25°C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption typ. (for max. add 30%)

current at load	5 pF	15 pF	30 pF	60 pF	unit
output disabled	4.0	4.0	4.0	4.0	mA
1.0 ~ 19.9 MHz	4.0	4.6	5.6	7.6	mA
20.0 ~ 29.9 MHz	4.6	5.7	7.4	10.9	mA
30.0 ~ 49.9 MHz	5.1	6.7	9.2	14.3	mA
50.0 ~ 79.9 MHz	6.4	9.0	13.2		mA
80.0 ~ 110.0 MHz	7.7	11.2	17.0		mA
115.0 ~ 137.0 MHz	(10.0)	(14.5)			mA

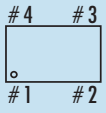
note: current at default edge control setting "D", also refer to table 4.

Table 3: Configurable Standby Function Options (e/d)

pin #1 (e/d control)	option	functionality
low "0" ($V_{IL} \leq 0.2\ V_{DC}$)	S = Stop	output weakly pulled down, oscillator in sleep mode
	T = TriState	output high impedance, oscillator operates
	N = None	oscillator output active
high "1" ($V_{IH} \geq 0.8\ V_{DC}$)	all	oscillator output active
open*	all	oscillator output active

* a pull up resistor is recommended in EMI stressed circuit environments.

Pin Connection



#4: V_{DC} · #3: output
#1: e/d · #2: GND

note: a capacitor of 0.1 µF between V_{DC} and GND is recommended.

Jauch MEMS – Uses SiTime's MEMS First™ technology

Jauch Quartz GmbH • e-mail: info@jauch.de
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Table 4: Max. Rise & Fall Time vs. Load Capacitance

C_L	5 pF	15 pF	30 pF	5 pF	15 pF	30 pF
edge control	at 10% ~ 90% of V_{DC} (ns)			at 20% ~ 80% of V_{DC} (ns)		
0	1.2	2.4	5.2	0.8	1.7	3.4
1	1.4	2.6	5.8	0.9	1.9	3.8
2	1.6	3.0	6.0	1.1	2.1	4.0
D = 3*	1.8	4.0	6.6	1.2	2.6	4.6
4	3.2	6.4	11.0	2.2	4.4	7.8
5	4.4	8.4	14.6	2.9	5.8	10.4
6	6.6	12.4	23.0	4.4	8.6	15.2
7	12.8	25.0	46.0	8.6	16.6	30.0

* default edge control setting "D" at V_{DC} = 2.5 V ~ 3.3 V, please also refer to the supplementary information on our homepage for typical values and more details.

Table 5: Non-Configurable Frequencies

operating temperature option		operating temperature option	
T2 – (-40°C ~ +105°C) T3 – (-40°C ~ +125°C)		T8 – (-55°C ~ +125°C)	
from (MHz)	to (MHz)	from (MHz)	to (MHz)
61.223	61.674	61.223	61.974
69.796	70.485	69.240	70.827
79.063	79.162	78.715	79.561
81.428	82.232	80.160	80.174
91.834	92.155	80.780	82.632
94.249	94.430	91.834	95.474
94.875	94.994	96.192	96.209
97.714	98.679	96.936	99.158
110.0	115.194	110.0	119.342
117.811	118.038	–	–
118.594	118.743	120.239	120.262
122.142	122.705	121.170	121.243
123.022	123.348	121.601	123.948

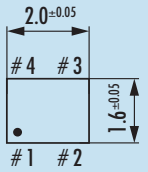
Order Information

Example: O 26.123456 – JSO 75 C1 L C – B – 2V3 – T0 – S – D

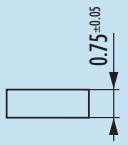
- **O** = Oscillator
- **frequency (8 digits),** see also table 5
  1.0 ~ 110.0 MHz
  115.0 ~ 137.0 MHz
- **JSO** = Jauch Silicon Oscillator
- **package**
  75 = 7050, 53 = 5032, 32 = 3225, 22 = 2520, 21 = 2016
- **frequency range**
  C1 = 1.0 ~ 110.0 MHz
  C2 = 115.0 ~ 137.0 MHz
- **function/feature**
  L = lowpower
- **output I/F**
  C = (H)CMOS
- **edge control**
  D = default
  0 – 7, see table 4
- **standby function options**
  S = Stop
  T = TriState
  N = None
- **temperature range**
  T0 = -20°C ~ +70°C, T1 = -40°C ~ +85°C, T2 = -40°C ~ +105°C, T3 = -40°C ~ +125°C, T8 = -55°C ~ +125°C
- **supply voltage**
  3.3 = 3.3 V, 3.0 = 3.0 V, 2.8 = 2.8 V, 2.5 = 2.5 V, 1.8 = 1.8 V, 2V3 = 2.5 V ~ 3.3 V
- **frequency stability overall**
  B = ± 50 ppm, G = ± 30 ppm, C = ± 25 ppm, D = ± 20 ppm

Dimensions

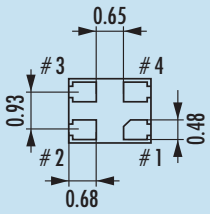
2.0 x 1.6 x 0.75
JSO21



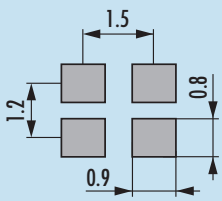
top view



side view

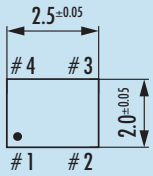


bottom view

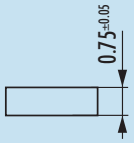


pad layout

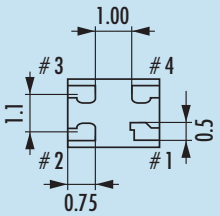
2.5 x 2.0 x 0.75
JSO22



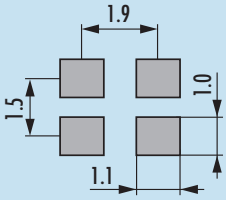
top view



side view

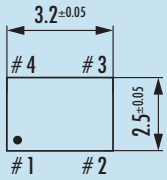


bottom view

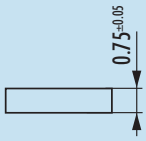


pad layout

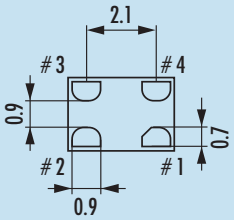
3.2 x 2.5 x 0.75
JSO32



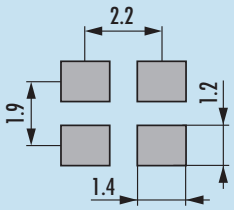
top view



side view

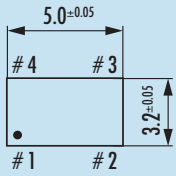


bottom view

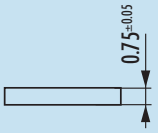


pad layout

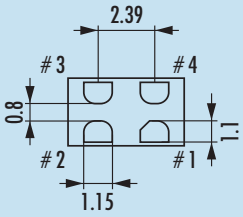
5.0 x 3.2 x 0.75
JSO53



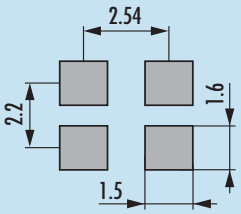
top view



side view

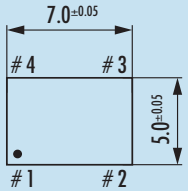


bottom view

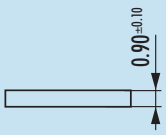


pad layout

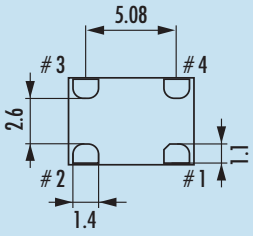
7.0 x 5.0 x 0.90
JSO75



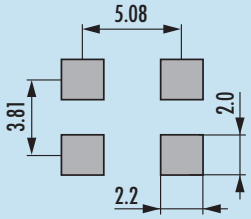
top view



side view



bottom view



pad layout

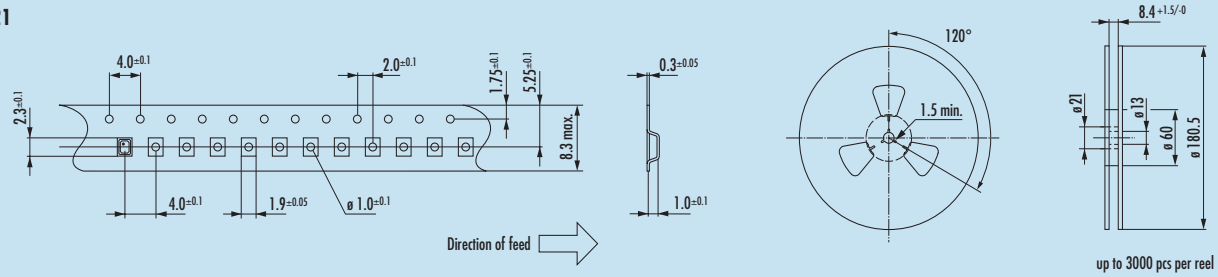
Pin connection # 1: e/d # 2: GND # 3: output # 4: V_{DC} note: a capacitor of 0.1 µF between V_{DC} and GND is recommended

in mm

Jauch Quartz GmbH • e-mail: info@jauch.de
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

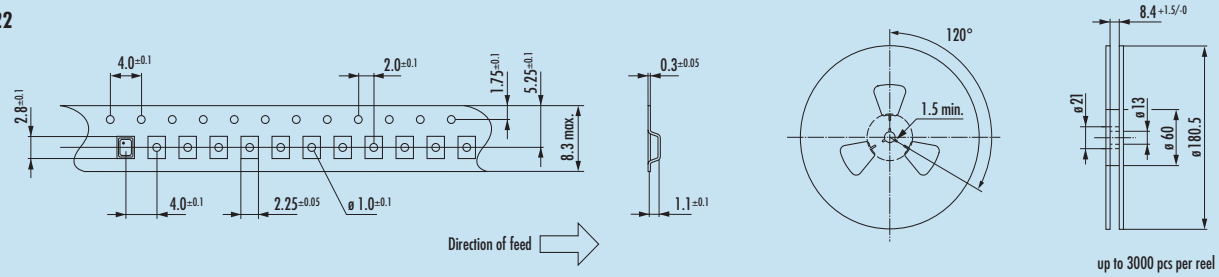
Taping Specification

2.0 x 1.6 x 0.75
JSO21



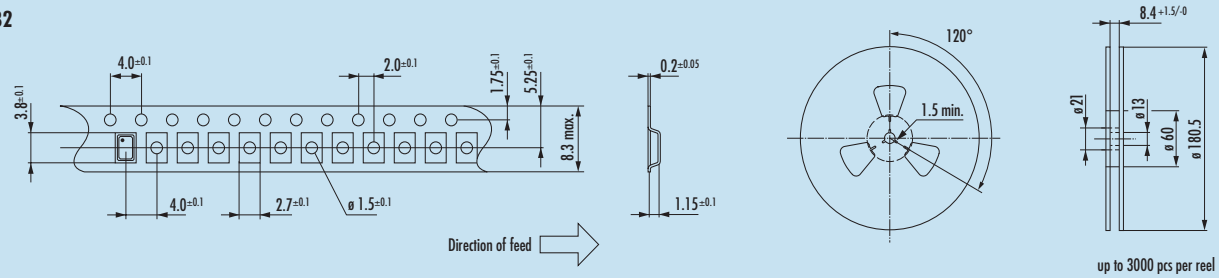
up to 3000 pcs per reel

2.5 x 2.0 x 0.75
JSO22



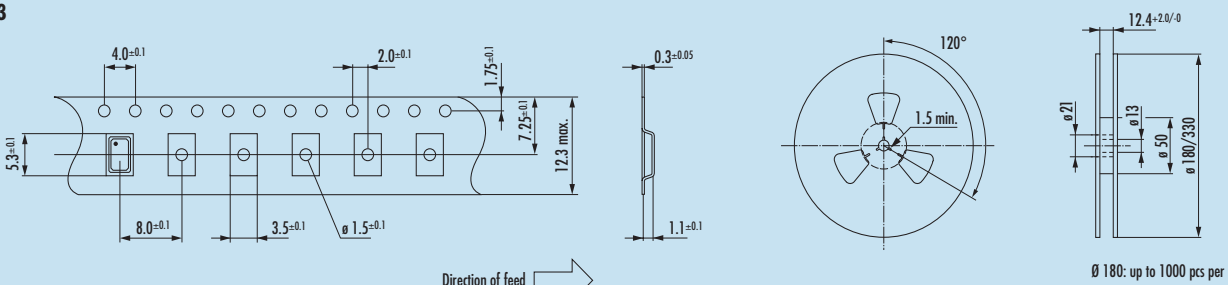
up to 3000 pcs per reel

3.2 x 2.5 x 0.75
JSO32



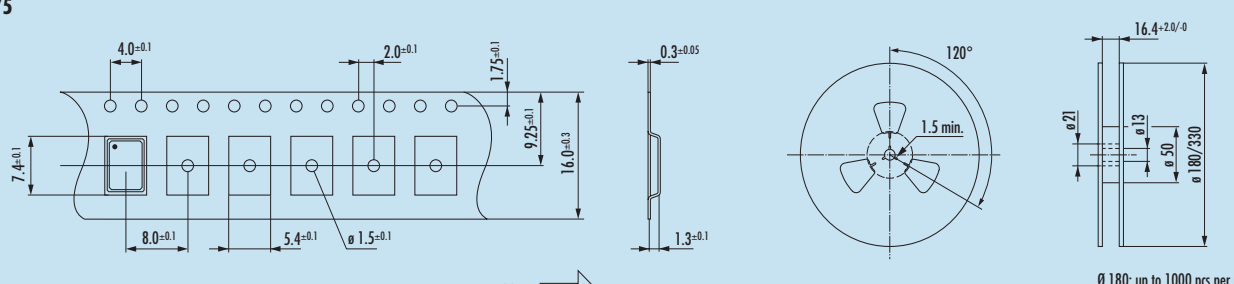
up to 3000 pcs per reel

5.0 x 3.2 x 0.75
JSO53



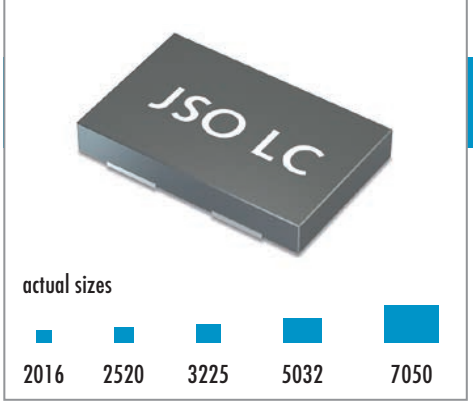
Ø 180: up to 1000 pcs per reel
Ø 330: up to 3000 pcs per reel

7.0 x 5.0 x 0.90
JSO75



Ø 180: up to 1000 pcs per reel
Ø 330: up to 3000 pcs per reel

in mm



MEMS-Oscillator · JSO LC series · 3.3 V

- low power oscillator with HCMOS/LVCMOS output
- compatible to industry standard packages 2016 – 7050
- configured to customer's specification
- extended shock & vibration resistance
- very fast delivery service
- 500 million hours MTBF

General Data

type		JSOxxCxLC 3.3 V
frequency range		1.0 ~ 110.0 MHz (temp. range T0 ~ T8)
		115.0 ~ 137.0 MHz (temp. range T0 ~ T1)
frequency stability over all		±20 ppm ~ ±50 ppm (see table 1)
current consumption		see table 2
supply voltage V_{DC}		3.3 V ± 10%
temperature	operating	T0 = -20°C ~ +70°C
		T1 = -40°C ~ +85°C
		T2 = -40°C ~ +105°C
		T3 = -40°C ~ +125°C
		T8 = -55°C ~ +125°C
	storage	-55°C ~ +150°C
output	logic	HCMOS/LVCMOS
	rise & fall time	3 ns max. at 15 pF / 6 ns max. at 30 pF (see table 4)
	load max.	30 pF max. recommended (≤ 83.0 MHz)
		15 pF max. recommended (> 83.0 MHz)
		other load capacitances possible, see supplementary document
	current max.	4 mA
	low level max.	0.1 x V_{DC}
	high level min.	0.9 x V_{DC}
standby function (e/d)		stop (S), tristate-only (T) or none (N), see table 3
output enable time max.		5 ms (S) / 150 ns (T)
output disable time max.		150 ns
start-up time max.		5 ms
standby current max.		5 µA (for stop (S), see table 3)
phase jitter 12 kHz ~ 20 MHz		< 3.0 ps RMS
symmetry at 0.5 x V_{DC}		45% ~ 55% (standard)

note: some frequencies can't be configured, see table 5.

Packing Note / Marking

QTY < 250 pcs. → cut tape
QTY 250/500/1K/3K pcs. → tape and reel
Marking: lot code only

RoHS compliant | Pb free | REACH compliant | Conflict mineral free

Table 1: Frequency Stability Code

stability code / temp. code*		B ±50 ppm	G ±30 ppm	C ±25 ppm	D ±20 ppm	
-20°C ~ +70°C	T0	○	○	○	○	
-40°C ~ +85°C	T1	○	○	○	○	
-40°C ~ +105°C	T2	○	○	○	○	
-40°C ~ +125°C	T3	○	○	○	○	
-55°C ~ +125°C	T8	○	○	○		
○ available						

* includes stability at 25°C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption typ. (for max. add 30%)

current at load	5 pF	15 pF	30 pF	60 pF	unit
output disabled	4.0	4.0	4.0	4.0	mA
1.0 ~ 19.9 MHz	4.0	4.6	5.6	7.6	mA
20.0 ~ 29.9 MHz	4.6	5.7	7.4	10.9	mA
30.0 ~ 49.9 MHz	5.1	6.7	9.2	14.3	mA
50.0 ~ 79.9 MHz	6.4	9.0	13.2		mA
80.0 ~ 110.0 MHz	7.7	11.2	17.0		mA
115.0 ~ 137.0 MHz	(10.0)	(14.5)			mA

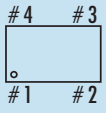
note: current at default edge control setting "D", also refer to table 4.

Table 3: Configurable Standby Function Options (e/d)

pin #1 (e/d control)	option	functionality
low "0" ($V_{IL} \leq 0.2\ V_{DC}$)	S = Stop	output weakly pulled down, oscillator in sleep mode
	T = TriState	output high impedance, oscillator operates
	N = None	oscillator output active
high "1" ($V_{IH} \geq 0.8\ V_{DC}$)	all	oscillator output active
open*	all	oscillator output active

* a pull up resistor is recommended in EMI stressed circuit environments.

Pin Connection



#4: V_{DC} #3: output
#1: e/d #2: GND

note: a capacitor of 0.1 µF between V_{DC} and GND is recommended.

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full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Table 4: Max. Rise & Fall Time vs. Load Capacitance

C_L	5 pF	15 pF	30 pF	5 pF	15 pF	30 pF
edge control	at 10% ~ 90% of V_{DC} (ns)			at 20% ~ 80% of V_{DC} (ns)		
0	1.0	1.7	3.6	0.7	1.2	2.6
1	1.1	1.8	4.4	0.7	1.3	3.0
2	1.2	2.6	5.0	0.8	1.8	3.3
D = 3*	1.3	3.0	6.0	0.9	2.0	3.8
4	2.6	5.4	9.4	1.5	3.8	6.4
5	3.4	6.6	12.0	2.4	5.0	8.6
6	5.2	10.0	17.0	3.6	7.0	12.4
7	10.4	21.0	35.0	7.4	14.0	25.0

* default edge control setting "D" at V_{DC} = 3.3 V, please also refer to the supplementary information on our homepage for typical values and more details.

Table 5: Non-Configurable Frequencies

operating temperature option		operating temperature option	
T2 – (-40°C ~ +105°C) T3 – (-40°C ~ +125°C)		T8 – (-55°C ~ +125°C)	
from (MHz)	to (MHz)	from (MHz)	to (MHz)
61.223	61.674	61.223	61.974
69.796	70.485	69.240	70.827
79.063	79.162	78.715	79.561
81.428	82.232	80.160	80.174
91.834	92.155	80.780	82.632
94.249	94.430	91.834	95.474
94.875	94.994	96.192	96.209
97.714	98.679	96.936	99.158
110.0	115.194	110.0	119.342
117.811	118.038	–	–
118.594	118.743	120.239	120.262
122.142	122.705	121.170	121.243
123.022	123.348	121.601	123.948

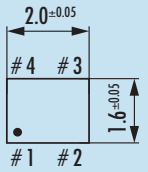
Order Information

Example: O 26.123456 – JSO 75 C1 L C – B – 3.3 – T0 – S – D

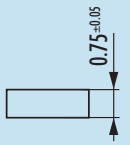
- O = Oscillator
- **frequency (8 digits),** see also table 5
  1.0 ~ 110.0 MHz
  115.0 ~ 137.0 MHz
- JSO = Jauch Silicon Oscillator
- **package**
  75 = 7050
  53 = 5032
  32 = 3225
  22 = 2520
  21 = 2016
- **frequency range**
  C1 = 1.0 ~ 110.0 MHz
  C2 = 115.0 ~ 137.0 MHz
- **function/feature**
  L = lowpower
- **output I/F**
  C = (H)CMOS
- **edge control**
  D = default
  0 – 7, see table 4
- **standby function options**
  S = Stop
  T = TriState
  N = None
- **temperature range**
  T0 = -20°C ~ +70°C
  T1 = -40°C ~ +85°C
  T2 = -40°C ~ +105°C
  T3 = -40°C ~ +125°C
  T8 = -55°C ~ +125°C
- **supply voltage**
  3.3 = 3.3 V
  3.0 = 3.0 V
  2.8 = 2.8 V
  2.5 = 2.5 V
  1.8 = 1.8 V
  2V3 = 2.5 V ~ 3.3 V
- **frequency stability overall**
  B = ± 50 ppm
  G = ± 30 ppm
  C = ± 25 ppm
  D = ± 20 ppm

Dimensions

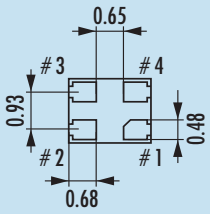
2.0 x 1.6 x 0.75
JSO21



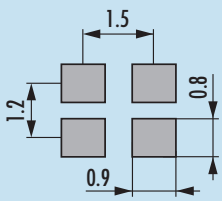
top view



side view

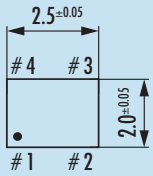


bottom view

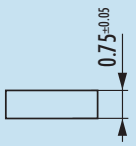


pad layout

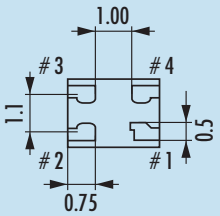
2.5 x 2.0 x 0.75
JSO22



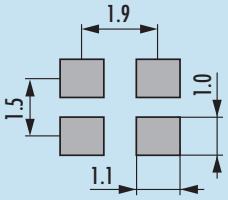
top view



side view

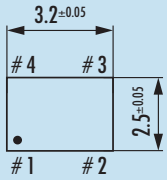


bottom view

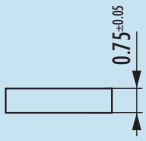


pad layout

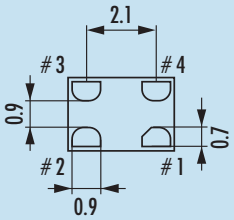
3.2 x 2.5 x 0.75
JSO32



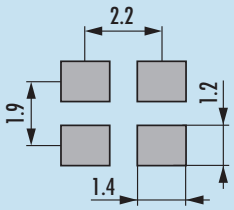
top view



side view

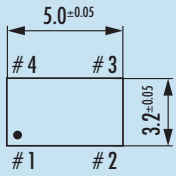


bottom view

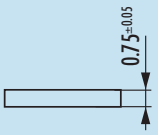


pad layout

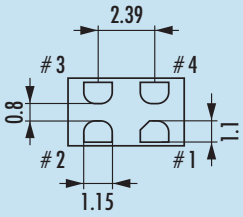
5.0 x 3.2 x 0.75
JSO53



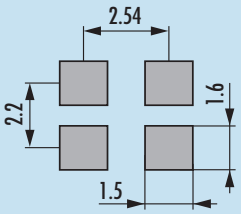
top view



side view

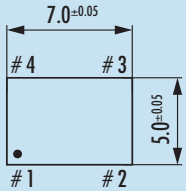


bottom view

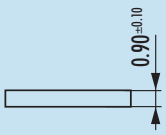


pad layout

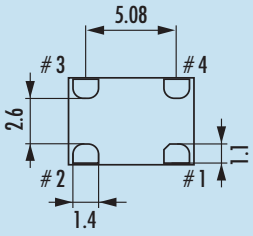
7.0 x 5.0 x 0.90
JSO75



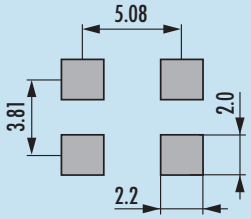
top view



side view



bottom view



pad layout

Pin connection # 1: e/d # 2: GND # 3: output # 4: V_{DC} note: a capacitor of 0.1 µF between V_{DC} and GND is recommended

in mm

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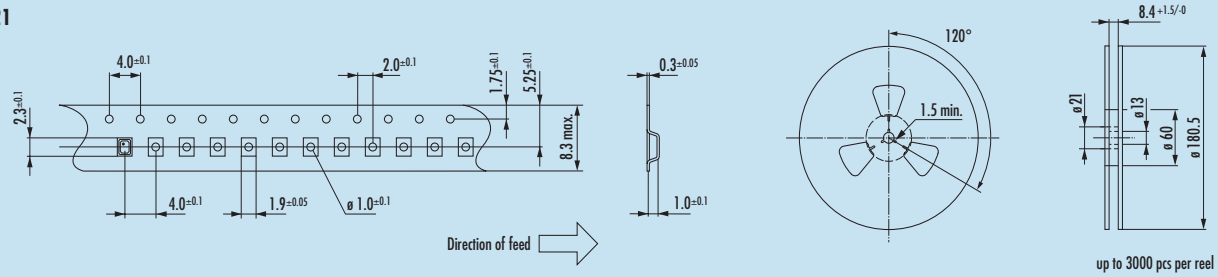
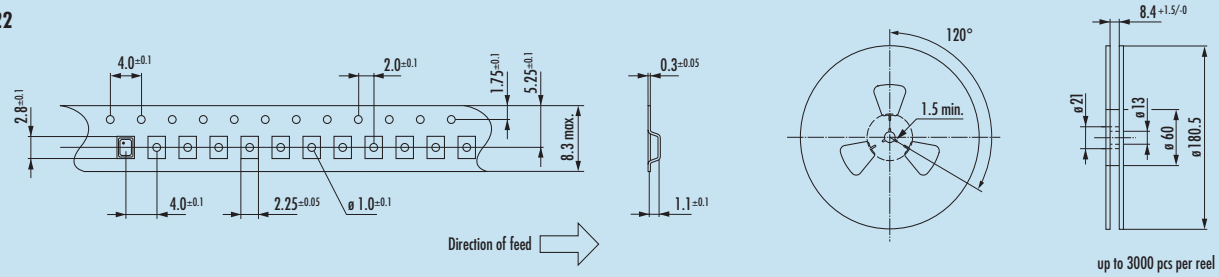
Taping Specification

2.0 x 1.6 x 0.75
JSO21



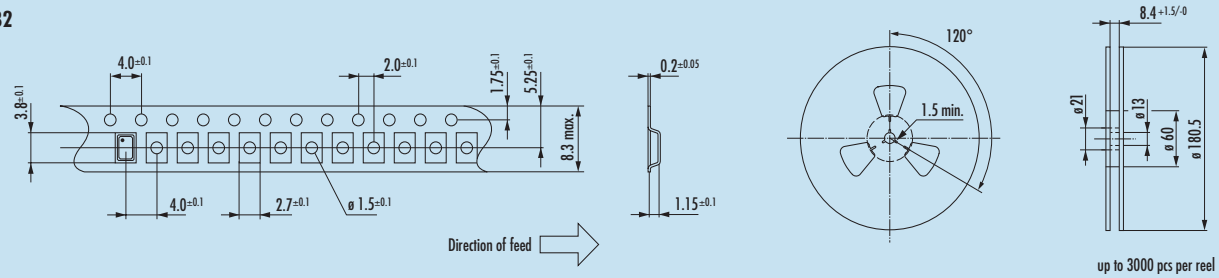
up to 3000 pcs per reel

2.5 x 2.0 x 0.75
JSO22



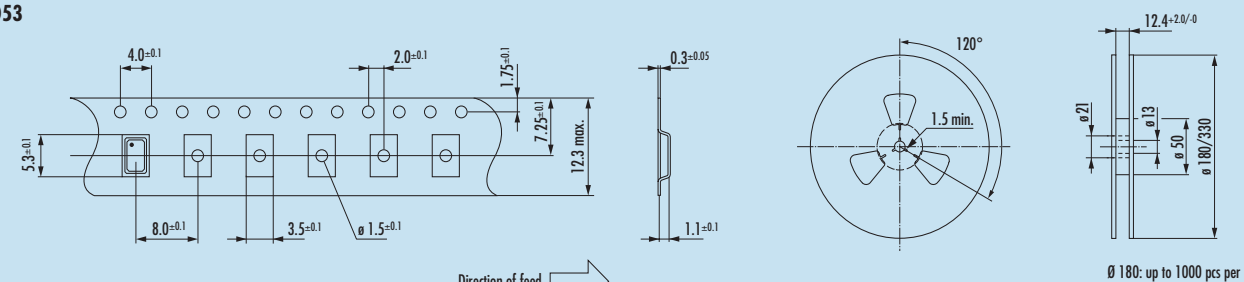
up to 3000 pcs per reel

3.2 x 2.5 x 0.75
JSO32



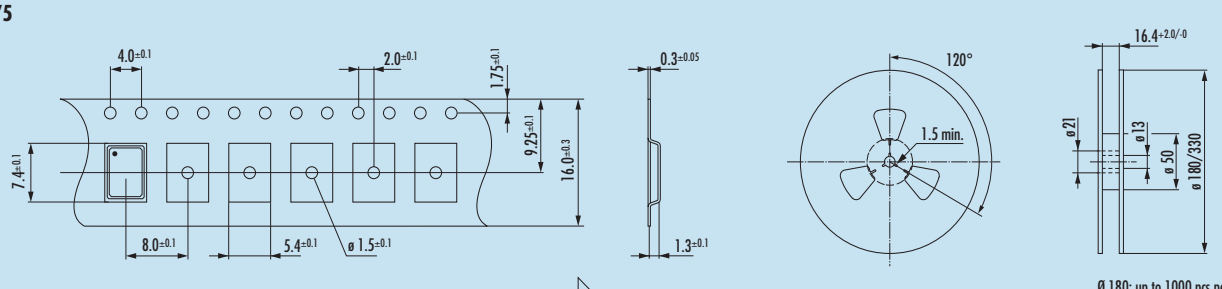
up to 3000 pcs per reel

5.0 x 3.2 x 0.75
JSO53



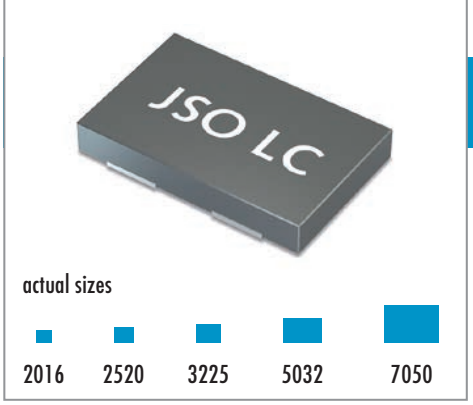
Ø 180: up to 1000 pcs per reel
Ø 330: up to 3000 pcs per reel

7.0 x 5.0 x 0.90
JSO75



Ø 180: up to 1000 pcs per reel
Ø 330: up to 3000 pcs per reel

in mm



MEMS-Oscillator · JSO LC series · 3.0 V

- low power oscillator with HCMOS/LVCMOS output
- compatible to industry standard packages 2016 – 7050
- configured to customer's specification
- extended shock & vibration resistance
- very fast delivery service
- 500 million hours MTBF

General Data

type		JSOxxCxLC 3.0 V
frequency range		1.0 ~ 110.0 MHz (temp. range T0 ~ T8)
		115.0 ~ 137.0 MHz (temp. range T0 ~ T1)
frequency stability over all		±20 ppm ~ ±50 ppm (see table 1)
current consumption		see table 2
supply voltage V_{DC}		3.0 V ± 10%
temperature	operating	T0 = -20°C ~ +70°C
		T1 = -40°C ~ +85°C
		T2 = -40°C ~ +105°C
		T3 = -40°C ~ +125°C
		T8 = -55°C ~ +125°C
	storage	-55°C ~ +150°C
output	logic	HCMOS/LVCMOS
	rise & fall time	3.3 ns max. at 15 pF / 6.2 ns max. at 30 pF (see table 4)
	load max.	30 pF max. recommended (≤ 81.0 MHz)
		15 pF max. recommended (> 81.0 MHz)
		other load capacitances possible, see supplementary document
	current max.	4 mA
	low level max.	0.1 x V_{DC}
	high level min.	0.9 x V_{DC}
standby function (e/d)		stop (S), tristate-only (T) or none (N), see table 3
output enable time max.		5 ms (S) / 150 ns (T)
output disable time max.		150 ns
start-up time max.		5 ms
standby current max.		5 µA (for stop (S), see table 3)
phase jitter 12 kHz ~ 20 MHz		< 3.0 ps RMS
symmetry at 0.5 x V_{DC}		45% ~ 55% (standard)

note: some frequencies can't be configured, see table 5.

Packing Note / Marking

QTY < 250 pcs. → cut tape
QTY 250/500/1K/3K pcs. → tape and reel
Marking: lot code only

RoHS compliant · Pb free · REACH compliant · Conflict mineral free

Table 1: Frequency Stability Code

stability code / temp. code*		B ±50 ppm	G ±30 ppm	C ±25 ppm	D ±20 ppm	
-20°C ~ +70°C	T0	○	○	○	○	
-40°C ~ +85°C	T1	○	○	○	○	
-40°C ~ +105°C	T2	○	○	○	○	
-40°C ~ +125°C	T3	○	○	○	○	
-55°C ~ +125°C	T8	○	○	○		
○ available						

* includes stability at 25°C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption typ. (for max. add 30%)

current at load	5 pF	15 pF	30 pF	60 pF	unit
output disabled	3.9	3.9	3.9	3.9	mA
1.0 ~ 19.9 MHz	4.1	4.5	5.4	7.2	mA
20.0 ~ 29.9 MHz	4.5	5.4	6.9	10.1	mA
30.0 ~ 49.9 MHz	4.9	6.3	8.6	13.2	mA
50.0 ~ 79.9 MHz	6.1	8.4	12.2		mA
80.0 ~ 110.0 MHz	7.3	10.5	15.5		mA
115.0 ~ 137.0 MHz	(9.5)	(14.0)			mA

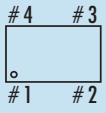
note: current at default edge control setting "D", also refer to table 4.

Table 3: Configurable Standby Function Options (e/d)

pin #1 (e/d control)	option	functionality
low "0" (V_{IL} ≤ 0.2 V_{DC})	S = Stop	output weakly pulled down, oscillator in sleep mode
	T = TriState	output high impedance, oscillator operates
	N = None	oscillator output active
high "1" (V_{IH} ≥ 0.8 V_{DC})	all	oscillator output active
open*	all	oscillator output active

* a pull up resistor is recommended in EMI stressed circuit environments.

Pin Connection



#4: V_{DC} · #3: output
#1: e/d · #2: GND

note: a capacitor of 0.1 µF between V_{DC} and GND is recommended.

Jauch MEMS – Uses SiTime's MEMS First™ technology

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full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Table 4: Max. Rise & Fall Time vs. Load Capacitance

C_L	5 pF	15 pF	30 pF	5 pF	15 pF	30 pF
edge control	at 10% ~ 90% of V_{DC} (ns)			at 20% ~ 80% of V_{DC} (ns)		
0	1.1	2.0	4.2	0.7	1.4	2.8
1	1.2	2.2	4.8	0.8	1.6	3.3
2	1.3	2.8	5.4	0.9	1.9	3.6
D = 3*	1.5	3.3	6.2	1.0	2.2	4.0
4	2.8	5.8	10.0	1.8	4.0	6.8
5	3.8	7.4	13.0	2.6	5.2	9.0
6	5.5	11.0	19.0	3.8	7.6	13.4
7	11.4	22.0	40.0	7.8	14.6	27.0

* default edge control setting "D" at V_{DC} = 3.0 V, please also refer to the supplementary information on our homepage for typical values and more details.

Table 5: Non-Configurable Frequencies

operating temperature option		operating temperature option	
T2 – (-40°C ~ +105°C) T3 – (-40°C ~ +125°C)		T8 – (-55°C ~ +125°C)	
from (MHz)	to (MHz)	from (MHz)	to (MHz)
61.223	61.674	61.223	61.974
69.796	70.485	69.240	70.827
79.063	79.162	78.715	79.561
81.428	82.232	80.160	80.174
91.834	92.155	80.780	82.632
94.249	94.430	91.834	95.474
94.875	94.994	96.192	96.209
97.714	98.679	96.936	99.158
110.0	115.194	110.0	119.342
117.811	118.038	–	–
118.594	118.743	120.239	120.262
122.142	122.705	121.170	121.243
123.022	123.348	121.601	123.948

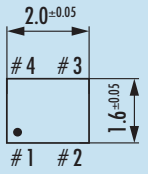
Order Information

Example: O 26.123456 – JSO 75 C1 L C – B – 3.0 – T0 – S – D

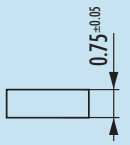
- **O** = Oscillator
- **frequency (8 digits),** see also table 5
  1.0 ~ 110.0 MHz
  115.0 ~ 137.0 MHz
- **JSO** = Jauch Silicon Oscillator
- **package**
  75 = 7050
  53 = 5032
  32 = 3225
  22 = 2520
  21 = 2016
- **frequency range**
  C1 = 1.0 ~ 110.0 MHz
  C2 = 115.0 ~ 137.0 MHz
- **function/feature**
  L = lowpower
- **output I/F**
  C = (H)CMOS
- **edge control**
  D = default
  0 – 7, see table 4
- **standby function options**
  S = Stop
  T = TriState
  N = None
- **temperature range**
  T0 = -20°C ~ +70°C
  T1 = -40°C ~ +85°C
  T2 = -40°C ~ +105°C
  T3 = -40°C ~ +125°C
  T8 = -55°C ~ +125°C
- **supply voltage**
  3.3 = 3.3 V
  3.0 = 3.0 V
  2.8 = 2.8 V
  2.5 = 2.5 V
  1.8 = 1.8 V
  2V3 = 2.5 V ~ 3.3 V
- **frequency stability overall**
  B = ± 50 ppm
  G = ± 30 ppm
  C = ± 25 ppm
  D = ± 20 ppm

Dimensions

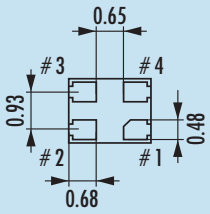
2.0 x 1.6 x 0.75
JSO21



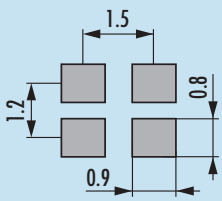
top view



side view

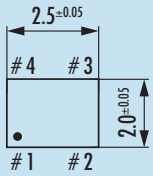


bottom view

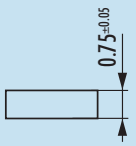


pad layout

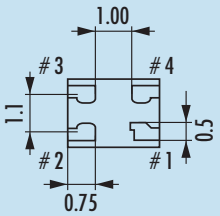
2.5 x 2.0 x 0.75
JSO22



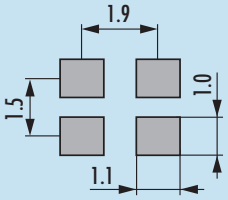
top view



side view

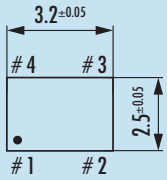


bottom view

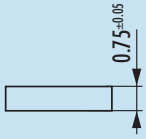


pad layout

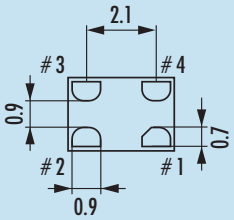
3.2 x 2.5 x 0.75
JSO32



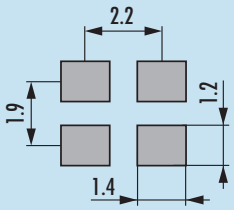
top view



side view

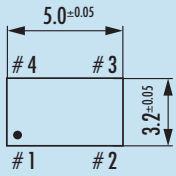


bottom view

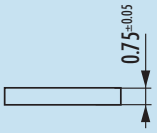


pad layout

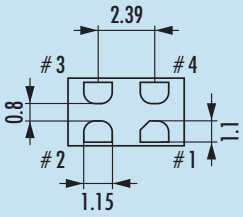
5.0 x 3.2 x 0.75
JSO53



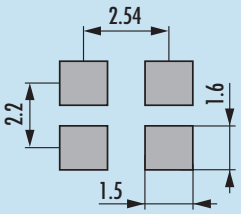
top view



side view

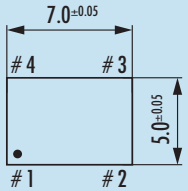


bottom view

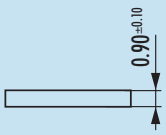


pad layout

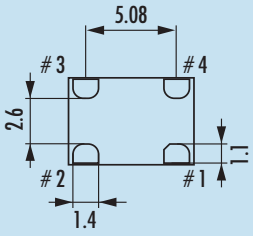
7.0 x 5.0 x 0.90
JSO75



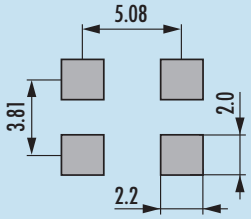
top view



side view



bottom view



pad layout

Pin connection	# 1: e/d	# 2: GND	# 3: output	# 4: V_{DC}	note: a capacitor of 0.1 µF between V_{DC} and GND is recommended

in mm

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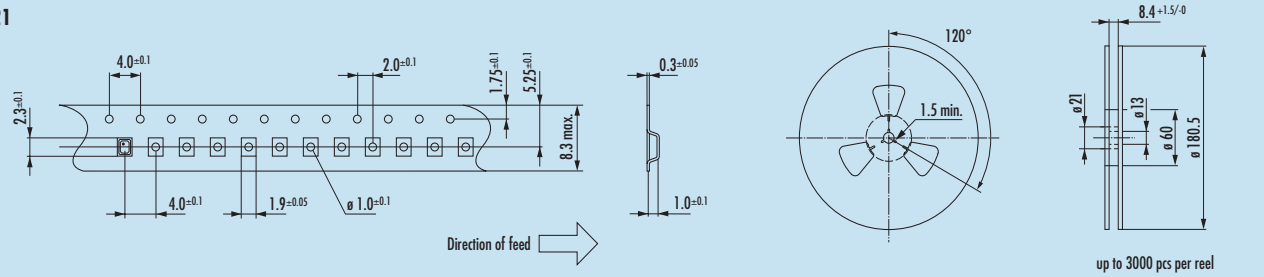
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

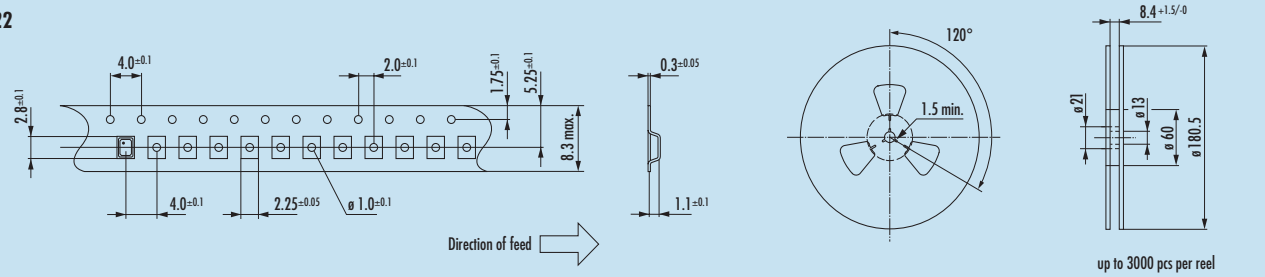
Taping Specification

2.0 x 1.6 x 0.75
JSO21



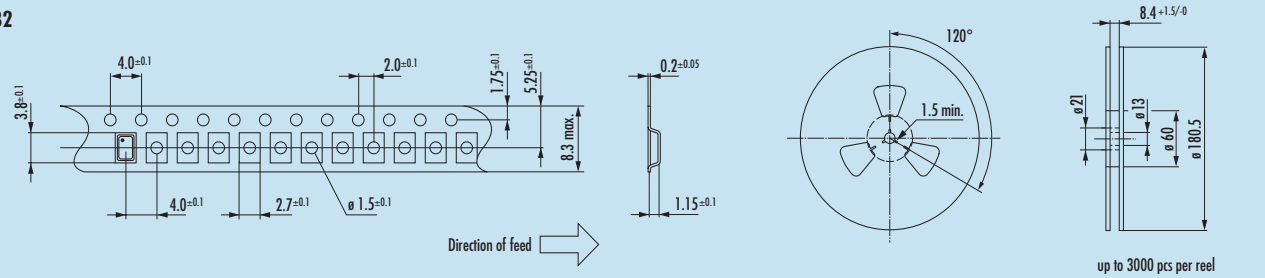
up to 3000 pcs per reel

2.5 x 2.0 x 0.75
JSO22



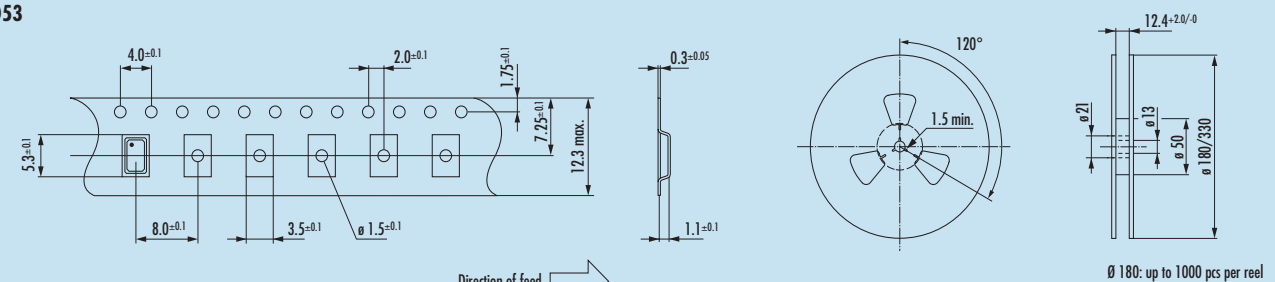
up to 3000 pcs per reel

3.2 x 2.5 x 0.75
JSO32



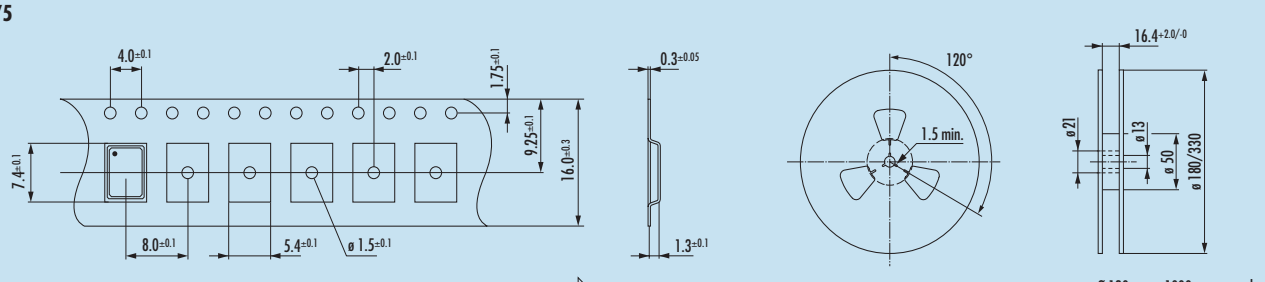
up to 3000 pcs per reel

5.0 x 3.2 x 0.75
JSO53



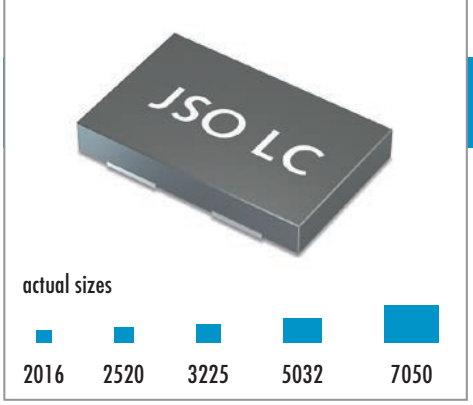
Ø 180: up to 1000 pcs per reel
Ø 330: up to 3000 pcs per reel

7.0 x 5.0 x 0.90
JSO75



Ø 180: up to 1000 pcs per reel
Ø 330: up to 3000 pcs per reel

in mm



MEMS-Oscillator · JSO LC series · 2.8 V

- low power oscillator with HCMOS/LVCMOS output
- compatible to industry standard packages 2016 – 7050
- configured to customer's specification
- extended shock & vibration resistance
- very fast delivery service
- 500 million hours MTBF

General Data

type		JSOxxCxLC 2.8 V
frequency range		1.0 ~ 110.0 MHz (temp. range T0 ~ T8)
		115.0 ~ 137.0 MHz (temp. range T0 ~ T1)
frequency stability over all		±20 ppm ~ ±50 ppm (see table 1)
current consumption		see table 2
supply voltage V_{DC}		2.8 V ± 10%
temperature	operating	T0 = -20°C ~ +70°C
		T1 = -40°C ~ +85°C
		T2 = -40°C ~ +105°C
		T3 = -40°C ~ +125°C
		T8 = -55°C ~ +125°C
	storage	-55°C ~ +150°C
output	logic	HCMOS/LVCMOS
	rise & fall time	2.9 ns max. at 15 pF / 5.7 ns max. at 30 pF (see table 4)
	load max.	30 pF max. recommended (≤ 88.0 MHz)
		15 pF max. recommended (> 88.0 MHz)
		other load capacitances possible, see supplementary document
	current max.	3 mA
	low level max.	0.1 x V_{DC}
	high level min.	0.9 x V_{DC}
standby function (e/d)		stop (S), tristate-only (T) or none (N), see table 3
output enable time max.		5 ms (S) / 150 ns (T)
output disable time max.		150 ns
start-up time max.		5 ms
standby current max.		4 µA (for stop (S), see table 3)
phase jitter 12 kHz ~ 20 MHz		< 3.0 ps RMS
symmetry at 0.5 x V_{DC}		45% ~ 55% (standard)

note: some frequencies can't be configured, see table 5.

Packing Note / Marking

QTY < 250 pcs. → cut tape
QTY 250/500/1K/3K pcs. → tape and reel
Marking: lot code only

RoHS compliant · Pb free · REACH compliant · Conflict mineral free

Table 1: Frequency Stability Code

stability code / temp. code*		B ±50 ppm	G ±30 ppm	C ±25 ppm	D ±20 ppm	
-20°C ~ +70°C	T0	○	○	○	○	
-40°C ~ +85°C	T1	○	○	○	○	
-40°C ~ +105°C	T2	○	○	○	○	
-40°C ~ +125°C	T3	○	○	○	○	
-55°C ~ +125°C	T8	○	○	○		
○ available						

* includes stability at 25°C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption typ. (for max. add 30%)

current at load	5 pF	15 pF	30 pF	60 pF	unit
output disabled	3.8	3.8	3.8	3.8	mA
1.0 ~ 19.9 MHz	4.1	4.3	5.2	6.9	mA
20.0 ~ 29.9 MHz	4.4	5.2	6.7	9.8	mA
30.0 ~ 49.9 MHz	4.8	6.2	8.3	12.7	mA
50.0 ~ 79.9 MHz	6.1	8.1	11.7		mA
80.0 ~ 110.0 MHz	7.0	10.0			mA
115.0 ~ 137.0 MHz	(9.0)	(14.0)			mA

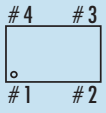
note: current at default edge control setting "D", also refer to table 4.

Table 3: Configurable Standby Function Options (e/d)

pin #1 (e/d control)	option	functionality
low "0" ($V_{IL} \leq 0.2\ V_{DC}$)	S = Stop	output weakly pulled down, oscillator in sleep mode
	T = TriState	output high impedance, oscillator operates
	N = None	oscillator output active
high "1" ($V_{IH} \geq 0.8\ V_{DC}$)	all	oscillator output active
open*	all	oscillator output active

* a pull up resistor is recommended in EMI stressed circuit environments.

Pin Connection



#4: V_{DC} · #3: output
#1: e/d · #2: GND

note: a capacitor of 0.1 µF between V_{DC} and GND is recommended.

Jauch MEMS – Uses SiTime's MEMS First™ technology

Jauch Quartz GmbH • e-mail: info@jauch.de
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Table 4: Max. Rise & Fall Time vs. Load Capacitance

C_L	5 pF	15 pF	30 pF	5 pF	15 pF	30 pF
edge control	at 10% ~ 90% of V_{DC} (ns)			at 20% ~ 80% of V_{DC} (ns)		
0	1.2	2.2	4.6	0.8	1.6	3.0
1	1.3	2.4	5.2	0.9	1.8	3.5
D = 2*	1.5	2.9	5.7	1.0	2.0	3.8
3	1.6	3.6	6.4	1.1	2.4	4.4
4	3.0	6.2	10.4	2.0	4.2	7.4
5	4.0	7.6	13.6	2.8	5.4	9.4
6	5.8	11.6	21.0	4.0	8.0	14.2
7	12.0	23.0	42.0	8.2	15.2	28.0

* default edge control setting "D" at V_{DC} = 2.8 V, please also refer to the supplementary information on our homepage for typical values and more details.

Table 5: Non-Configurable Frequencies

operating temperature option		operating temperature option	
T2 – (-40°C ~ +105°C) T3 – (-40°C ~ +125°C)		T8 – (-55°C ~ +125°C)	
from (MHz)	to (MHz)	from (MHz)	to (MHz)
61.223	61.674	61.223	61.974
69.796	70.485	69.240	70.827
79.063	79.162	78.715	79.561
81.428	82.232	80.160	80.174
91.834	92.155	80.780	82.632
94.249	94.430	91.834	95.474
94.875	94.994	96.192	96.209
97.714	98.679	96.936	99.158
110.0	115.194	110.0	119.342
117.811	118.038	–	–
118.594	118.743	120.239	120.262
122.142	122.705	121.170	121.243
123.022	123.348	121.601	123.948

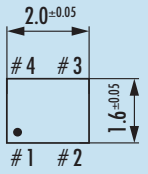
Order Information

Example: O 26.123456 – JSO 75 C1 L C – B – 2.8 – T0 – S – D

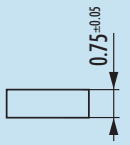
- **O** = Oscillator
- **frequency (8 digits),** see also table 5
  1.0 ~ 110.0 MHz
  115.0 ~ 137.0 MHz
- **JSO** = Jauch Silicon Oscillator
- **package**
  75 = 7050
  53 = 5032
  32 = 3225
  22 = 2520
  21 = 2016
- **frequency range**
  C1 = 1.0 ~ 110.0 MHz
  C2 = 115.0 ~ 137.0 MHz
- **function/feature**
  L = lowpower
- **output I/F**
  C = (H)CMOS
- **edge control**
  D = default
  0 – 7, see table 4
- **standby function options**
  S = Stop
  T = TriState
  N = None
- **temperature range**
  T0 = -20°C ~ +70°C
  T1 = -40°C ~ +85°C
  T2 = -40°C ~ +105°C
  T3 = -40°C ~ +125°C
  T8 = -55°C ~ +125°C
- **supply voltage**
  3.3 = 3.3 V
  3.0 = 3.0 V
  2.8 = 2.8 V
  2.5 = 2.5 V
  1.8 = 1.8 V
  2V3 = 2.5 V ~ 3.3 V
- **frequency stability overall**
  B = ± 50 ppm
  G = ± 30 ppm
  C = ± 25 ppm
  D = ± 20 ppm

Dimensions

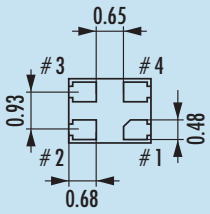
2.0 x 1.6 x 0.75
JSO21



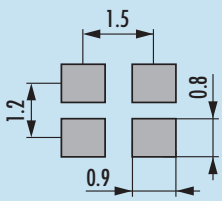
top view



side view

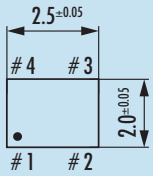


bottom view

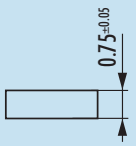


pad layout

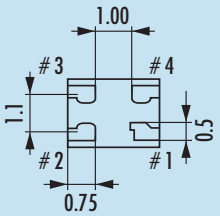
2.5 x 2.0 x 0.75
JSO22



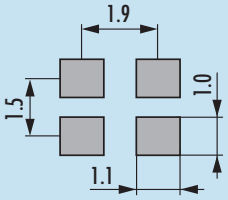
top view



side view

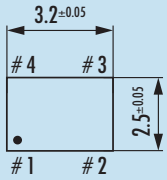


bottom view

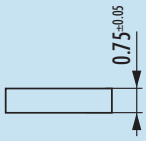


pad layout

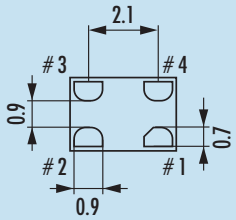
3.2 x 2.5 x 0.75
JSO32



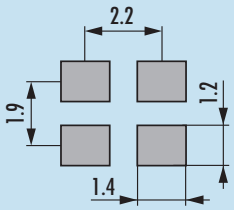
top view



side view

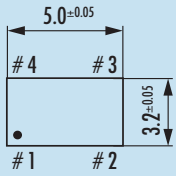


bottom view

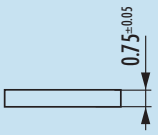


pad layout

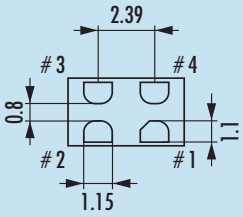
5.0 x 3.2 x 0.75
JSO53



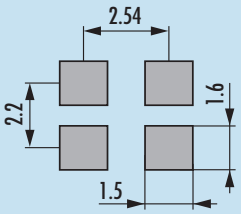
top view



side view

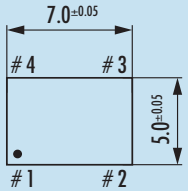


bottom view

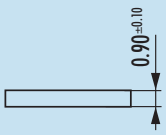


pad layout

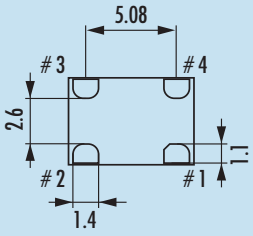
7.0 x 5.0 x 0.90
JSO75



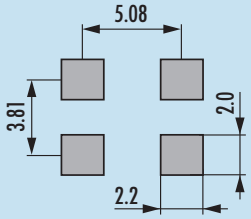
top view



side view



bottom view



pad layout

Pin connection # 1: e/d # 2: GND # 3: output # 4: V_{DC} note: a capacitor of 0.1 µF between V_{DC} and GND is recommended

in mm

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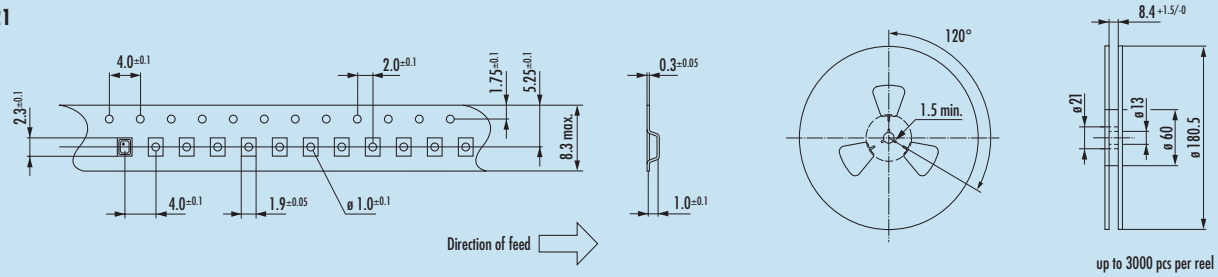
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

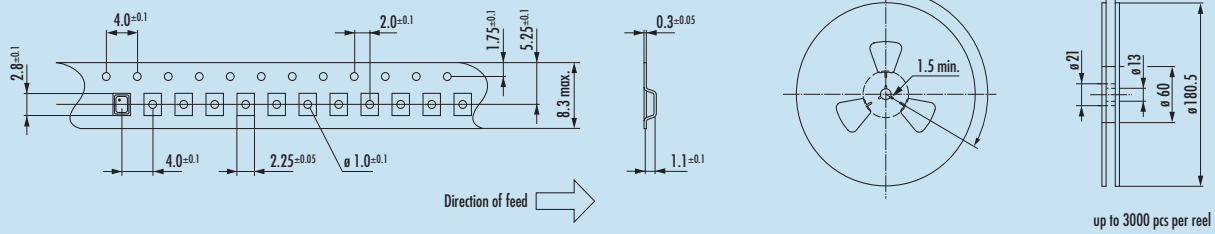
Taping Specification

2.0 x 1.6 x 0.75
JSO21



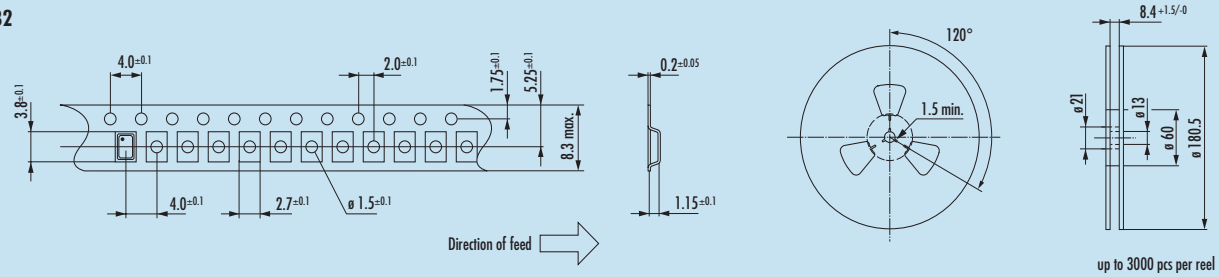
up to 3000 pcs per reel

2.5 x 2.0 x 0.75
JSO22



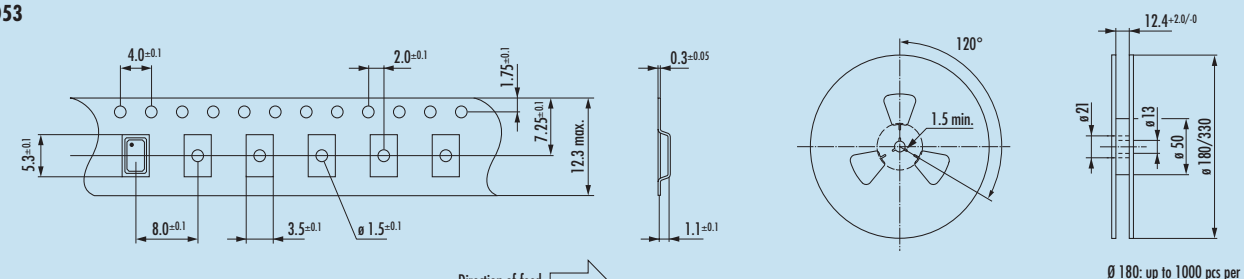
up to 3000 pcs per reel

3.2 x 2.5 x 0.75
JSO32



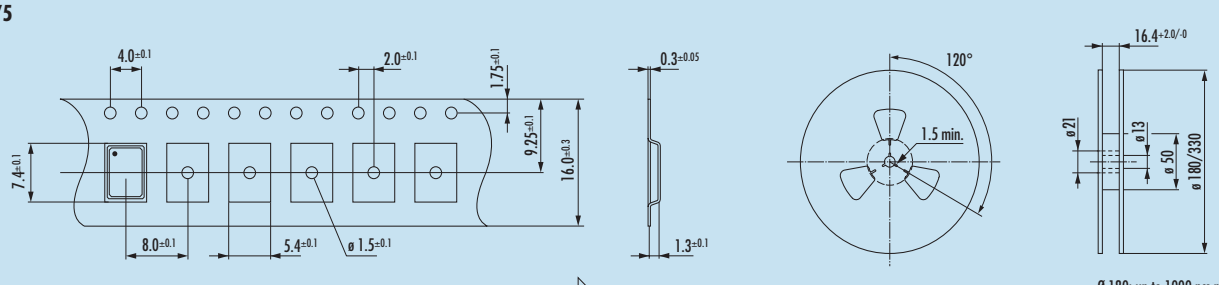
up to 3000 pcs per reel

5.0 x 3.2 x 0.75
JSO53



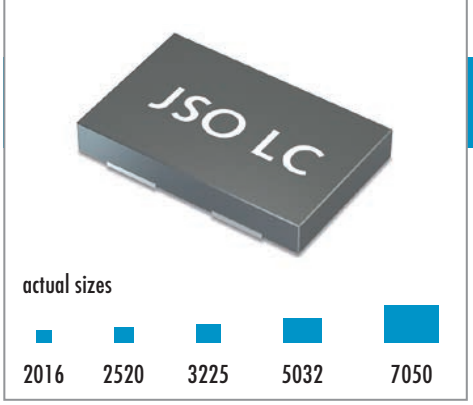
Ø 180: up to 1000 pcs per reel
Ø 330: up to 3000 pcs per reel

7.0 x 5.0 x 0.90
JSO75



Ø 180: up to 1000 pcs per reel
Ø 330: up to 3000 pcs per reel

in mm



MEMS-Oscillator · JSO LC series · 2.5 V

- low power oscillator with HCMOS/LVCMOS output
- compatible to industry standard packages 2016 – 7050
- configured to customer's specification
- extended shock & vibration resistance
- very fast delivery service
- 500 million hours MTBF

General Data

type		JSOxxCxLC 2.5 V
frequency range		1.0 ~ 110.0 MHz (temp. range T0 ~ T8)
		115.0 ~ 137.0 MHz (temp. range T0 ~ T1)
frequency stability over all		±20 ppm ~ ±50 ppm (see table 1)
current consumption		see table 2
supply voltage V_{DC}		2.5 V ± 10%
temperature	operating	T0 = -20°C ~ +70°C
		T1 = -40°C ~ +85°C
		T2 = -40°C ~ +105°C
		T3 = -40°C ~ +125°C
		T8 = -55°C ~ +125°C
	storage	-55°C ~ +150°C
output	logic	HCMOS/LVCMOS
	rise & fall time	3.0 ns max. at 15 pF / 6.0 ns max. at 30 pF (see table 4)
	load max.	30 pF max. recommended (≤ 83.0 MHz)
		15 pF max. recommended (> 83.0 MHz)
		other load capacitances possible, see supplementary document
	current max.	3 mA
	low level max.	0.1 x V_{DC}
	high level min.	0.9 x V_{DC}
standby function (e/d)		stop (S), tristate-only (T) or none (N), see table 3
output enable time max.		5 ms (S) / 150 ns (T)
output disable time max.		150 ns
start-up time max.		5 ms
standby current max.		3 µA (for stop (S), see table 3)
phase jitter 12 kHz ~ 20 MHz		< 3.0 ps RMS
symmetry at 0.5 x V_{DC}		45% ~ 55% (standard)

note: some frequencies can't be configured, see table 5.

Packing Note / Marking

QTY < 250 pcs. → cut tape
QTY 250/500/1K/3K pcs. → tape and reel
Marking: lot code only

RoHS compliant · Pb free · REACH compliant · Conflict mineral free

Table 1: Frequency Stability Code

stability code / temp. code*		B ±50 ppm	G ±30 ppm	C ±25 ppm	D ±20 ppm	
-20°C ~ +70°C	T0	○	○	○	○	
-40°C ~ +85°C	T1	○	○	○	○	
-40°C ~ +105°C	T2	○	○	○	○	
-40°C ~ +125°C	T3	○	○	○	○	
-55°C ~ +125°C	T8	○	○	○		
○ available						

* includes stability at 25°C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption typ. (for max. add 30%)

current at load	5 pF	15 pF	30 pF	60 pF	unit
output disabled	3.7	3.7	3.7	3.7	mA
1.0 ~ 19.9 MHz	3.8	4.2	5.0	6.4	mA
20.0 ~ 29.9 MHz	4.3	5.0	6.4	9.0	mA
30.0 ~ 49.9 MHz	4.7	5.8	7.8	11.6	mA
50.0 ~ 79.9 MHz	5.6	7.6	10.7		mA
80.0 ~ 110.0 MHz	6.6	9.2			mA
115.0 ~ 137.0 MHz	(8.5)	(13.0)			mA

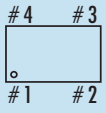
note: current at default edge control setting "D", also refer to table 4.

Table 3: Configurable Standby Function Options (e/d)

pin #1 (e/d control)	option	functionality
low "0" (V_{IL} ≤ 0.2 V_{DC})	S = Stop	output weakly pulled down, oscillator in sleep mode
	T = TriState	output high impedance, oscillator operates
	N = None	oscillator output active
high "1" (V_{IH} ≥ 0.8 V_{DC})	all	oscillator output active
open*	all	oscillator output active

* a pull up resistor is recommended in EMI stressed circuit environments.

Pin Connection



#4: V_{DC} · #3: output
#1: e/d · #2: GND

note: a capacitor of 0.1 µF between V_{DC} and GND is recommended.

Jauch MEMS – Uses SiTime's MEMS First™ technology

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Table 4: Max. Rise & Fall Time vs. Load Capacitance

C_L	5 pF	15 pF	30 pF	5 pF	15 pF	30 pF
edge control	at 10% ~ 90% of V_{DC} (ns)			at 20% ~ 80% of V_{DC} (ns)		
0	1.2	2.4	5.2	0.8	1.7	3.4
1	1.4	2.6	5.8	0.9	1.9	3.8
D = 2*	1.6	3.0	6.0	1.1	2.1	4.0
3	1.8	4.0	6.6	1.2	2.6	4.6
4	3.2	6.4	11.0	2.2	4.4	7.8
5	4.4	8.4	14.6	2.9	5.8	10.4
6	6.6	12.4	23.0	4.4	8.6	15.2
7	12.8	25.0	46.0	8.6	16.6	30.0

* default edge control setting "D" at V_{DC} = 2.5 V, please also refer to the supplementary information on our homepage for typical values and more details.

Table 5: Non-Configurable Frequencies

operating temperature option		operating temperature option	
T2 – (-40°C ~ +105°C) T3 – (-40°C ~ +125°C)		T8 – (-55°C ~ +125°C)	
from (MHz)	to (MHz)	from (MHz)	to (MHz)
61.223	61.674	61.223	61.974
69.796	70.485	69.240	70.827
79.063	79.162	78.715	79.561
81.428	82.232	80.160	80.174
91.834	92.155	80.780	82.632
94.249	94.430	91.834	95.474
94.875	94.994	96.192	96.209
97.714	98.679	96.936	99.158
110.0	115.194	110.0	119.342
117.811	118.038	–	–
118.594	118.743	120.239	120.262
122.142	122.705	121.170	121.243
123.022	123.348	121.601	123.948

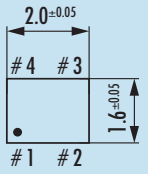
Order Information

Example: O 26.123456 – JSO 75 C1 L C – B – 2.5 – T0 – S – D

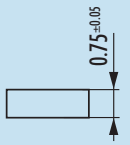
- **O** = Oscillator
- **frequency (8 digits),** see also table 5
  1.0 ~ 110.0 MHz
  115.0 ~ 137.0 MHz
- **JSO** = Jauch Silicon Oscillator
- **package**
  75 = 7050
  53 = 5032
  32 = 3225
  22 = 2520
  21 = 2016
- **frequency range**
  C1 = 1.0 ~ 110.0 MHz
  C2 = 115.0 ~ 137.0 MHz
- **function/feature**
  L = lowpower
- **output I/F**
  C = (H)CMOS
- **edge control**
  D = default
  0 – 7, see table 4
- **standby function options**
  S = Stop
  T = TriState
  N = None
- **temperature range**
  T0 = -20°C ~ +70°C
  T1 = -40°C ~ +85°C
  T2 = -40°C ~ +105°C
  T3 = -40°C ~ +125°C
  T8 = -55°C ~ +125°C
- **supply voltage**
  3.3 = 3.3 V
  3.0 = 3.0 V
  2.8 = 2.8 V
  2.5 = 2.5 V
  1.8 = 1.8 V
  2V3 = 2.5 V ~ 3.3 V
- **frequency stability overall**
  B = ± 50 ppm
  G = ± 30 ppm
  C = ± 25 ppm
  D = ± 20 ppm

Dimensions

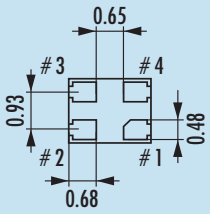
2.0 x 1.6 x 0.75
JSO21



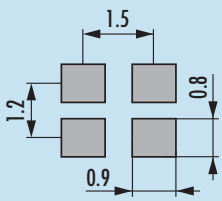
top view



side view

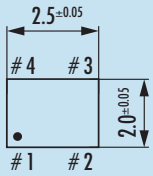


bottom view

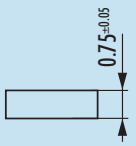


pad layout

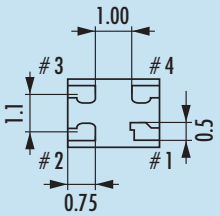
2.5 x 2.0 x 0.75
JSO22



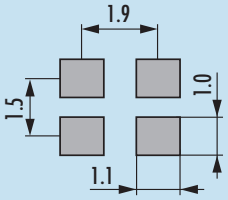
top view



side view

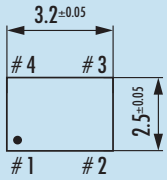


bottom view

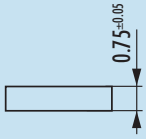


pad layout

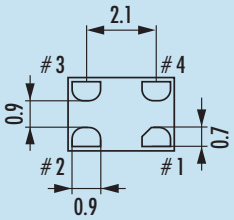
3.2 x 2.5 x 0.75
JSO32



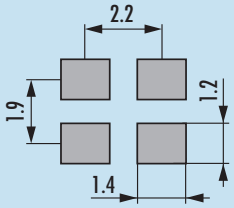
top view



side view

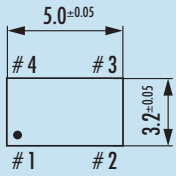


bottom view

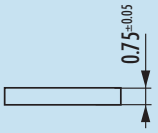


pad layout

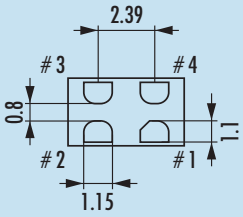
5.0 x 3.2 x 0.75
JSO53



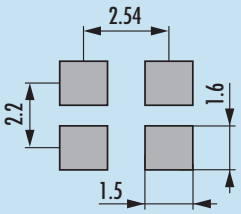
top view



side view

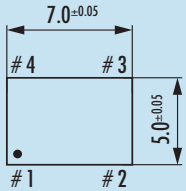


bottom view

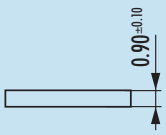


pad layout

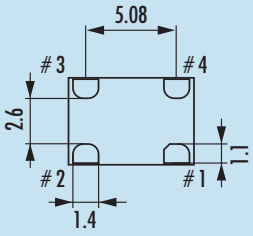
7.0 x 5.0 x 0.90
JSO75



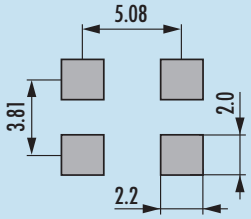
top view



side view



bottom view



pad layout

Pin connection	# 1: e/d	# 2: GND	# 3: output	# 4: V_{DC}	note: a capacitor of 0.1 µF between V_{DC} and GND is recommended

in mm

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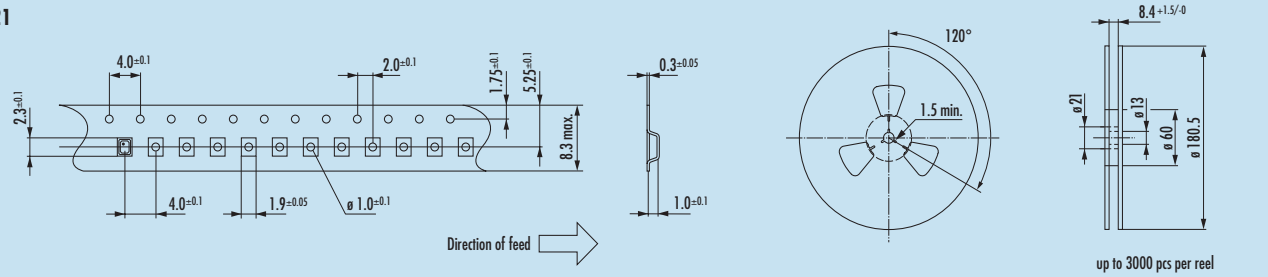
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

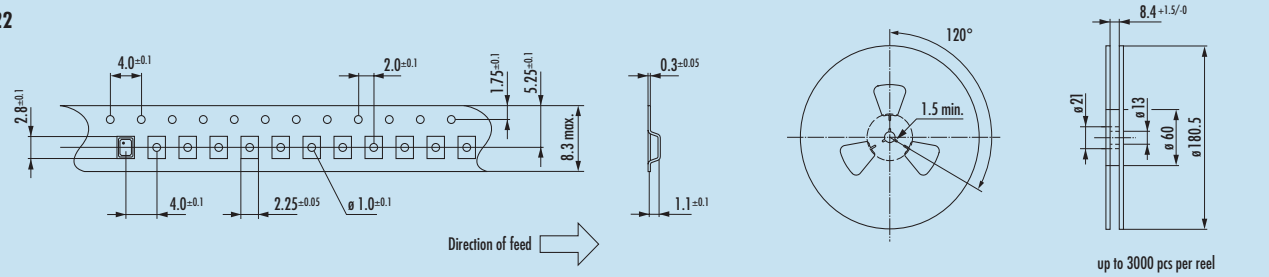
Taping Specification

2.0 x 1.6 x 0.75
JSO21



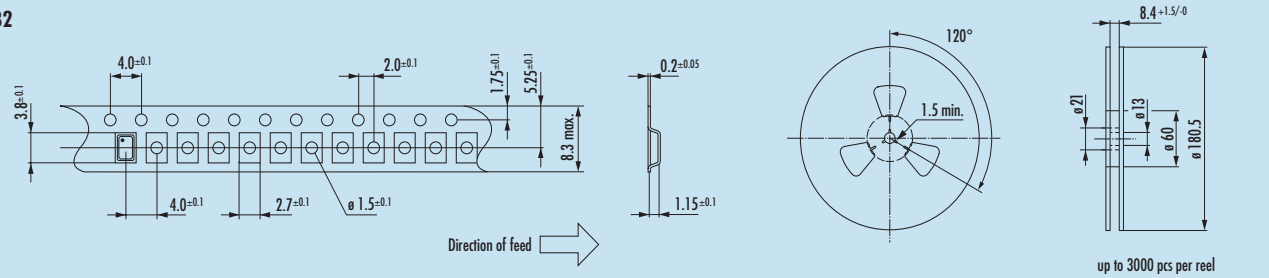
up to 3000 pcs per reel

2.5 x 2.0 x 0.75
JSO22



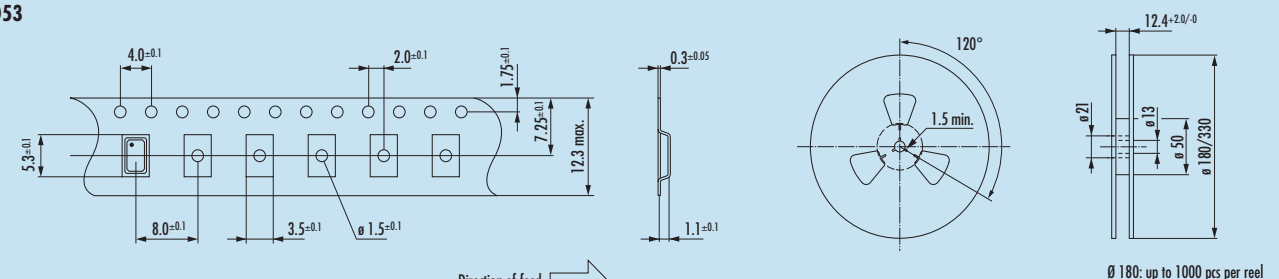
up to 3000 pcs per reel

3.2 x 2.5 x 0.75
JSO32



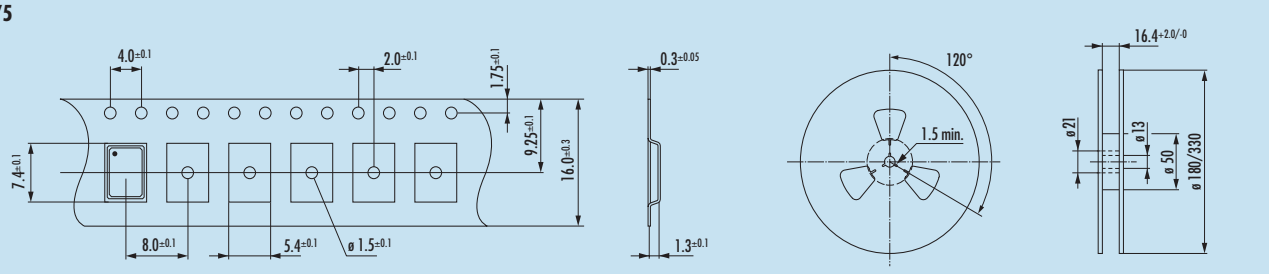
up to 3000 pcs per reel

5.0 x 3.2 x 0.75
JSO53



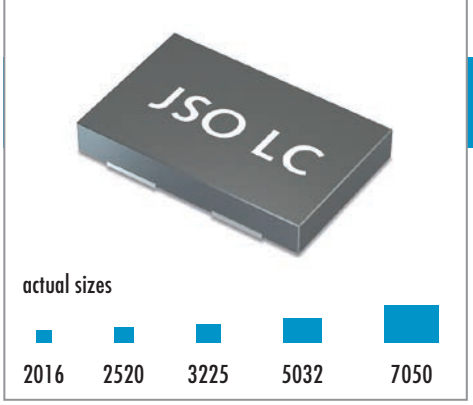
Ø 180: up to 1000 pcs per reel
Ø 330: up to 3000 pcs per reel

7.0 x 5.0 x 0.90
JSO75



Ø 180: up to 1000 pcs per reel
Ø 330: up to 3000 pcs per reel

in mm



MEMS-Oscillator · JSO LC series · 1.8 V

- low power oscillator with HCMOS/LVCMOS output
- compatible to industry standard packages 2016 – 7050
- configured to customer's specification
- extended shock & vibration resistance
- very fast delivery service
- 500 million hours MTBF

General Data

type		JSOxxCxLC 1.8 V
frequency range		1.0 ~ 110.0 MHz (temp. range T0 ~ T8)
		115.0 ~ 137.0 MHz (temp. range T0 ~ T1)
frequency stability over all		±20 ppm ~ ±50 ppm (see table 1)
current consumption		see table 2
supply voltage V_{DC}		1.8 V ± 10%
temperature	operating	T0 = -20°C ~ +70°C
		T1 = -40°C ~ +85°C
		T2 = -40°C ~ +105°C
		T3 = -40°C ~ +125°C
		T8 = -55°C ~ +125°C
	storage	-55°C ~ +150°C
output	logic	HCMOS/LVCMOS
	rise & fall time	4.2 ns max. at 15 pF / 6.8 ns max. at 30 pF (see table 4)
	load max.	30 pF max. recommended (≤ 74.0 MHz)
		15 pF max. recommended (> 74.0 MHz)
		other load capacitances possible, see supplementary document
	current max.	2 mA
	low level max.	0.1 x V_{DC}
	high level min.	0.9 x V_{DC}
standby function (e/d)		stop (S), tristate-only (T) or none (N), see table 3
output enable time max.		5 ms (S) / 150 ns (T)
output disable time max.		150 ns
start-up time max.		5 ms
standby current max.		2 µA (for stop (S), see table 3)
phase jitter 12 kHz ~ 20 MHz		< 3.0 ps RMS
symmetry at 0.5 x V_{DC}		45% ~ 55% (standard)

note: some frequencies can't be configured, see table 5.

Packing Note / Marking

QTY < 250 pcs. → cut tape
QTY 250/500/1K/3K pcs. → tape and reel
Marking: lot code only

RoHS compliant · Pb free · REACH compliant · Conflict mineral free

Table 1: Frequency Stability Code

stability code / temp. code*		B ±50 ppm	G ±30 ppm	C ±25 ppm	D ±20 ppm	
-20°C ~ +70°C	T0	○	○	○	○	
-40°C ~ +85°C	T1	○	○	○	○	
-40°C ~ +105°C	T2	○	○	○	○	
-40°C ~ +125°C	T3	○	○	○	○	
-55°C ~ +125°C	T8	○	○	○		
○ available						

* includes stability at 25°C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption typ. (for max. add 30%)

current at load	5 pF	15 pF	30 pF	60 pF	unit
output disabled	3.5	3.5	3.5	3.5	mA
1.0 ~ 19.9 MHz	3.6	3.9	4.4	5.5	mA
20.0 ~ 29.9 MHz	4.2	4.5	5.4	6.5	mA
30.0 ~ 49.9 MHz	4.5	5.1	6.5		mA
50.0 ~ 79.9 MHz	4.9	6.3			mA
80.0 ~ 110.0 MHz	5.7	7.6			mA
115.0 ~ 137.0 MHz	(8.0)	(13.0)			mA

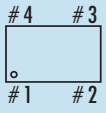
note: current at default edge control setting "D", also refer to table 4.

Table 3: Configurable Standby Function Options (e/d)

pin #1 (e/d control)	option	functionality
low "0" (V_{IL} ≤ 0.2 V_{DC})	S = Stop	output weakly pulled down, oscillator in sleep mode
	T = TriState	output high impedance, oscillator operates
	N = None	oscillator output active
high "1" (V_{IH} ≥ 0.8 V_{DC})	all	oscillator output active
open*	all	oscillator output active

* a pull up resistor is recommended in EMI stressed circuit environments.

Pin Connection



#4: V_{DC} · #3: output
#1: e/d · #2: GND

note: a capacitor of 0.1 µF between V_{DC} and GND is recommended.

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full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Table 4: Max. Rise & Fall Time vs. Load Capacitance

C_L	5 pF	15 pF	30 pF	5 pF	15 pF	30 pF
edge control	at 10% ~ 90% of V_{DC} (ns)			at 20% ~ 80% of V_{DC} (ns)		
D = 0*	1.8	4.2	6.8	1.2	2.8	4.8
1	2.2	5.0	7.6	1.4	3.4	5.2
2	2.4	5.6	8.8	1.6	3.8	6.0
3	2.8	6.0	10.0	1.8	4.2	6.8
4	4.8	9.8	17.0	3.4	6.6	11.6
5	6.6	12.6	21.0	4.4	8.6	15.0
6	10.0	18.0	32.0	6.6	12.0	22.0
7	18.0	34.0	62.0	12.4	24.0	44.0

* default edge control setting "D" at V_{DC} = 1.8 V, please also refer to the supplementary information on our homepage for typical values and more details.

Table 5: Non-Configurable Frequencies

operating temperature option		operating temperature option	
T2 – (-40°C ~ +105°C) T3 – (-40°C ~ +125°C)		T8 – (-55°C ~ +125°C)	
from (MHz)	to (MHz)	from (MHz)	to (MHz)
61.223	61.674	61.223	61.974
69.796	70.485	69.240	70.827
79.063	79.162	78.715	79.561
81.428	82.232	80.160	80.174
91.834	92.155	80.780	82.632
94.249	94.430	91.834	95.474
94.875	94.994	96.192	96.209
97.714	98.679	96.936	99.158
110.0	115.194	110.0	119.342
117.811	118.038	–	–
118.594	118.743	120.239	120.262
122.142	122.705	121.170	121.243
123.022	123.348	121.601	123.948

Order Information

Example: O 26.123456 – JSO 75 C1 L C – B – 1.8 – T0 – S – D

O = Oscillator

frequency (8 digits), see also table 5
1.0 ~ 110.0 MHz
115.0 ~ 137.0 MHz

JSO = Jauch Silicon Oscillator

package
75 = 7050
53 = 5032
32 = 3225
22 = 2520
21 = 2016

frequency range
C1 = 1.0 ~ 110.0 MHz
C2 = 115.0 ~ 137.0 MHz

function/feature
L = lowpower

output I/F
C = (H)CMOS

edge control
D = default
0 – 7, see table 4

standby function options
S = Stop
T = TriState
N = None

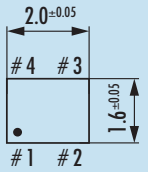
temperature range
T0 = -20°C ~ +70°C
T1 = -40°C ~ +85°C
T2 = -40°C ~ +105°C
T3 = -40°C ~ +125°C
T8 = -55°C ~ +125°C

supply voltage
3.3 = 3.3 V
3.0 = 3.0 V
2.8 = 2.8 V
2.5 = 2.5 V
1.8 = 1.8 V
2V3 = 2.5 V ~ 3.3 V

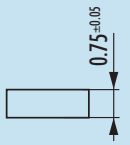
frequency stability overall
B = ± 50 ppm
G = ± 30 ppm
C = ± 25 ppm
D = ± 20 ppm

Dimensions

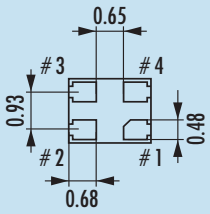
2.0 x 1.6 x 0.75
JSO21



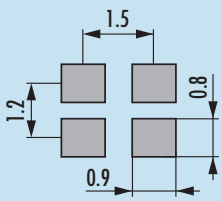
top view



side view

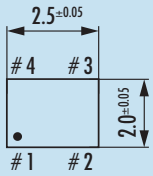


bottom view

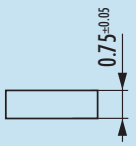


pad layout

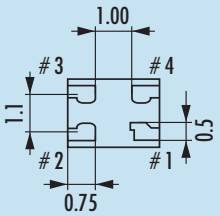
2.5 x 2.0 x 0.75
JSO22



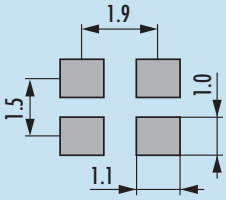
top view



side view

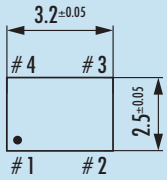


bottom view

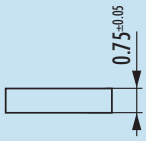


pad layout

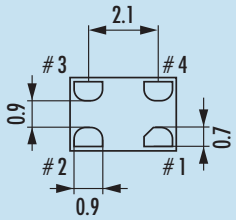
3.2 x 2.5 x 0.75
JSO32



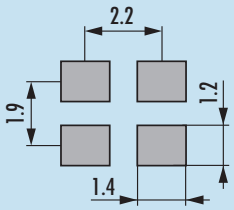
top view



side view

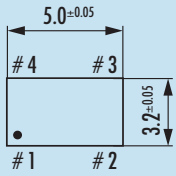


bottom view

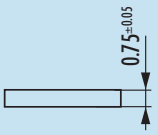


pad layout

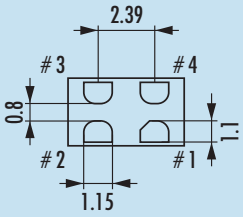
5.0 x 3.2 x 0.75
JSO53



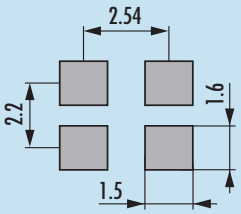
top view



side view

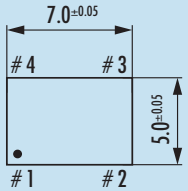


bottom view

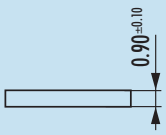


pad layout

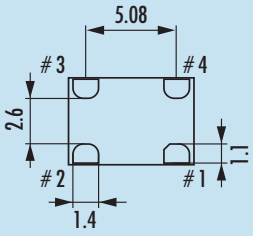
7.0 x 5.0 x 0.90
JSO75



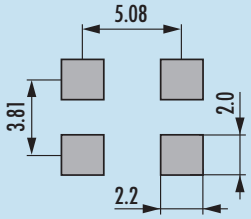
top view



side view



bottom view



pad layout

Pin connection	# 1: e/d	# 2: GND	# 3: output	# 4: V_{DC}	note: a capacitor of 0.1 µF between V_{DC} and GND is recommended

in mm

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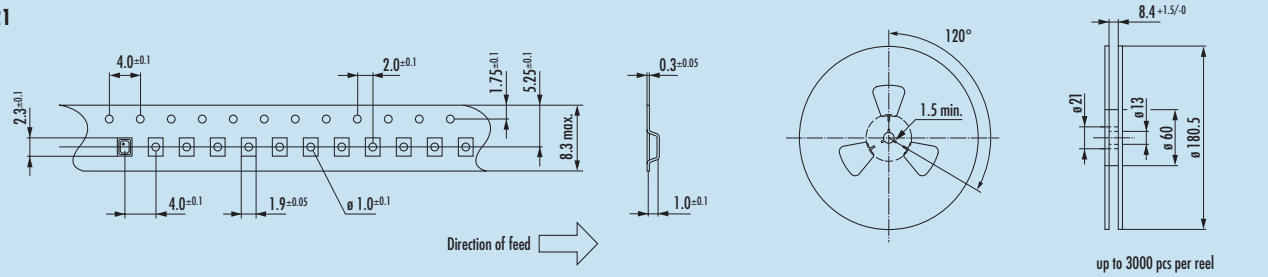
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

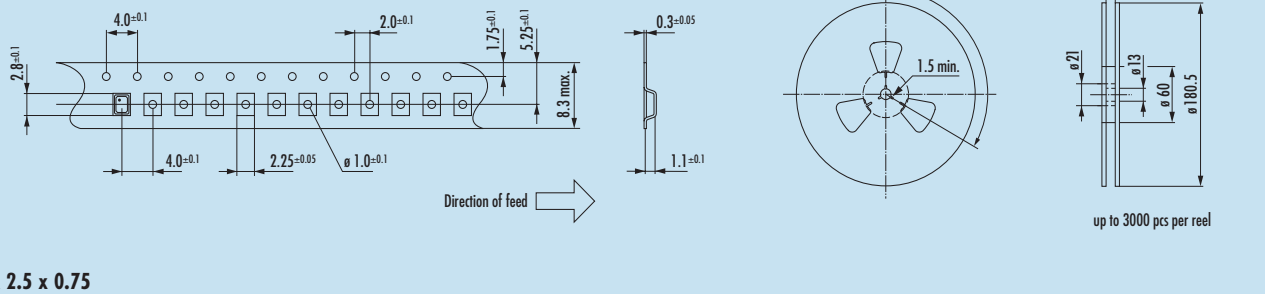
Taping Specification

2.0 x 1.6 x 0.75
JSO21



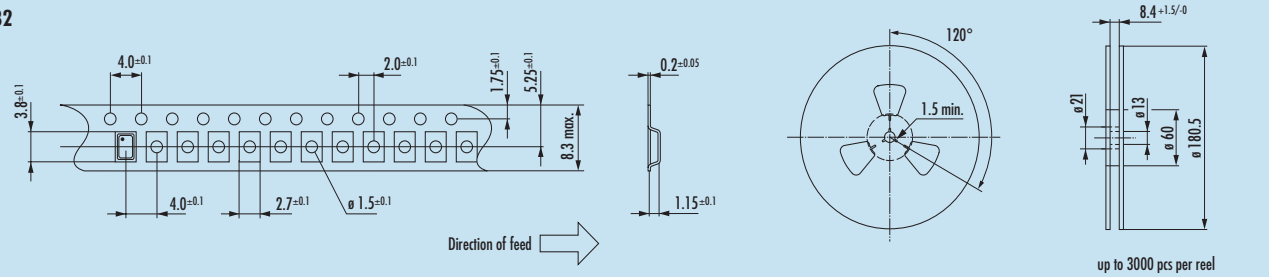
up to 3000 pcs per reel

2.5 x 2.0 x 0.75
JSO22



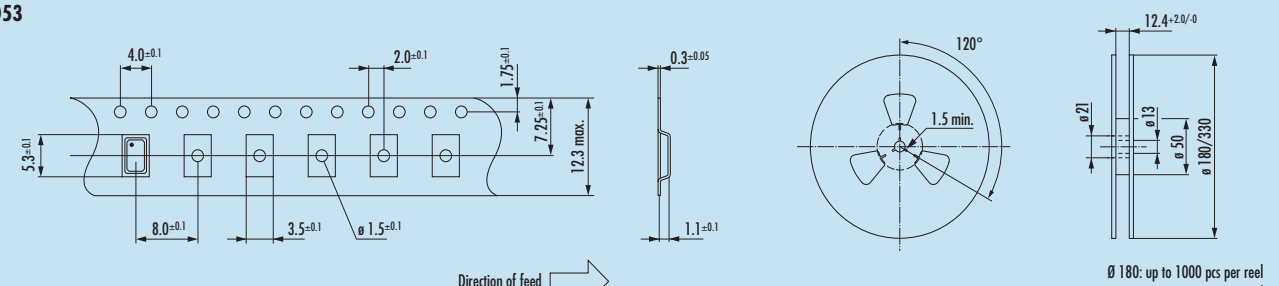
up to 3000 pcs per reel

3.2 x 2.5 x 0.75
JSO32



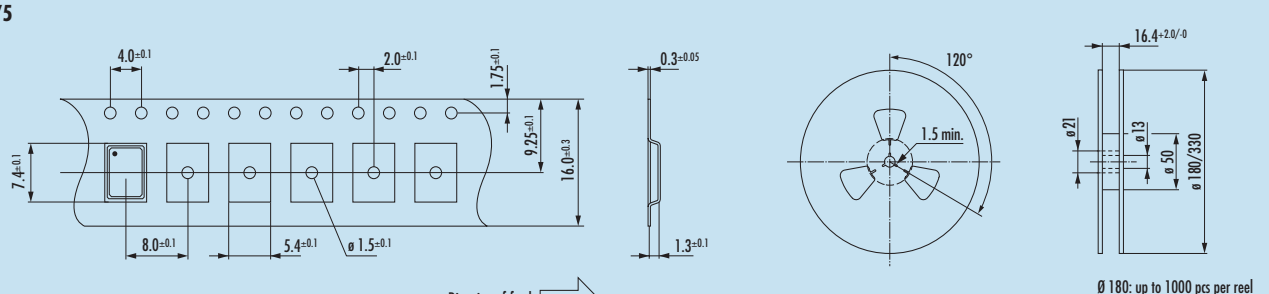
up to 3000 pcs per reel

5.0 x 3.2 x 0.75
JSO53



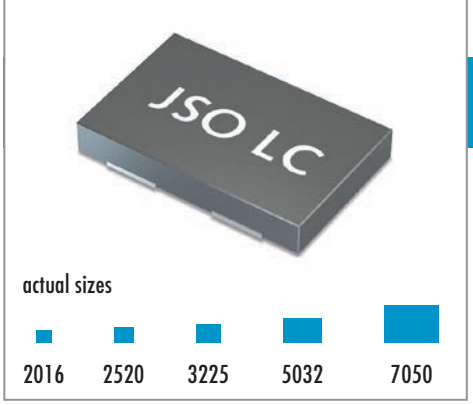
Ø 180: up to 1000 pcs per reel
Ø 330: up to 3000 pcs per reel

7.0 x 5.0 x 0.90
JSO75



Ø 180: up to 1000 pcs per reel
Ø 330: up to 3000 pcs per reel

in mm



MEMS-Oscillator · JSO LC series · 2.5 V ~ 3.3 V

- low power oscillator with HCMOS/LVCMOS output
- compatible to industry standard packages 2016 – 7050
- configured to customer's specification
- extended shock & vibration resistance
- very fast delivery service
- 500 million hours MTBF

General Data

type		JSOxxCxLC 2.5 V ~ 3.3 V
frequency range		1.0 ~ 110.0 MHz (temp. range T0 ~ T8)
		115.0 ~ 137.0 MHz (temp. range T0 ~ T1)
frequency stability over all		±20 ppm ~ ±50 ppm (see table 1)
current consumption		see table 2
supply voltage V_{DC}		2.5 V – 10% ~ 3.3 V + 10%
temperature	operating	T0 = -20°C ~ +70°C
		T1 = -40°C ~ +85°C
		T2 = -40°C ~ +105°C
		T3 = -40°C ~ +125°C
		T8 = -55°C ~ +125°C
	storage	-55°C ~ +150°C
output	logic	HCMOS/LVCMOS
	rise & fall time	4.0 ns max. at 15 pF / 6.6 ns max. at 30 pF (see table 4)
	load max.	30 pF max. recommended (≤ 76.0 MHz)
		15 pF max. recommended (> 76.0 MHz)
		other load capacitances possible, see supplementary document
	current max.	3 mA
	low level max.	0.1 x V_{DC}
	high level min.	0.9 x V_{DC}
standby function (e/d)		stop (S), tristate-only (T) or none (N), see table 3
output enable time max.		5 ms (S) / 150 ns (T)
output disable time max.		150 ns
start-up time max.		5 ms
standby current max.		3 µA (for stop (S), see table 3)
phase jitter 12 kHz ~ 20 MHz		< 3.0 ps RMS
symmetry at 0.5 x V_{DC}		45% ~ 55% (standard)

note: some frequencies can't be configured, see table 5.

Packing Note / Marking

QTY < 250 pcs. → cut tape
QTY 250/500/1K/3K pcs. → tape and reel
Marking: lot code only

RoHS compliant | Pb free | REACH compliant | Conflict mineral free

Table 1: Frequency Stability Code

stability code / temp. code*		B ±50 ppm	G ±30 ppm	C ±25 ppm	D ±20 ppm	
-20°C ~ +70°C	T0	○	○	○	○	
-40°C ~ +85°C	T1	○	○	○	○	
-40°C ~ +105°C	T2	○	○	○	○	
-40°C ~ +125°C	T3	○	○	○	○	
-55°C ~ +125°C	T8	○	○	○		
○ available						

* includes stability at 25°C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption typ. (for max. add 30%)

current at load	5 pF	15 pF	30 pF	60 pF	unit
output disabled	4.0	4.0	4.0	4.0	mA
1.0 ~ 19.9 MHz	4.0	4.6	5.6	7.6	mA
20.0 ~ 29.9 MHz	4.6	5.7	7.4	10.9	mA
30.0 ~ 49.9 MHz	5.1	6.7	9.2	14.3	mA
50.0 ~ 79.9 MHz	6.4	9.0	13.2		mA
80.0 ~ 110.0 MHz	7.7	11.2	17.0		mA
115.0 ~ 137.0 MHz	(10.0)	(14.5)			mA

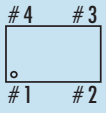
note: current at default edge control setting "D", also refer to table 4.

Table 3: Configurable Standby Function Options (e/d)

pin #1 (e/d control)	option	functionality
low "0" ($V_{IL} \leq 0.2\ V_{DC}$)	S = Stop	output weakly pulled down, oscillator in sleep mode
	T = TriState	output high impedance, oscillator operates
	N = None	oscillator output active
high "1" ($V_{IH} \geq 0.8\ V_{DC}$)	all	oscillator output active
open*	all	oscillator output active

* a pull up resistor is recommended in EMI stressed circuit environments.

Pin Connection



#4: V_{DC} #3: output
#1: e/d #2: GND

note: a capacitor of 0.1 µF between V_{DC} and GND is recommended.

Jauch MEMS – Uses SiTime's MEMS First™ technology

Jauch Quartz GmbH • e-mail: info@jauch.de
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Table 4: Max. Rise & Fall Time vs. Load Capacitance

C_L	5 pF	15 pF	30 pF	5 pF	15 pF	30 pF
edge control	at 10% ~ 90% of V_{DC} (ns)			at 20% ~ 80% of V_{DC} (ns)		
0	1.2	2.4	5.2	0.8	1.7	3.4
1	1.4	2.6	5.8	0.9	1.9	3.8
2	1.6	3.0	6.0	1.1	2.1	4.0
D = 3*	1.8	4.0	6.6	1.2	2.6	4.6
4	3.2	6.4	11.0	2.2	4.4	7.8
5	4.4	8.4	14.6	2.9	5.8	10.4
6	6.6	12.4	23.0	4.4	8.6	15.2
7	12.8	25.0	46.0	8.6	16.6	30.0

* default edge control setting "D" at V_{DC} = 2.5 V ~ 3.3 V, please also refer to the supplementary information on our homepage for typical values and more details.

Table 5: Non-Configurable Frequencies

operating temperature option		operating temperature option	
T2 – (-40°C ~ +105°C) T3 – (-40°C ~ +125°C)		T8 – (-55°C ~ +125°C)	
from (MHz)	to (MHz)	from (MHz)	to (MHz)
61.223	61.674	61.223	61.974
69.796	70.485	69.240	70.827
79.063	79.162	78.715	79.561
81.428	82.232	80.160	80.174
91.834	92.155	80.780	82.632
94.249	94.430	91.834	95.474
94.875	94.994	96.192	96.209
97.714	98.679	96.936	99.158
110.0	115.194	110.0	119.342
117.811	118.038	–	–
118.594	118.743	120.239	120.262
122.142	122.705	121.170	121.243
123.022	123.348	121.601	123.948

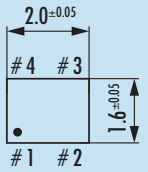
Order Information

Example: O 26.123456 – JSO 75 C1 L C – B – 2V3 – T0 – S – D

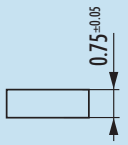
- **O** = Oscillator
- **frequency (8 digits),** see also table 5
  1.0 ~ 110.0 MHz
  115.0 ~ 137.0 MHz
- **JSO** = Jauch Silicon Oscillator
- **package**
  75 = 7050
  53 = 5032
  32 = 3225
  22 = 2520
  21 = 2016
- **frequency range**
  C1 = 1.0 ~ 110.0 MHz
  C2 = 115.0 ~ 137.0 MHz
- **function/feature**
  L = lowpower
- **output I/F**
  C = (H)CMOS
- **edge control**
  D = default
  0 – 7, see table 4
- **standby function options**
  S = Stop
  T = TriState
  N = None
- **temperature range**
  T0 = -20°C ~ +70°C
  T1 = -40°C ~ +85°C
  T2 = -40°C ~ +105°C
  T3 = -40°C ~ +125°C
  T8 = -55°C ~ +125°C
- **supply voltage**
  3.3 = 3.3 V
  3.0 = 3.0 V
  2.8 = 2.8 V
  2.5 = 2.5 V
  1.8 = 1.8 V
  2V3 = 2.5 V ~ 3.3 V
- **frequency stability overall**
  B = ± 50 ppm
  G = ± 30 ppm
  C = ± 25 ppm
  D = ± 20 ppm

Dimensions

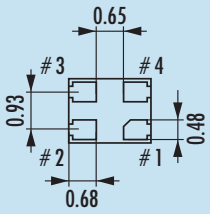
2.0 x 1.6 x 0.75
JSO21



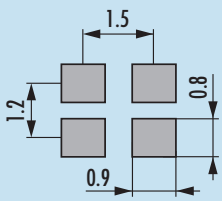
top view



side view

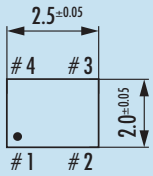


bottom view

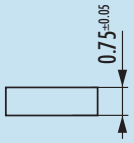


pad layout

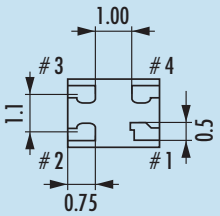
2.5 x 2.0 x 0.75
JSO22



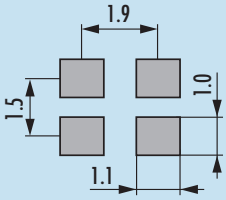
top view



side view

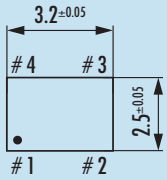


bottom view

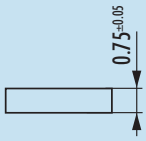


pad layout

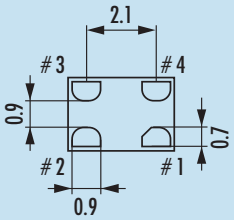
3.2 x 2.5 x 0.75
JSO32



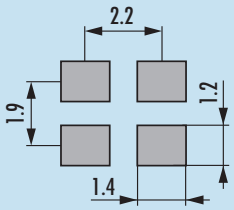
top view



side view

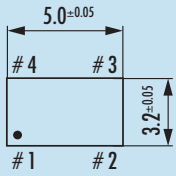


bottom view

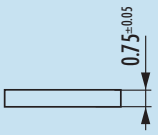


pad layout

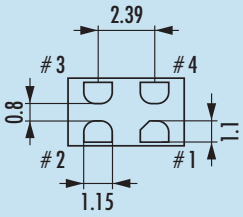
5.0 x 3.2 x 0.75
JSO53



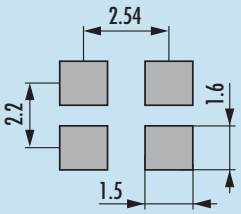
top view



side view

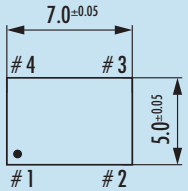


bottom view

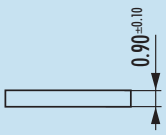


pad layout

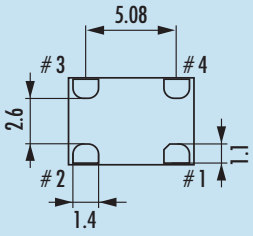
7.0 x 5.0 x 0.90
JSO75



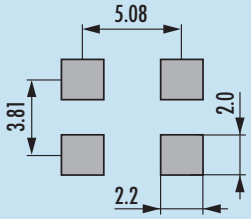
top view



side view



bottom view



pad layout

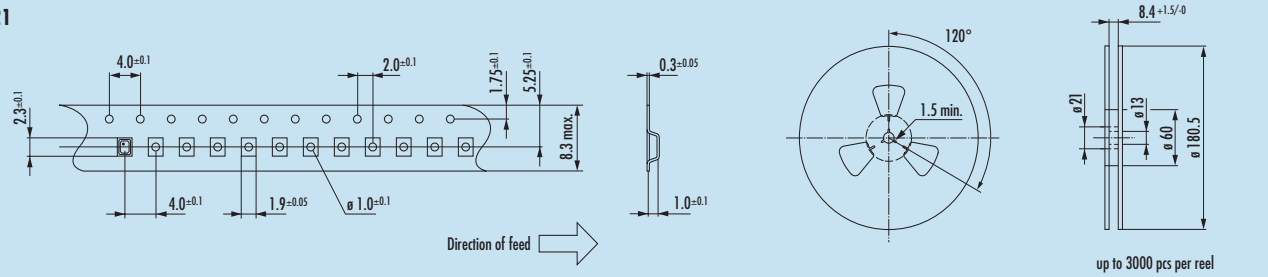
Pin connection	# 1: e/d	# 2: GND	# 3: output	# 4: V_{DC}	note: a capacitor of 0.1 µF between V_{DC} and GND is recommended

in mm

Jauch Quartz GmbH • e-mail: info@jauch.de
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

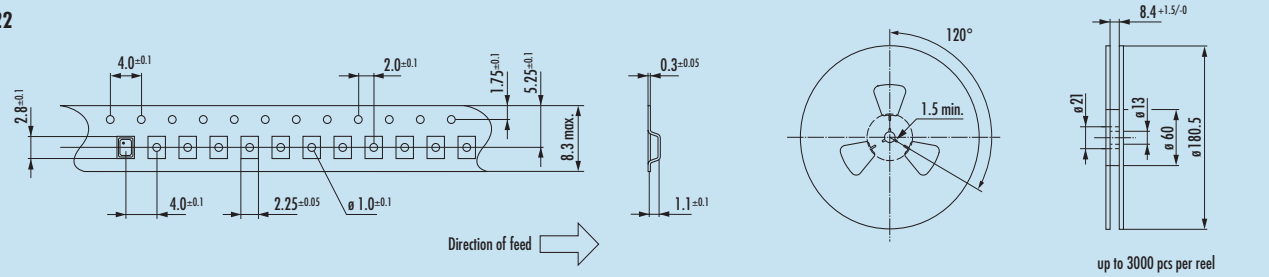
Taping Specification

2.0 x 1.6 x 0.75
JSO21



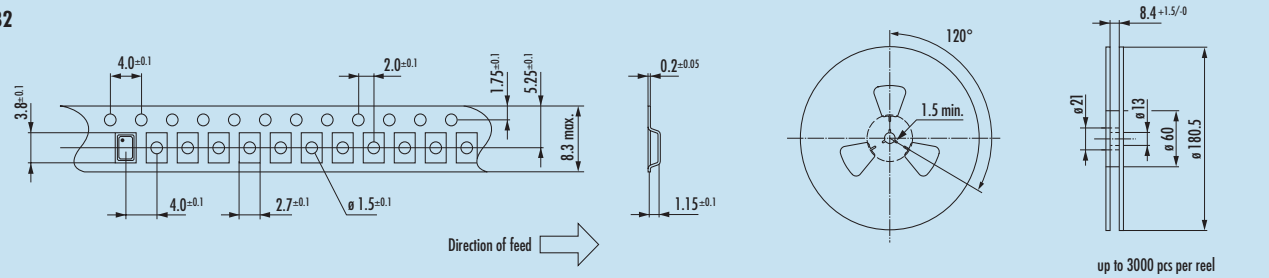
up to 3000 pcs per reel

2.5 x 2.0 x 0.75
JSO22



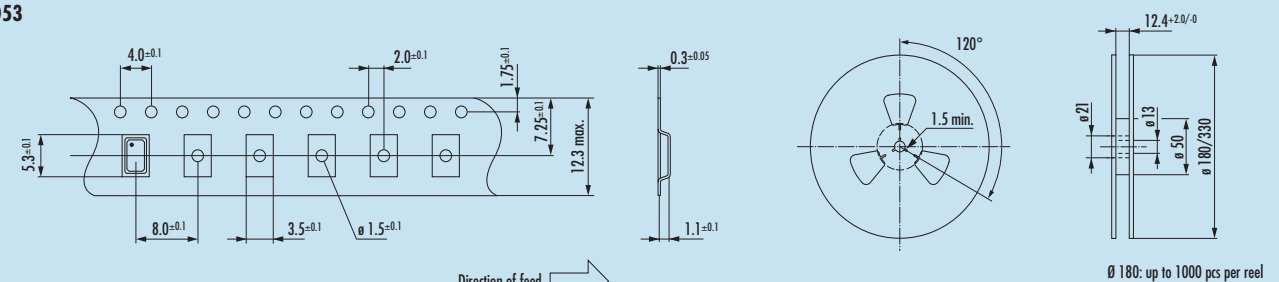
up to 3000 pcs per reel

3.2 x 2.5 x 0.75
JSO32



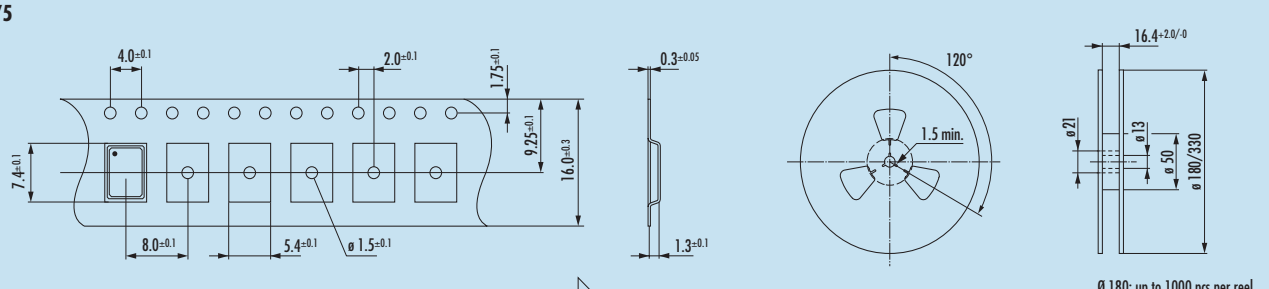
up to 3000 pcs per reel

5.0 x 3.2 x 0.75
JSO53



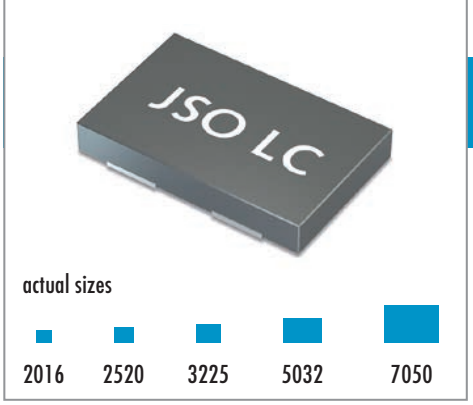
Ø 180: up to 1000 pcs per reel
Ø 330: up to 3000 pcs per reel

7.0 x 5.0 x 0.90
JSO75



Ø 180: up to 1000 pcs per reel
Ø 330: up to 3000 pcs per reel

in mm



MEMS-Oscillator · JSO LC series · 3.3 V

- low power oscillator with HCMOS/LVCMOS output
- compatible to industry standard packages 2016 – 7050
- configured to customer's specification
- extended shock & vibration resistance
- very fast delivery service
- 500 million hours MTBF

General Data

type		JSOxxCxLC 3.3 V
frequency range		1.0 ~ 110.0 MHz (temp. range T0 ~ T8)
		115.0 ~ 137.0 MHz (temp. range T0 ~ T1)
frequency stability over all		±20 ppm ~ ±50 ppm (see table 1)
current consumption		see table 2
supply voltage V_{DC}		3.3 V ± 10%
temperature	operating	T0 = -20°C ~ +70°C
		T1 = -40°C ~ +85°C
		T2 = -40°C ~ +105°C
		T3 = -40°C ~ +125°C
		T8 = -55°C ~ +125°C
	storage	-55°C ~ +150°C
output	logic	HCMOS/LVCMOS
	rise & fall time	3 ns max. at 15 pF / 6 ns max. at 30 pF (see table 4)
	load max.	30 pF max. recommended (≤ 83.0 MHz)
		15 pF max. recommended (> 83.0 MHz)
		other load capacitances possible, see supplementary document
	current max.	4 mA
	low level max.	0.1 x V_{DC}
	high level min.	0.9 x V_{DC}
standby function (e/d)		stop (S), tristate-only (T) or none (N), see table 3
output enable time max.		5 ms (S) / 150 ns (T)
output disable time max.		150 ns
start-up time max.		5 ms
standby current max.		5 µA (for stop (S), see table 3)
phase jitter 12 kHz ~ 20 MHz		< 3.0 ps RMS
symmetry at 0.5 x V_{DC}		45% ~ 55% (standard)

note: some frequencies can't be configured, see table 5.

Packing Note / Marking

QTY < 250 pcs. → cut tape
QTY 250/500/1K/3K pcs. → tape and reel
Marking: lot code only

RoHS compliant | Pb free | REACH compliant | Conflict mineral free

Table 1: Frequency Stability Code

stability code / temp. code*		B ±50 ppm	G ±30 ppm	C ±25 ppm	D ±20 ppm	
-20°C ~ +70°C	T0	○	○	○	○	
-40°C ~ +85°C	T1	○	○	○	○	
-40°C ~ +105°C	T2	○	○	○	○	
-40°C ~ +125°C	T3	○	○	○	○	
-55°C ~ +125°C	T8	○	○	○		
○ available						

* includes stability at 25°C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption typ. (for max. add 30%)

current at load	5 pF	15 pF	30 pF	60 pF	unit
output disabled	4.0	4.0	4.0	4.0	mA
1.0 ~ 19.9 MHz	4.0	4.6	5.6	7.6	mA
20.0 ~ 29.9 MHz	4.6	5.7	7.4	10.9	mA
30.0 ~ 49.9 MHz	5.1	6.7	9.2	14.3	mA
50.0 ~ 79.9 MHz	6.4	9.0	13.2		mA
80.0 ~ 110.0 MHz	7.7	11.2	17.0		mA
115.0 ~ 137.0 MHz	(10.0)	(14.5)			mA

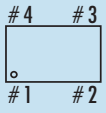
note: current at default edge control setting "D", also refer to table 4.

Table 3: Configurable Standby Function Options (e/d)

pin #1 (e/d control)	option	functionality
low "0" (V_{IL} ≤ 0.2 V_{DC})	S = Stop	output weakly pulled down, oscillator in sleep mode
	T = TriState	output high impedance, oscillator operates
	N = None	oscillator output active
high "1" (V_{IH} ≥ 0.8 V_{DC})	all	oscillator output active
open*	all	oscillator output active

* a pull up resistor is recommended in EMI stressed circuit environments.

Pin Connection



#4: V_{DC} #3: output
#1: e/d #2: GND

note: a capacitor of 0.1 µF between V_{DC} and GND is recommended.

Jauch MEMS – Uses SiTime's MEMS First™ technology

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full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Table 4: Max. Rise & Fall Time vs. Load Capacitance

C_L	5 pF	15 pF	30 pF	5 pF	15 pF	30 pF
edge control	at 10% ~ 90% of V_{DC} (ns)			at 20% ~ 80% of V_{DC} (ns)		
0	1.0	1.7	3.6	0.7	1.2	2.6
1	1.1	1.8	4.4	0.7	1.3	3.0
2	1.2	2.6	5.0	0.8	1.8	3.3
D = 3*	1.3	3.0	6.0	0.9	2.0	3.8
4	2.6	5.4	9.4	1.5	3.8	6.4
5	3.4	6.6	12.0	2.4	5.0	8.6
6	5.2	10.0	17.0	3.6	7.0	12.4
7	10.4	21.0	35.0	7.4	14.0	25.0

* default edge control setting "D" at V_{DC} = 3.3 V, please also refer to the supplementary information on our homepage for typical values and more details.

Table 5: Non-Configurable Frequencies

operating temperature option		operating temperature option	
T2 – (-40°C ~ +105°C) T3 – (-40°C ~ +125°C)		T8 – (-55°C ~ +125°C)	
from (MHz)	to (MHz)	from (MHz)	to (MHz)
61.223	61.674	61.223	61.974
69.796	70.485	69.240	70.827
79.063	79.162	78.715	79.561
81.428	82.232	80.160	80.174
91.834	92.155	80.780	82.632
94.249	94.430	91.834	95.474
94.875	94.994	96.192	96.209
97.714	98.679	96.936	99.158
110.0	115.194	110.0	119.342
117.811	118.038	–	–
118.594	118.743	120.239	120.262
122.142	122.705	121.170	121.243
123.022	123.348	121.601	123.948

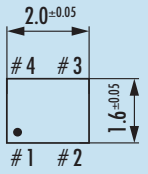
Order Information

Example: O 26.123456 – JSO 75 C1 L C – B – 3.3 – T0 – S – D

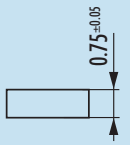
- **O** = Oscillator
- **frequency (8 digits),** see also table 5
  1.0 ~ 110.0 MHz
  115.0 ~ 137.0 MHz
- **JSO** = Jauch Silicon Oscillator
- **package**
  75 = 7050, 53 = 5032, 32 = 3225, 22 = 2520, 21 = 2016
- **frequency range**
  C1 = 1.0 ~ 110.0 MHz
  C2 = 115.0 ~ 137.0 MHz
- **function/feature**
  L = lowpower
- **output I/F**
  C = (H)CMOS
- **edge control**
  D = default
  0 – 7, see table 4
- **standby function options**
  S = Stop
  T = TriState
  N = None
- **temperature range**
  T0 = -20°C ~ +70°C, T1 = -40°C ~ +85°C, T2 = -40°C ~ +105°C, T3 = -40°C ~ +125°C, T8 = -55°C ~ +125°C
- **supply voltage**
  3.3 = 3.3 V, 3.0 = 3.0 V, 2.8 = 2.8 V, 2.5 = 2.5 V, 1.8 = 1.8 V, 2V3 = 2.5 V ~ 3.3 V
- **frequency stability overall**
  B = ± 50 ppm, G = ± 30 ppm, C = ± 25 ppm, D = ± 20 ppm

Dimensions

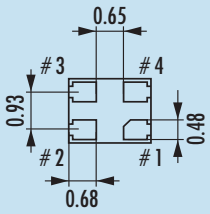
2.0 x 1.6 x 0.75
JSO21



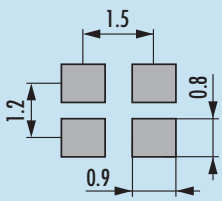
top view



side view

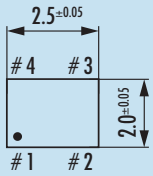


bottom view

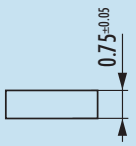


pad layout

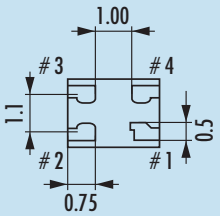
2.5 x 2.0 x 0.75
JSO22



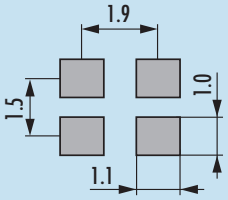
top view



side view

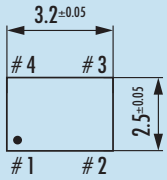


bottom view

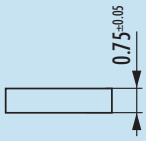


pad layout

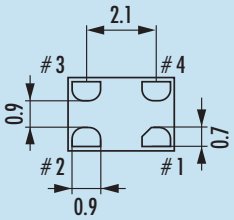
3.2 x 2.5 x 0.75
JSO32



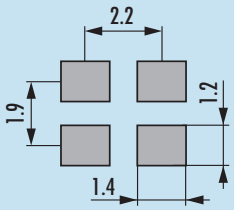
top view



side view

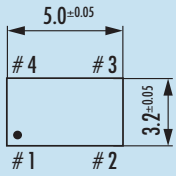


bottom view

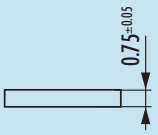


pad layout

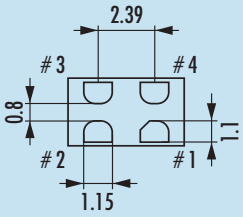
5.0 x 3.2 x 0.75
JSO53



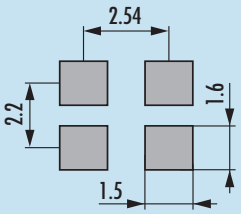
top view



side view

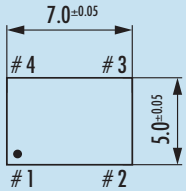


bottom view

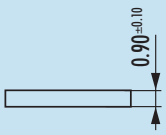


pad layout

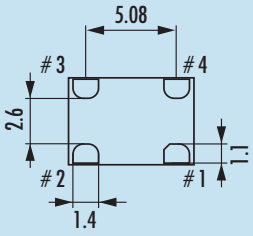
7.0 x 5.0 x 0.90
JSO75



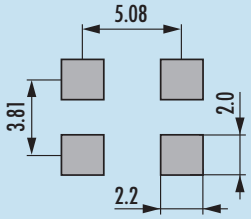
top view



side view



bottom view



pad layout

Pin connection # 1: e/d # 2: GND # 3: output # 4: V_{DC} note: a capacitor of 0.1 µF between V_{DC} and GND is recommended

in mm

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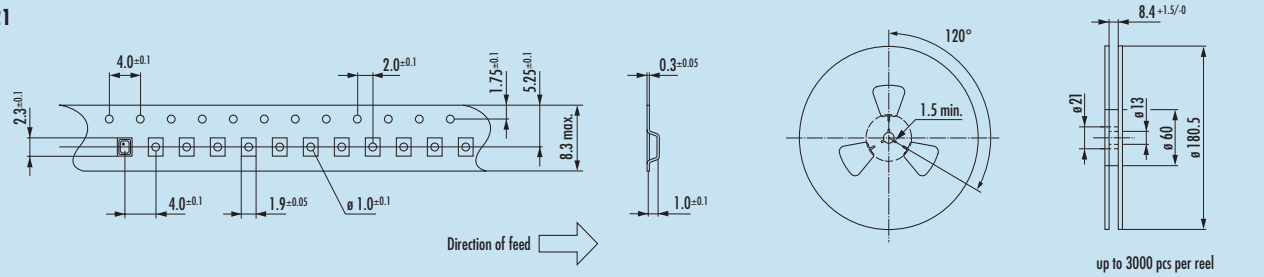
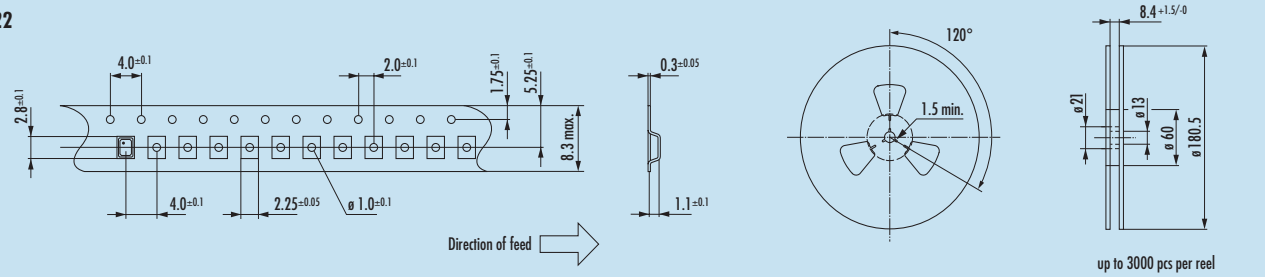
Taping Specification

2.0 x 1.6 x 0.75
JSO21



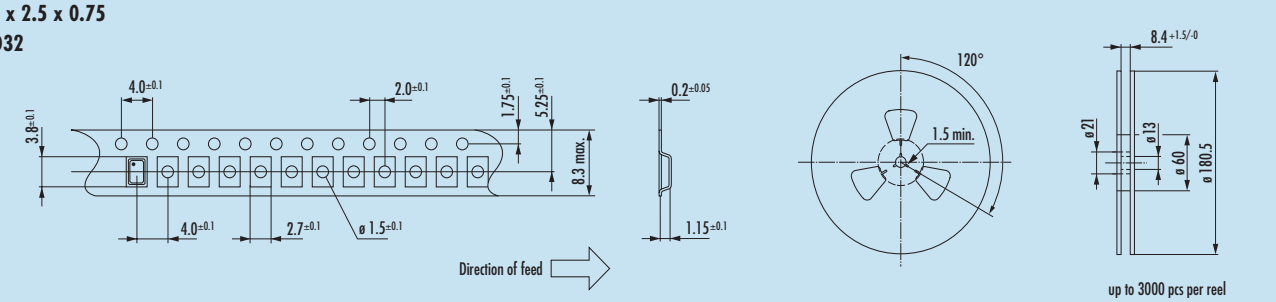
up to 3000 pcs per reel

2.5 x 2.0 x 0.75
JSO22



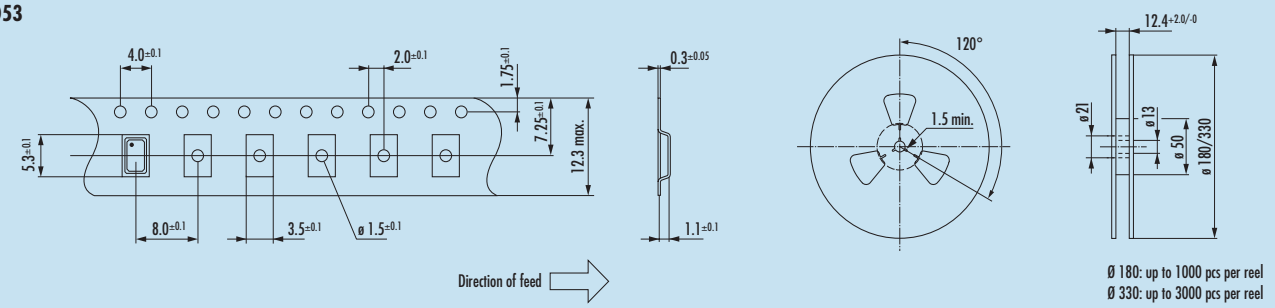
up to 3000 pcs per reel

3.2 x 2.5 x 0.75
JSO32



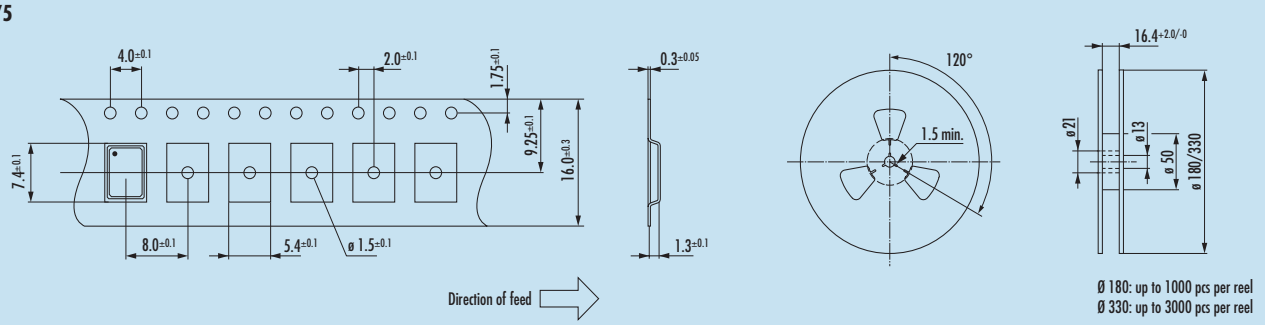
up to 3000 pcs per reel

5.0 x 3.2 x 0.75
JSO53



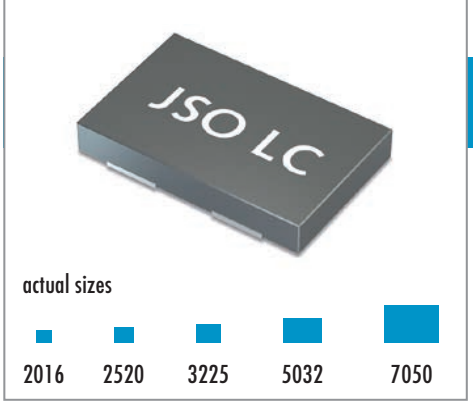
Ø 180: up to 1000 pcs per reel
Ø 330: up to 3000 pcs per reel

7.0 x 5.0 x 0.90
JSO75



Ø 180: up to 1000 pcs per reel
Ø 330: up to 3000 pcs per reel

in mm



MEMS-Oscillator · JSO LC series · 3.0 V

- low power oscillator with HCMOS/LVCMOS output
- compatible to industry standard packages 2016 – 7050
- configured to customer's specification
- extended shock & vibration resistance
- very fast delivery service
- 500 million hours MTBF

General Data

type		JSOxxCxLC 3.0 V
frequency range		1.0 ~ 110.0 MHz (temp. range T0 ~ T8)
		115.0 ~ 137.0 MHz (temp. range T0 ~ T1)
frequency stability over all		±20 ppm ~ ±50 ppm (see table 1)
current consumption		see table 2
supply voltage V_{DC}		3.0 V ± 10%
temperature	operating	T0 = -20°C ~ +70°C
		T1 = -40°C ~ +85°C
		T2 = -40°C ~ +105°C
		T3 = -40°C ~ +125°C
		T8 = -55°C ~ +125°C
	storage	-55°C ~ +150°C
output	logic	HCMOS/LVCMOS
	rise & fall time	3.3 ns max. at 15 pF / 6.2 ns max. at 30 pF (see table 4)
	load max.	30 pF max. recommended (≤ 81.0 MHz)
		15 pF max. recommended (> 81.0 MHz)
		other load capacitances possible, see supplementary document
	current max.	4 mA
	low level max.	0.1 x V_{DC}
	high level min.	0.9 x V_{DC}
standby function (e/d)		stop (S), tristate-only (T) or none (N), see table 3
output enable time max.		5 ms (S) / 150 ns (T)
output disable time max.		150 ns
start-up time max.		5 ms
standby current max.		5 µA (for stop (S), see table 3)
phase jitter 12 kHz ~ 20 MHz		< 3.0 ps RMS
symmetry at 0.5 x V_{DC}		45% ~ 55% (standard)

note: some frequencies can't be configured, see table 5.

Packing Note / Marking

QTY < 250 pcs. → cut tape
QTY 250/500/1K/3K pcs. → tape and reel
Marking: lot code only

RoHS compliant | Pb free | REACH compliant | Conflict mineral free

Table 1: Frequency Stability Code

stability code / temp. code*		B ±50 ppm	G ±30 ppm	C ±25 ppm	D ±20 ppm	
-20°C ~ +70°C	T0	○	○	○	○	
-40°C ~ +85°C	T1	○	○	○	○	
-40°C ~ +105°C	T2	○	○	○	○	
-40°C ~ +125°C	T3	○	○	○	○	
-55°C ~ +125°C	T8	○	○	○		
○ available						

* includes stability at 25°C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption typ. (for max. add 30%)

current at load	5 pF	15 pF	30 pF	60 pF	unit
output disabled	3.9	3.9	3.9	3.9	mA
1.0 ~ 19.9 MHz	4.1	4.5	5.4	7.2	mA
20.0 ~ 29.9 MHz	4.5	5.4	6.9	10.1	mA
30.0 ~ 49.9 MHz	4.9	6.3	8.6	13.2	mA
50.0 ~ 79.9 MHz	6.1	8.4	12.2		mA
80.0 ~ 110.0 MHz	7.3	10.5	15.5		mA
115.0 ~ 137.0 MHz	(9.5)	(14.0)			mA

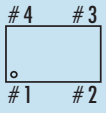
note: current at default edge control setting "D", also refer to table 4.

Table 3: Configurable Standby Function Options (e/d)

pin #1 (e/d control)	option	functionality
low "0" (V_{IL} ≤ 0.2 V_{DC})	S = Stop	output weakly pulled down, oscillator in sleep mode
	T = TriState	output high impedance, oscillator operates
	N = None	oscillator output active
high "1" (V_{IH} ≥ 0.8 V_{DC})	all	oscillator output active
open*	all	oscillator output active

* a pull up resistor is recommended in EMI stressed circuit environments.

Pin Connection



#4: V_{DC} #3: output
#1: e/d #2: GND

note: a capacitor of 0.1 µF between V_{DC} and GND is recommended.

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Table 4: Max. Rise & Fall Time vs. Load Capacitance

C_L	5 pF	15 pF	30 pF	5 pF	15 pF	30 pF
edge control	at 10% ~ 90% of V_{DC} (ns)			at 20% ~ 80% of V_{DC} (ns)		
0	1.1	2.0	4.2	0.7	1.4	2.8
1	1.2	2.2	4.8	0.8	1.6	3.3
2	1.3	2.8	5.4	0.9	1.9	3.6
D = 3*	1.5	3.3	6.2	1.0	2.2	4.0
4	2.8	5.8	10.0	1.8	4.0	6.8
5	3.8	7.4	13.0	2.6	5.2	9.0
6	5.5	11.0	19.0	3.8	7.6	13.4
7	11.4	22.0	40.0	7.8	14.6	27.0

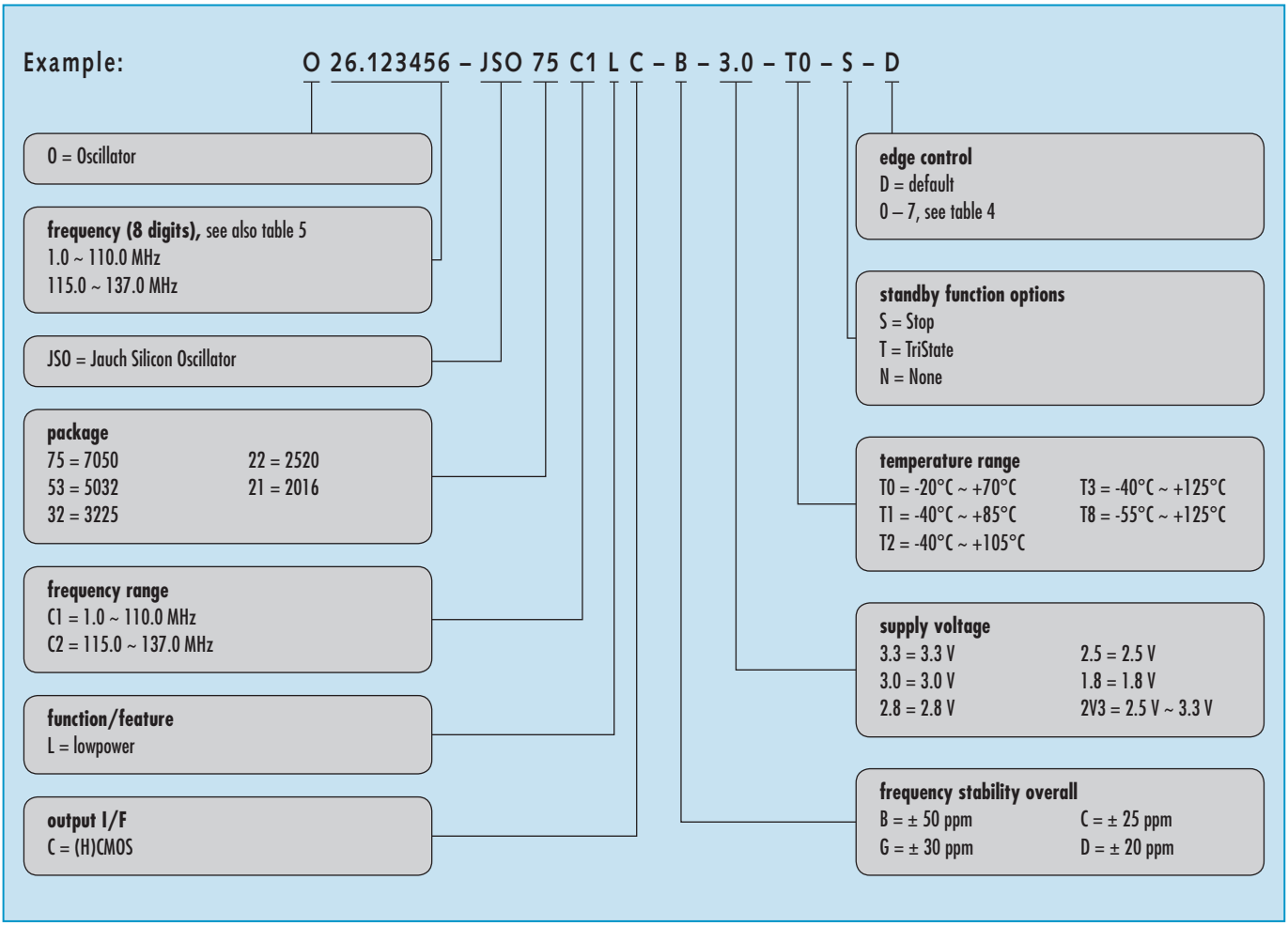
* default edge control setting "D" at V_{DC} = 3.0 V, please also refer to the supplementary information on our homepage for typical values and more details.

Table 5: Non-Configurable Frequencies

operating temperature option		operating temperature option	
T2 – (-40°C ~ +105°C) T3 – (-40°C ~ +125°C)		T8 – (-55°C ~ +125°C)	
from (MHz)	to (MHz)	from (MHz)	to (MHz)
61.223	61.674	61.223	61.974
69.796	70.485	69.240	70.827
79.063	79.162	78.715	79.561
81.428	82.232	80.160	80.174
91.834	92.155	80.780	82.632
94.249	94.430	91.834	95.474
94.875	94.994	96.192	96.209
97.714	98.679	96.936	99.158
110.0	115.194	110.0	119.342
117.811	118.038	–	–
118.594	118.743	120.239	120.262
122.142	122.705	121.170	121.243
123.022	123.348	121.601	123.948

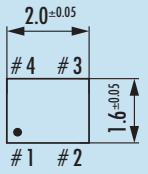
Order Information

Example: O 26.123456 – JSO 75 C1 L C – B – 3.0 – T0 – S – D

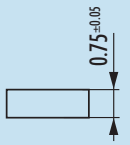


Dimensions

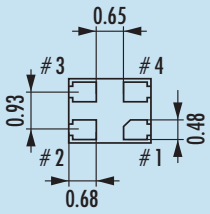
2.0 x 1.6 x 0.75
JSO21



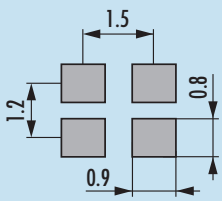
top view



side view

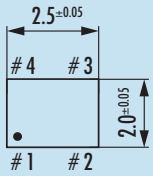


bottom view

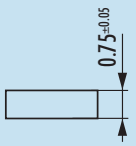


pad layout

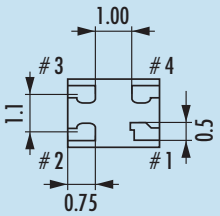
2.5 x 2.0 x 0.75
JSO22



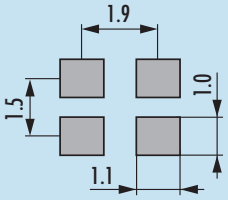
top view



side view

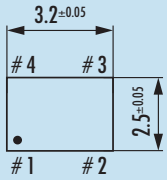


bottom view

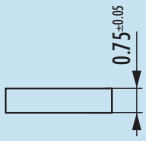


pad layout

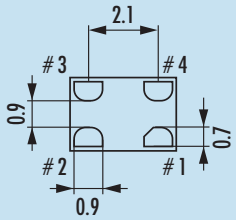
3.2 x 2.5 x 0.75
JSO32



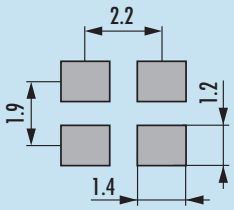
top view



side view

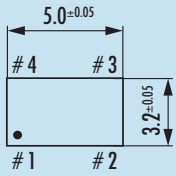


bottom view

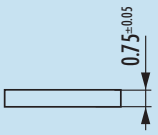


pad layout

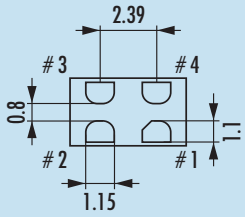
5.0 x 3.2 x 0.75
JSO53



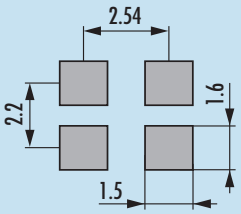
top view



side view

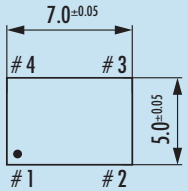


bottom view

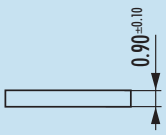


pad layout

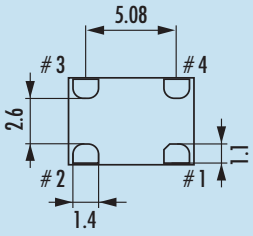
7.0 x 5.0 x 0.90
JSO75



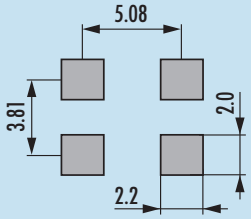
top view



side view



bottom view



pad layout

Pin connection # 1: e/d # 2: GND # 3: output # 4: V_{DC} note: a capacitor of 0.1 µF between V_{DC} and GND is recommended

in mm

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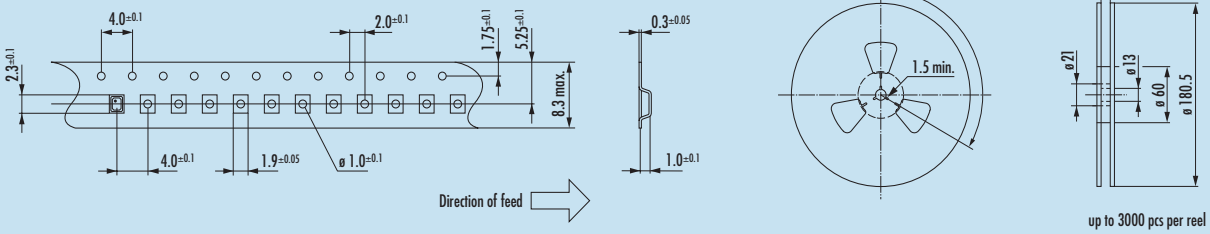
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

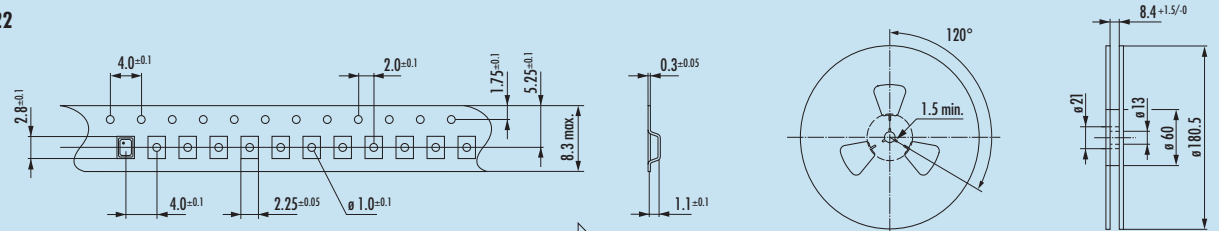
Taping Specification

2.0 x 1.6 x 0.75
JSO21



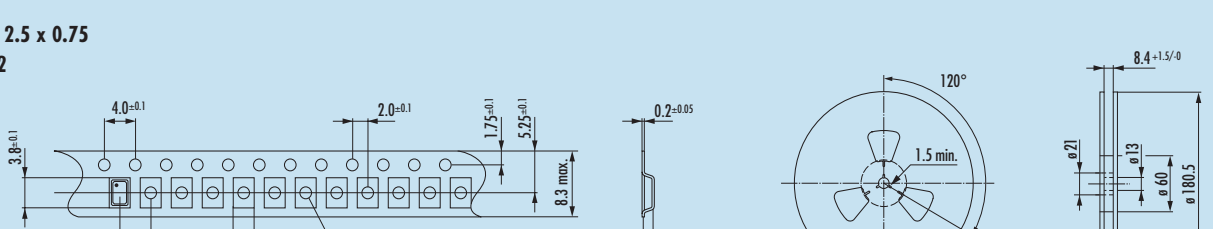
up to 3000 pcs per reel

2.5 x 2.0 x 0.75
JSO22



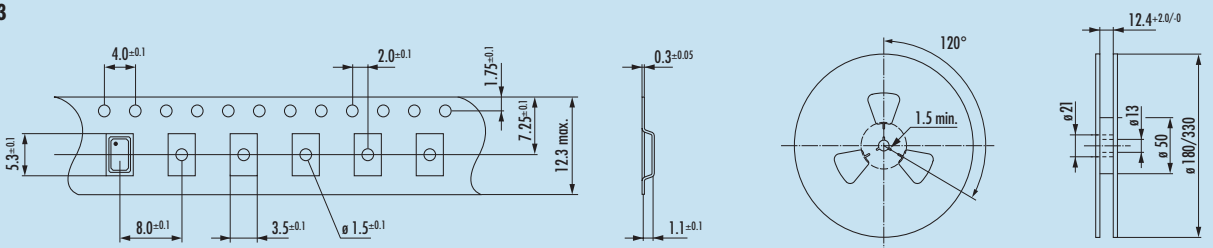
up to 3000 pcs per reel

3.2 x 2.5 x 0.75
JSO32



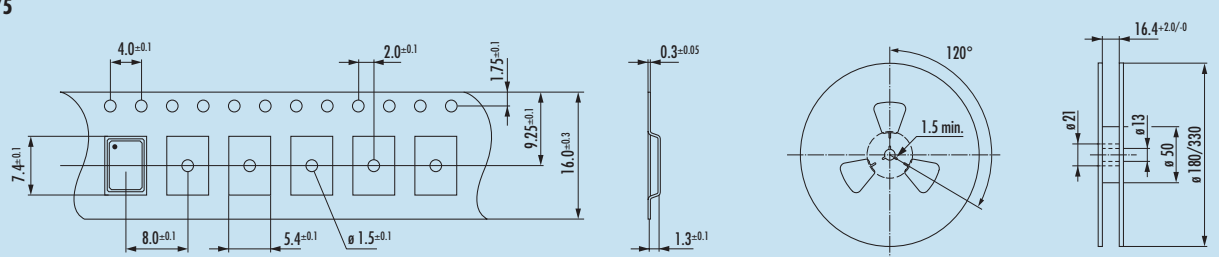
up to 3000 pcs per reel

5.0 x 3.2 x 0.75
JSO53



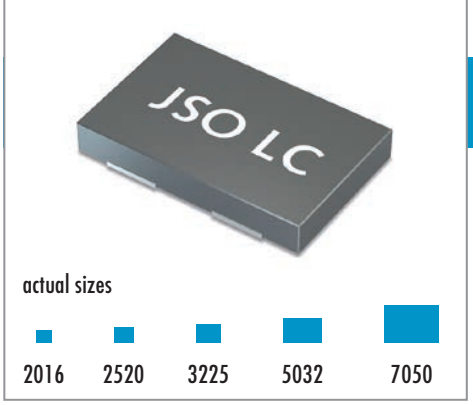
Ø 180: up to 1000 pcs per reel
Ø 330: up to 3000 pcs per reel

7.0 x 5.0 x 0.90
JSO75



Ø 180: up to 1000 pcs per reel
Ø 330: up to 3000 pcs per reel

in mm



MEMS-Oscillator · JSO LC series · 2.8 V

- low power oscillator with HCMOS/LVCMOS output
- compatible to industry standard packages 2016 – 7050
- configured to customer's specification
- extended shock & vibration resistance
- very fast delivery service
- 500 million hours MTBF

General Data

type		JSOxxCxLC 2.8 V
frequency range		1.0 ~ 110.0 MHz (temp. range T0 ~ T8)
		115.0 ~ 137.0 MHz (temp. range T0 ~ T1)
frequency stability over all		±20 ppm ~ ±50 ppm (see table 1)
current consumption		see table 2
supply voltage V_{DC}		2.8 V ± 10%
temperature	operating	T0 = -20°C ~ +70°C
		T1 = -40°C ~ +85°C
		T2 = -40°C ~ +105°C
		T3 = -40°C ~ +125°C
		T8 = -55°C ~ +125°C
	storage	-55°C ~ +150°C
output	logic	HCMOS/LVCMOS
	rise & fall time	2.9 ns max. at 15 pF / 5.7 ns max. at 30 pF (see table 4)
	load max.	30 pF max. recommended (≤ 88.0 MHz)
		15 pF max. recommended (> 88.0 MHz)
		other load capacitances possible, see supplementary document
	current max.	3 mA
	low level max.	0.1 x V_{DC}
	high level min.	0.9 x V_{DC}
standby function (e/d)		stop (S), tristate-only (T) or none (N), see table 3
output enable time max.		5 ms (S) / 150 ns (T)
output disable time max.		150 ns
start-up time max.		5 ms
standby current max.		4 µA (for stop (S), see table 3)
phase jitter 12 kHz ~ 20 MHz		< 3.0 ps RMS
symmetry at 0.5 x V_{DC}		45% ~ 55% (standard)

note: some frequencies can't be configured, see table 5.

Packing Note / Marking

QTY < 250 pcs. → cut tape
QTY 250/500/1K/3K pcs. → tape and reel
Marking: lot code only

RoHS compliant · Pb free · REACH compliant · Conflict mineral free

Table 1: Frequency Stability Code

stability code / temp. code*		B ±50 ppm	G ±30 ppm	C ±25 ppm	D ±20 ppm	
-20°C ~ +70°C	T0	○	○	○	○	
-40°C ~ +85°C	T1	○	○	○	○	
-40°C ~ +105°C	T2	○	○	○	○	
-40°C ~ +125°C	T3	○	○	○	○	
-55°C ~ +125°C	T8	○	○	○		
○ available						

* includes stability at 25°C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption typ. (for max. add 30%)

current at load	5 pF	15 pF	30 pF	60 pF	unit
output disabled	3.8	3.8	3.8	3.8	mA
1.0 ~ 19.9 MHz	4.1	4.3	5.2	6.9	mA
20.0 ~ 29.9 MHz	4.4	5.2	6.7	9.8	mA
30.0 ~ 49.9 MHz	4.8	6.2	8.3	12.7	mA
50.0 ~ 79.9 MHz	6.1	8.1	11.7		mA
80.0 ~ 110.0 MHz	7.0	10.0			mA
115.0 ~ 137.0 MHz	(9.0)	(14.0)			mA

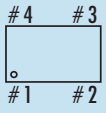
note: current at default edge control setting "D", also refer to table 4.

Table 3: Configurable Standby Function Options (e/d)

pin #1 (e/d control)	option	functionality
low "0" ($V_{IL} \leq 0.2\ V_{DC}$)	S = Stop	output weakly pulled down, oscillator in sleep mode
	T = TriState	output high impedance, oscillator operates
	N = None	oscillator output active
high "1" ($V_{IH} \geq 0.8\ V_{DC}$)	all	oscillator output active
open*	all	oscillator output active

* a pull up resistor is recommended in EMI stressed circuit environments.

Pin Connection



#4: V_{DC} · #3: output
#1: e/d · #2: GND

note: a capacitor of 0.1 µF between V_{DC} and GND is recommended.

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full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Table 4: Max. Rise & Fall Time vs. Load Capacitance

C_L	5 pF	15 pF	30 pF	5 pF	15 pF	30 pF
edge control	at 10% ~ 90% of V_{DC} (ns)			at 20% ~ 80% of V_{DC} (ns)		
0	1.2	2.2	4.6	0.8	1.6	3.0
1	1.3	2.4	5.2	0.9	1.8	3.5
D = 2*	1.5	2.9	5.7	1.0	2.0	3.8
3	1.6	3.6	6.4	1.1	2.4	4.4
4	3.0	6.2	10.4	2.0	4.2	7.4
5	4.0	7.6	13.6	2.8	5.4	9.4
6	5.8	11.6	21.0	4.0	8.0	14.2
7	12.0	23.0	42.0	8.2	15.2	28.0

* default edge control setting "D" at V_{DC} = 2.8 V, please also refer to the supplementary information on our homepage for typical values and more details.

Table 5: Non-Configurable Frequencies

operating temperature option		operating temperature option	
T2 – (-40°C ~ +105°C) T3 – (-40°C ~ +125°C)		T8 – (-55°C ~ +125°C)	
from (MHz)	to (MHz)	from (MHz)	to (MHz)
61.223	61.674	61.223	61.974
69.796	70.485	69.240	70.827
79.063	79.162	78.715	79.561
81.428	82.232	80.160	80.174
91.834	92.155	80.780	82.632
94.249	94.430	91.834	95.474
94.875	94.994	96.192	96.209
97.714	98.679	96.936	99.158
110.0	115.194	110.0	119.342
117.811	118.038	–	–
118.594	118.743	120.239	120.262
122.142	122.705	121.170	121.243
123.022	123.348	121.601	123.948

Order Information

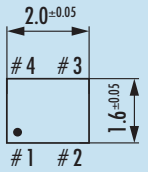
Example: O 26.123456 – JSO 75 C1 L C – B – 2.8 – T0 – S – D

- O = Oscillator
- **frequency (8 digits),** see also table 5
  1.0 ~ 110.0 MHz
  115.0 ~ 137.0 MHz
- JSO = Jauch Silicon Oscillator
- **package**
  75 = 7050
  53 = 5032
  32 = 3225
  22 = 2520
  21 = 2016
- **frequency range**
  C1 = 1.0 ~ 110.0 MHz
  C2 = 115.0 ~ 137.0 MHz
- **function/feature**
  L = lowpower
- **output I/F**
  C = (H)CMOS
- **edge control**
  D = default
  0 – 7, see table 4
- **standby function options**
  S = Stop
  T = TriState
  N = None
- **temperature range**
  T0 = -20°C ~ +70°C
  T1 = -40°C ~ +85°C
  T2 = -40°C ~ +105°C
  T3 = -40°C ~ +125°C
  T8 = -55°C ~ +125°C
- **supply voltage**
  3.3 = 3.3 V
  3.0 = 3.0 V
  2.8 = 2.8 V
  2.5 = 2.5 V
  1.8 = 1.8 V
  2V3 = 2.5 V ~ 3.3 V
- **frequency stability overall**
  B = ± 50 ppm
  G = ± 30 ppm
  C = ± 25 ppm
  D = ± 20 ppm

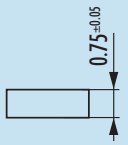
MEMS-Oscillator · JSO LC series · 2.8 V

Dimensions

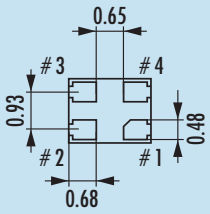
2.0 x 1.6 x 0.75
JSO21



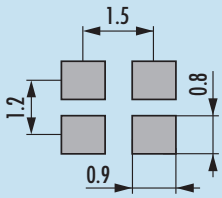
top view



side view

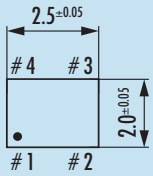


bottom view

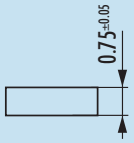


pad layout

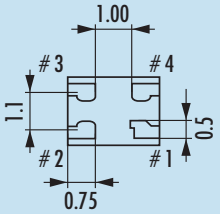
2.5 x 2.0 x 0.75
JSO22



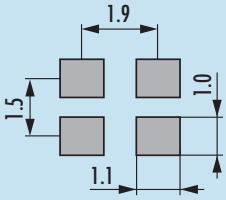
top view



side view

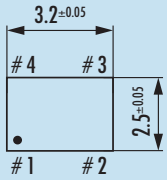


bottom view

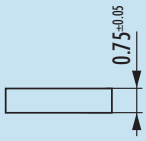


pad layout

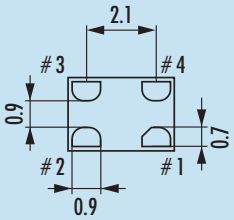
3.2 x 2.5 x 0.75
JSO32



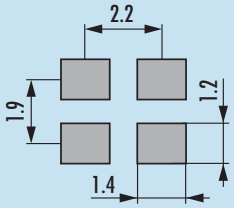
top view



side view

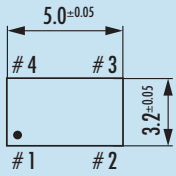


bottom view

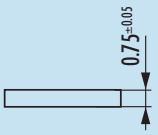


pad layout

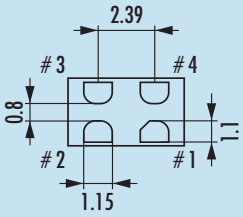
5.0 x 3.2 x 0.75
JSO53



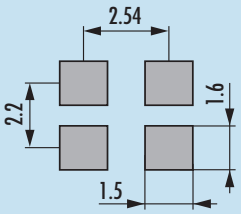
top view



side view

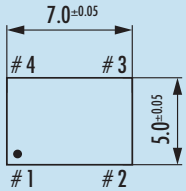


bottom view

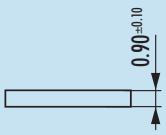


pad layout

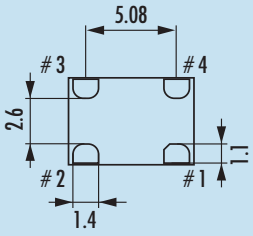
7.0 x 5.0 x 0.90
JSO75



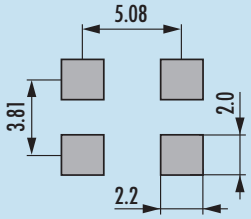
top view



side view



bottom view



pad layout

Pin connection	# 1: e/d	# 2: GND	# 3: output	# 4: V_{DC}	note: a capacitor of 0.1 µF between V_{DC} and GND is recommended

in mm

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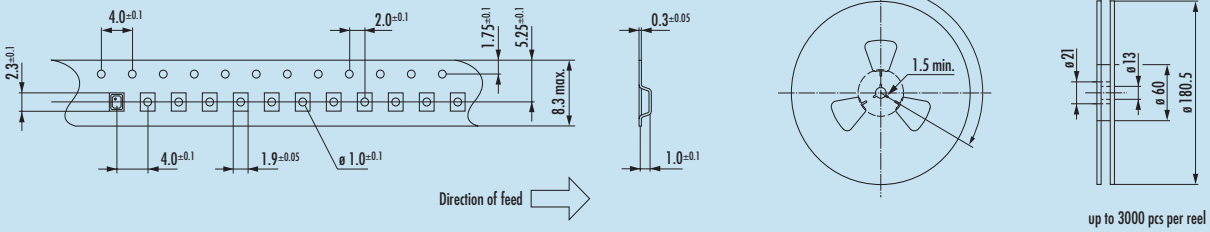
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

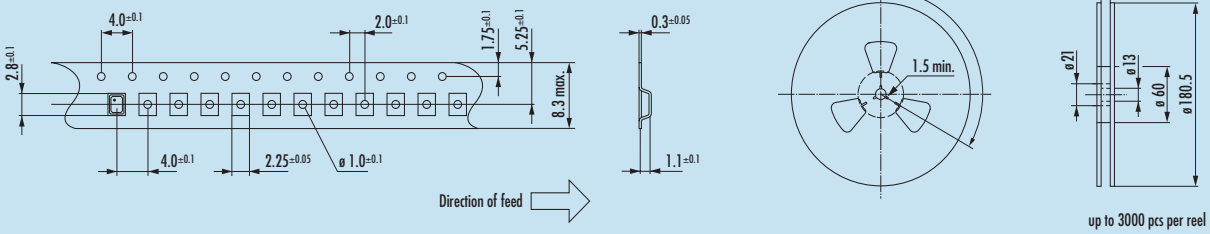
Taping Specification

2.0 x 1.6 x 0.75
JSO21



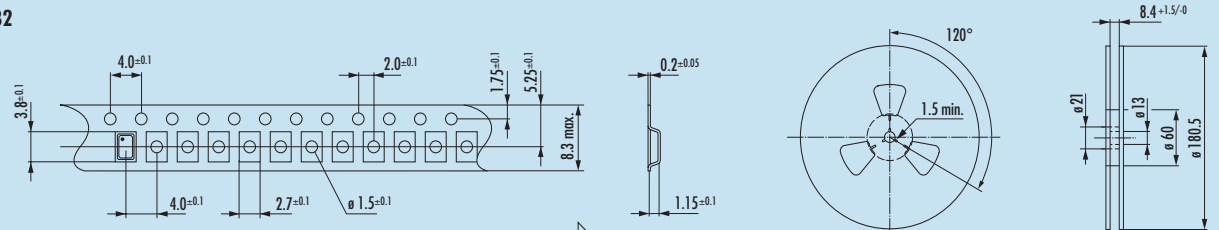
up to 3000 pcs per reel

2.5 x 2.0 x 0.75
JSO22



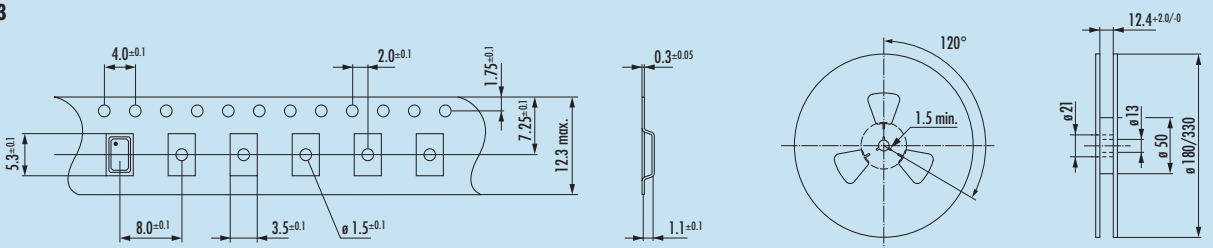
up to 3000 pcs per reel

3.2 x 2.5 x 0.75
JSO32



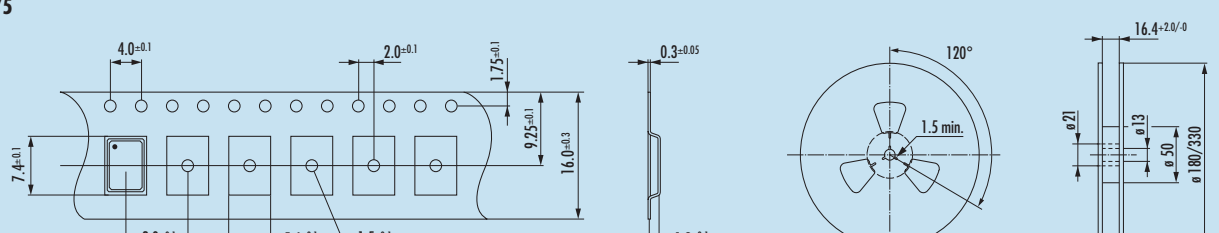
up to 3000 pcs per reel

5.0 x 3.2 x 0.75
JSO53



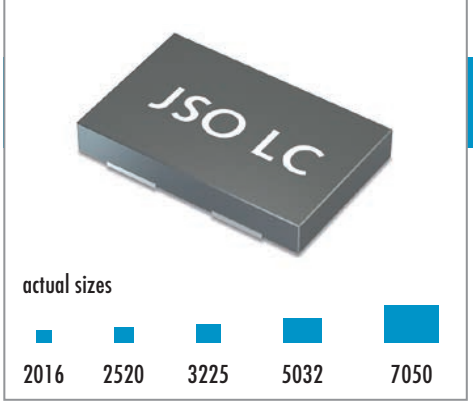
Ø 180: up to 1000 pcs per reel
Ø 330: up to 3000 pcs per reel

7.0 x 5.0 x 0.90
JSO75



Ø 180: up to 1000 pcs per reel
Ø 330: up to 3000 pcs per reel

in mm



MEMS-Oscillator · JSO LC series · 2.5 V

- low power oscillator with HCMOS/LVCMOS output
- compatible to industry standard packages 2016 – 7050
- configured to customer's specification
- extended shock & vibration resistance
- very fast delivery service
- 500 million hours MTBF

General Data

type		JSOxxCxLC 2.5 V
frequency range		1.0 ~ 110.0 MHz (temp. range T0 ~ T8)
		115.0 ~ 137.0 MHz (temp. range T0 ~ T1)
frequency stability over all		±20 ppm ~ ±50 ppm (see table 1)
current consumption		see table 2
supply voltage V_{DC}		2.5 V ± 10%
temperature	operating	T0 = -20°C ~ +70°C
		T1 = -40°C ~ +85°C
		T2 = -40°C ~ +105°C
		T3 = -40°C ~ +125°C
		T8 = -55°C ~ +125°C
	storage	-55°C ~ +150°C
output	logic	HCMOS/LVCMOS
	rise & fall time	3.0 ns max. at 15 pF / 6.0 ns max. at 30 pF (see table 4)
	load max.	30 pF max. recommended (≤ 83.0 MHz)
		15 pF max. recommended (> 83.0 MHz)
		other load capacitances possible, see supplementary document
	current max.	3 mA
	low level max.	0.1 x V_{DC}
	high level min.	0.9 x V_{DC}
standby function (e/d)		stop (S), tristate-only (T) or none (N), see table 3
output enable time max.		5 ms (S) / 150 ns (T)
output disable time max.		150 ns
start-up time max.		5 ms
standby current max.		3 µA (for stop (S), see table 3)
phase jitter 12 kHz ~ 20 MHz		< 3.0 ps RMS
symmetry at 0.5 x V_{DC}		45% ~ 55% (standard)

note: some frequencies can't be configured, see table 5.

Packing Note / Marking

QTY < 250 pcs. → cut tape
QTY 250/500/1K/3K pcs. → tape and reel
Marking: lot code only

RoHS compliant · Pb free · REACH compliant · Conflict mineral free

Table 1: Frequency Stability Code

stability code / temp. code*		B ±50 ppm	G ±30 ppm	C ±25 ppm	D ±20 ppm	
-20°C ~ +70°C	T0	○	○	○	○	
-40°C ~ +85°C	T1	○	○	○	○	
-40°C ~ +105°C	T2	○	○	○	○	
-40°C ~ +125°C	T3	○	○	○	○	
-55°C ~ +125°C	T8	○	○	○		
○ available						

* includes stability at 25°C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption typ. (for max. add 30%)

current at load	5 pF	15 pF	30 pF	60 pF	unit
output disabled	3.7	3.7	3.7	3.7	mA
1.0 ~ 19.9 MHz	3.8	4.2	5.0	6.4	mA
20.0 ~ 29.9 MHz	4.3	5.0	6.4	9.0	mA
30.0 ~ 49.9 MHz	4.7	5.8	7.8	11.6	mA
50.0 ~ 79.9 MHz	5.6	7.6	10.7		mA
80.0 ~ 110.0 MHz	6.6	9.2			mA
115.0 ~ 137.0 MHz	(8.5)	(13.0)			mA

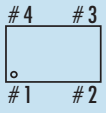
note: current at default edge control setting "D", also refer to table 4.

Table 3: Configurable Standby Function Options (e/d)

pin #1 (e/d control)	option	functionality
low "0" ($V_{IL} \leq 0.2\ V_{DC}$)	S = Stop	output weakly pulled down, oscillator in sleep mode
	T = TriState	output high impedance, oscillator operates
	N = None	oscillator output active
high "1" ($V_{IH} \geq 0.8\ V_{DC}$)	all	oscillator output active
open*	all	oscillator output active

* a pull up resistor is recommended in EMI stressed circuit environments.

Pin Connection



#4: V_{DC} · #3: output
#1: e/d · #2: GND

note: a capacitor of 0.1 µF between V_{DC} and GND is recommended.

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full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Table 4: Max. Rise & Fall Time vs. Load Capacitance

C_L	5 pF	15 pF	30 pF	5 pF	15 pF	30 pF
edge control	at 10% ~ 90% of V_{DC} (ns)			at 20% ~ 80% of V_{DC} (ns)		
0	1.2	2.4	5.2	0.8	1.7	3.4
1	1.4	2.6	5.8	0.9	1.9	3.8
D = 2*	1.6	3.0	6.0	1.1	2.1	4.0
3	1.8	4.0	6.6	1.2	2.6	4.6
4	3.2	6.4	11.0	2.2	4.4	7.8
5	4.4	8.4	14.6	2.9	5.8	10.4
6	6.6	12.4	23.0	4.4	8.6	15.2
7	12.8	25.0	46.0	8.6	16.6	30.0

* default edge control setting "D" at V_{DC} = 2.5 V, please also refer to the supplementary information on our homepage for typical values and more details.

Table 5: Non-Configurable Frequencies

operating temperature option		operating temperature option	
T2 – (-40°C ~ +105°C) T3 – (-40°C ~ +125°C)		T8 – (-55°C ~ +125°C)	
from (MHz)	to (MHz)	from (MHz)	to (MHz)
61.223	61.674	61.223	61.974
69.796	70.485	69.240	70.827
79.063	79.162	78.715	79.561
81.428	82.232	80.160	80.174
91.834	92.155	80.780	82.632
94.249	94.430	91.834	95.474
94.875	94.994	96.192	96.209
97.714	98.679	96.936	99.158
110.0	115.194	110.0	119.342
117.811	118.038	–	–
118.594	118.743	120.239	120.262
122.142	122.705	121.170	121.243
123.022	123.348	121.601	123.948

Order Information

Example: O 26.123456 – JSO 75 C1 L C – B – 2.5 – T0 – S – D

O = Oscillator

frequency (8 digits), see also table 5
1.0 ~ 110.0 MHz
115.0 ~ 137.0 MHz

JSO = Jauch Silicon Oscillator

package
75 = 7050
53 = 5032
32 = 3225
22 = 2520
21 = 2016

frequency range
C1 = 1.0 ~ 110.0 MHz
C2 = 115.0 ~ 137.0 MHz

function/feature
L = lowpower

output I/F
C = (H)CMOS

frequency stability overall
B = ± 50 ppm
C = ± 25 ppm
G = ± 30 ppm
D = ± 20 ppm

supply voltage
3.3 = 3.3 V
3.0 = 3.0 V
2.8 = 2.8 V
2.5 = 2.5 V
1.8 = 1.8 V
2V3 = 2.5 V ~ 3.3 V

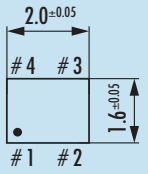
temperature range
T0 = -20°C ~ +70°C
T1 = -40°C ~ +85°C
T2 = -40°C ~ +105°C
T3 = -40°C ~ +125°C
T8 = -55°C ~ +125°C

standby function options
S = Stop
T = TriState
N = None

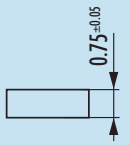
edge control
D = default
0 – 7, see table 4

Dimensions

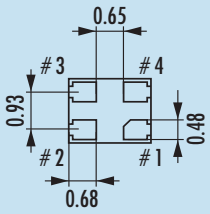
2.0 x 1.6 x 0.75
JSO21



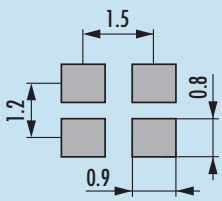
top view



side view

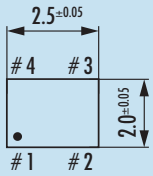


bottom view

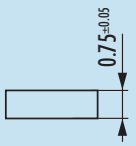


pad layout

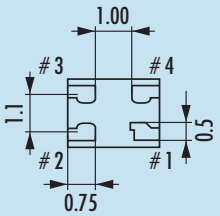
2.5 x 2.0 x 0.75
JSO22



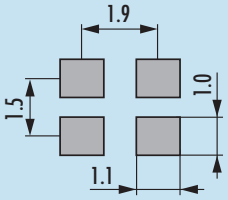
top view



side view

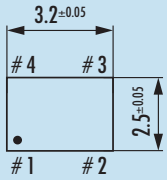


bottom view

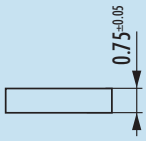


pad layout

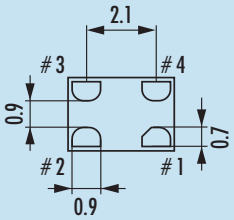
3.2 x 2.5 x 0.75
JSO32



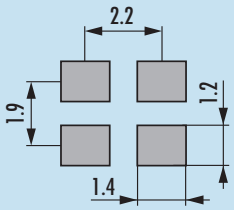
top view



side view

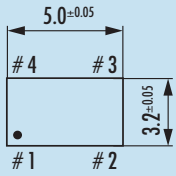


bottom view

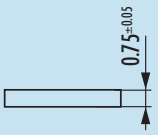


pad layout

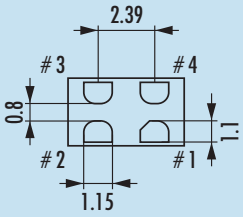
5.0 x 3.2 x 0.75
JSO53



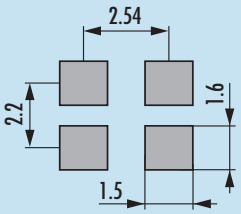
top view



side view

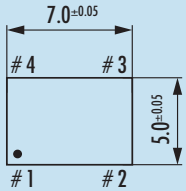


bottom view

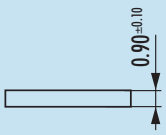


pad layout

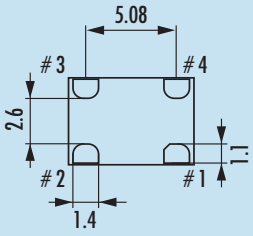
7.0 x 5.0 x 0.90
JSO75



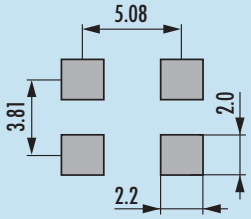
top view



side view



bottom view



pad layout

Pin connection # 1: e/d # 2: GND # 3: output # 4: V_{DC} note: a capacitor of 0.1 µF between V_{DC} and GND is recommended

in mm

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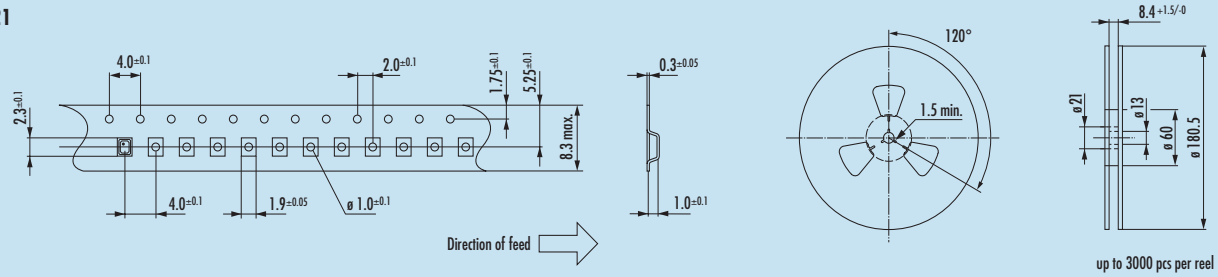
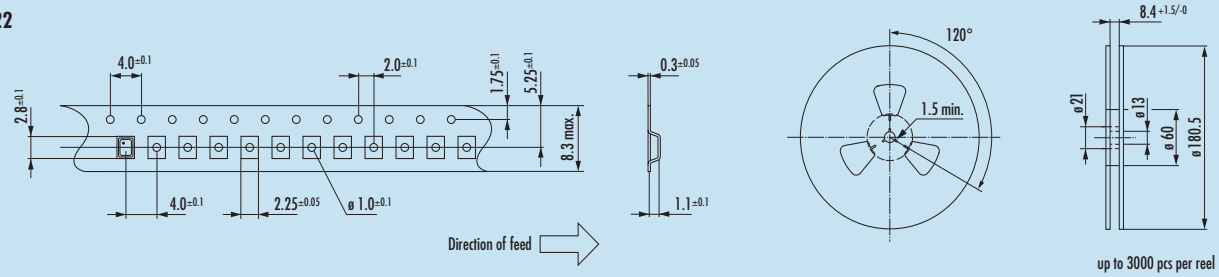
Taping Specification

2.0 x 1.6 x 0.75
JSO21



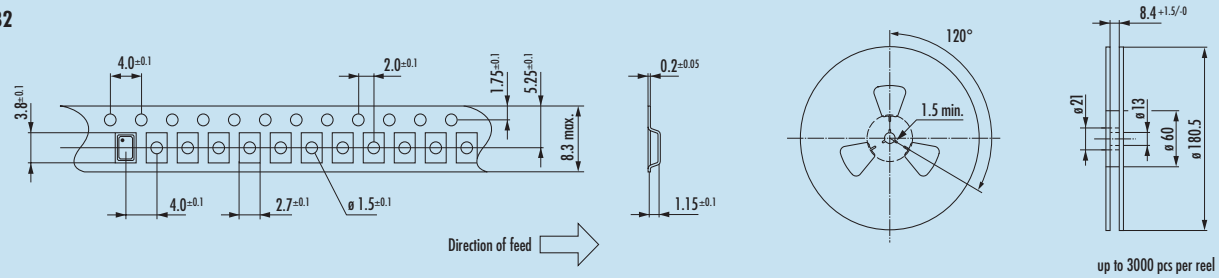
up to 3000 pcs per reel

2.5 x 2.0 x 0.75
JSO22



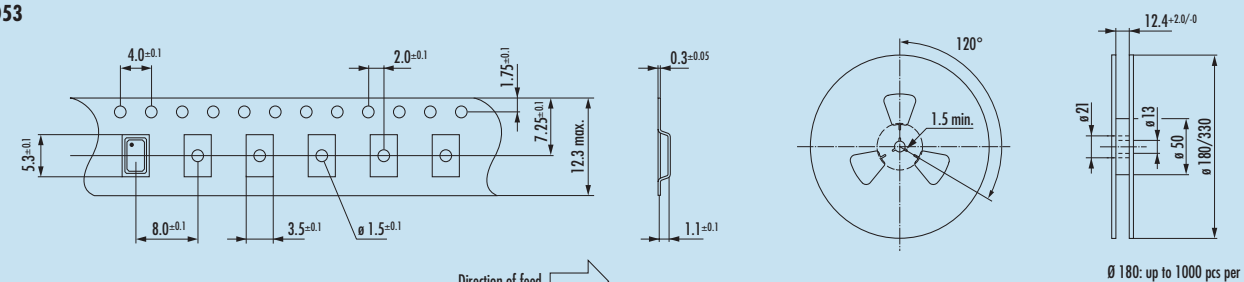
up to 3000 pcs per reel

3.2 x 2.5 x 0.75
JSO32



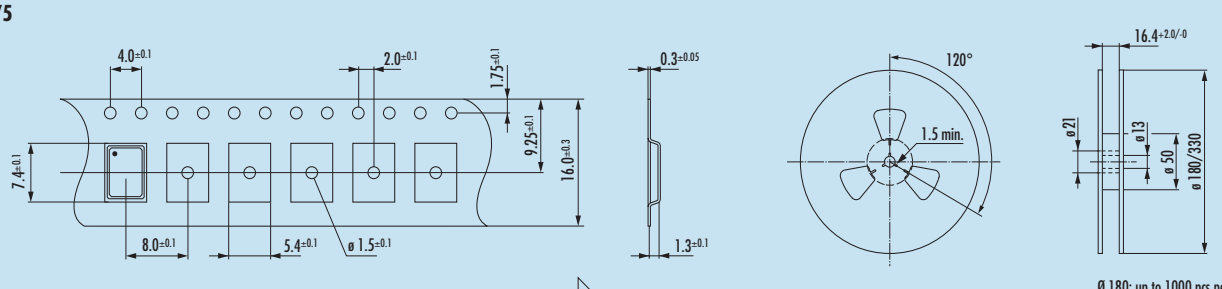
up to 3000 pcs per reel

5.0 x 3.2 x 0.75
JSO53



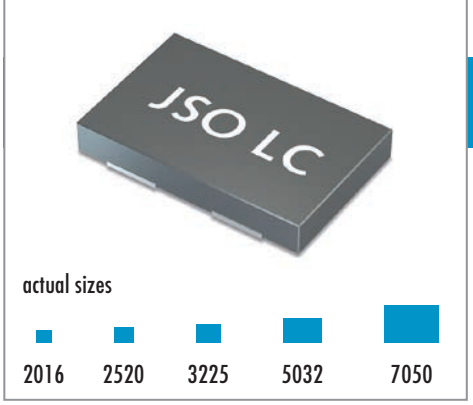
Ø 180: up to 1000 pcs per reel
Ø 330: up to 3000 pcs per reel

7.0 x 5.0 x 0.90
JSO75



Ø 180: up to 1000 pcs per reel
Ø 330: up to 3000 pcs per reel

in mm



MEMS-Oscillator · JSO LC series · 1.8 V

- low power oscillator with HCMOS/LVCMOS output
- compatible to industry standard packages 2016 – 7050
- configured to customer's specification
- extended shock & vibration resistance
- very fast delivery service
- 500 million hours MTBF

General Data

type		JSOxxCxLC 1.8 V
frequency range		1.0 ~ 110.0 MHz (temp. range T0 ~ T8)
		115.0 ~ 137.0 MHz (temp. range T0 ~ T1)
frequency stability over all		±20 ppm ~ ±50 ppm (see table 1)
current consumption		see table 2
supply voltage V_{DC}		1.8 V ± 10%
temperature	operating	T0 = -20°C ~ +70°C
		T1 = -40°C ~ +85°C
		T2 = -40°C ~ +105°C
		T3 = -40°C ~ +125°C
		T8 = -55°C ~ +125°C
	storage	-55°C ~ +150°C
output	logic	HCMOS/LVCMOS
	rise & fall time	4.2 ns max. at 15 pF / 6.8 ns max. at 30 pF (see table 4)
	load max.	30 pF max. recommended (≤ 74.0 MHz)
		15 pF max. recommended (> 74.0 MHz)
		other load capacitances possible, see supplementary document
	current max.	2 mA
	low level max.	0.1 x V_{DC}
	high level min.	0.9 x V_{DC}
standby function (e/d)		stop (S), tristate-only (T) or none (N), see table 3
output enable time max.		5 ms (S) / 150 ns (T)
output disable time max.		150 ns
start-up time max.		5 ms
standby current max.		2 µA (for stop (S), see table 3)
phase jitter 12 kHz ~ 20 MHz		< 3.0 ps RMS
symmetry at 0.5 x V_{DC}		45% ~ 55% (standard)

note: some frequencies can't be configured, see table 5.

Packing Note / Marking

QTY < 250 pcs. → cut tape
QTY 250/500/1K/3K pcs. → tape and reel
Marking: lot code only

RoHS compliant · Pb free · REACH compliant · Conflict mineral free

Table 1: Frequency Stability Code

stability code / temp. code*		B ±50 ppm	G ±30 ppm	C ±25 ppm	D ±20 ppm	
-20°C ~ +70°C	T0	○	○	○	○	
-40°C ~ +85°C	T1	○	○	○	○	
-40°C ~ +105°C	T2	○	○	○	○	
-40°C ~ +125°C	T3	○	○	○	○	
-55°C ~ +125°C	T8	○	○	○		
○ available						

* includes stability at 25°C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption typ. (for max. add 30%)

current at load	5 pF	15 pF	30 pF	60 pF	unit
output disabled	3.5	3.5	3.5	3.5	mA
1.0 ~ 19.9 MHz	3.6	3.9	4.4	5.5	mA
20.0 ~ 29.9 MHz	4.2	4.5	5.4	6.5	mA
30.0 ~ 49.9 MHz	4.5	5.1	6.5		mA
50.0 ~ 79.9 MHz	4.9	6.3			mA
80.0 ~ 110.0 MHz	5.7	7.6			mA
115.0 ~ 137.0 MHz	(8.0)	(13.0)			mA

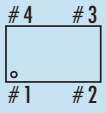
note: current at default edge control setting "D", also refer to table 4.

Table 3: Configurable Standby Function Options (e/d)

pin #1 (e/d control)	option	functionality
low "0" ($V_{IL} \leq 0.2\ V_{DC}$)	S = Stop	output weakly pulled down, oscillator in sleep mode
	T = TriState	output high impedance, oscillator operates
	N = None	oscillator output active
high "1" ($V_{IH} \geq 0.8\ V_{DC}$)	all	oscillator output active
open*	all	oscillator output active

* a pull up resistor is recommended in EMI stressed circuit environments.

Pin Connection



#4: V_{DC} · #3: output
#1: e/d · #2: GND

note: a capacitor of 0.1 µF between V_{DC} and GND is recommended.

Jauch MEMS – Uses SiTime's MEMS First™ technology

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full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Table 4: Max. Rise & Fall Time vs. Load Capacitance

C_L	5 pF	15 pF	30 pF	5 pF	15 pF	30 pF
edge control	at 10% ~ 90% of V_{DC} (ns)			at 20% ~ 80% of V_{DC} (ns)		
D = 0*	1.8	4.2	6.8	1.2	2.8	4.8
1	2.2	5.0	7.6	1.4	3.4	5.2
2	2.4	5.6	8.8	1.6	3.8	6.0
3	2.8	6.0	10.0	1.8	4.2	6.8
4	4.8	9.8	17.0	3.4	6.6	11.6
5	6.6	12.6	21.0	4.4	8.6	15.0
6	10.0	18.0	32.0	6.6	12.0	22.0
7	18.0	34.0	62.0	12.4	24.0	44.0

* default edge control setting "D" at V_{DC} = 1.8 V, please also refer to the supplementary information on our homepage for typical values and more details.

Table 5: Non-Configurable Frequencies

operating temperature option		operating temperature option	
T2 – (-40°C ~ +105°C) T3 – (-40°C ~ +125°C)		T8 – (-55°C ~ +125°C)	
from (MHz)	to (MHz)	from (MHz)	to (MHz)
61.223	61.674	61.223	61.974
69.796	70.485	69.240	70.827
79.063	79.162	78.715	79.561
81.428	82.232	80.160	80.174
91.834	92.155	80.780	82.632
94.249	94.430	91.834	95.474
94.875	94.994	96.192	96.209
97.714	98.679	96.936	99.158
110.0	115.194	110.0	119.342
117.811	118.038	–	–
118.594	118.743	120.239	120.262
122.142	122.705	121.170	121.243
123.022	123.348	121.601	123.948

Order Information

Example: O 26.123456 – JSO 75 C1 L C – B – 1.8 – T0 – S – D

O = Oscillator

frequency (8 digits), see also table 5
1.0 ~ 110.0 MHz
115.0 ~ 137.0 MHz

JSO = Jauch Silicon Oscillator

package
75 = 7050
53 = 5032
32 = 3225
22 = 2520
21 = 2016

frequency range
C1 = 1.0 ~ 110.0 MHz
C2 = 115.0 ~ 137.0 MHz

function/feature
L = lowpower

output I/F
C = (H)CMOS

edge control
D = default
0 – 7, see table 4

standby function options
S = Stop
T = TriState
N = None

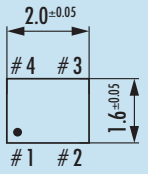
temperature range
T0 = -20°C ~ +70°C
T1 = -40°C ~ +85°C
T2 = -40°C ~ +105°C
T3 = -40°C ~ +125°C
T8 = -55°C ~ +125°C

supply voltage
3.3 = 3.3 V
3.0 = 3.0 V
2.8 = 2.8 V
2.5 = 2.5 V
1.8 = 1.8 V
2V3 = 2.5 V ~ 3.3 V

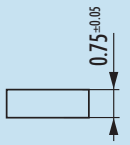
frequency stability overall
B = ± 50 ppm
G = ± 30 ppm
C = ± 25 ppm
D = ± 20 ppm

Dimensions

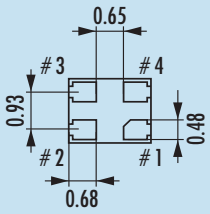
2.0 x 1.6 x 0.75
JSO21



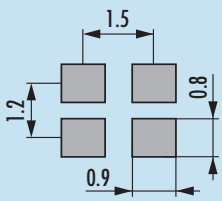
top view



side view

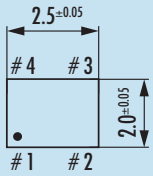


bottom view

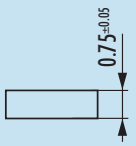


pad layout

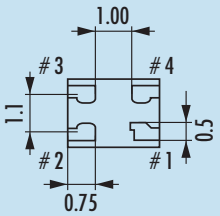
2.5 x 2.0 x 0.75
JSO22



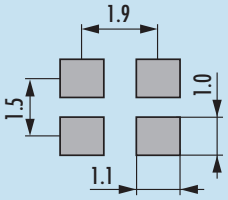
top view



side view

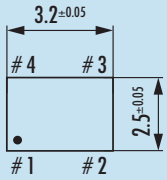


bottom view

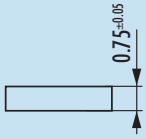


pad layout

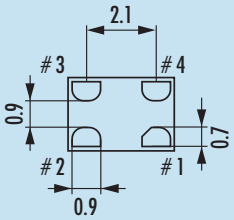
3.2 x 2.5 x 0.75
JSO32



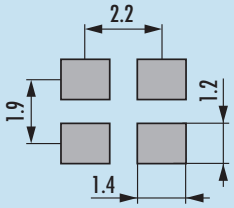
top view



side view

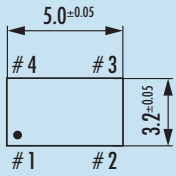


bottom view

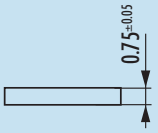


pad layout

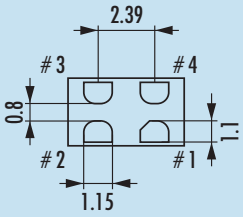
5.0 x 3.2 x 0.75
JSO53



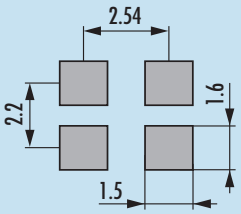
top view



side view

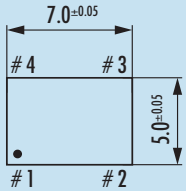


bottom view

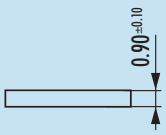


pad layout

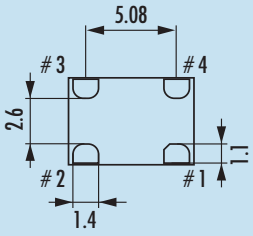
7.0 x 5.0 x 0.90
JSO75



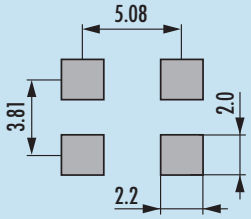
top view



side view



bottom view



pad layout

Pin connection # 1: e/d # 2: GND # 3: output # 4: V_{DC} note: a capacitor of 0.1 µF between V_{DC} and GND is recommended

in mm

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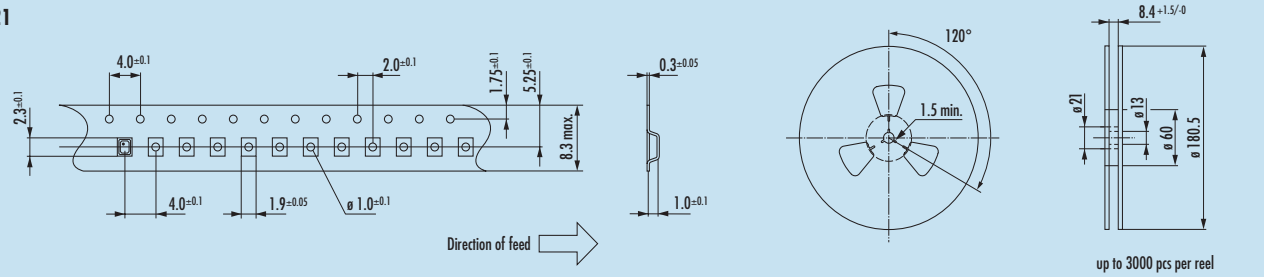
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

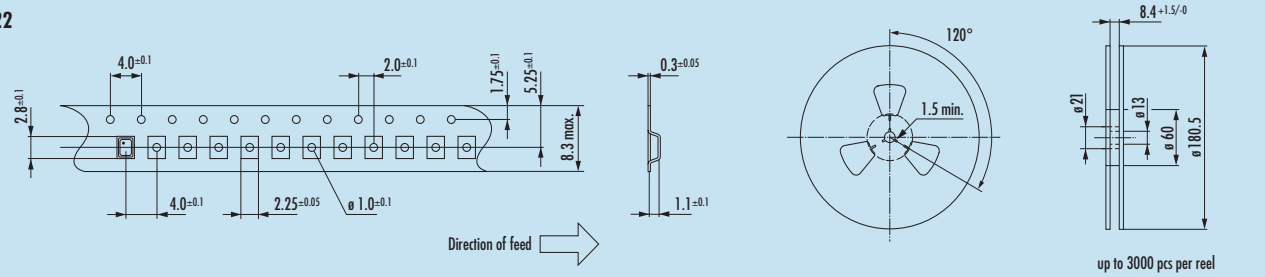
Taping Specification

2.0 x 1.6 x 0.75
JSO21



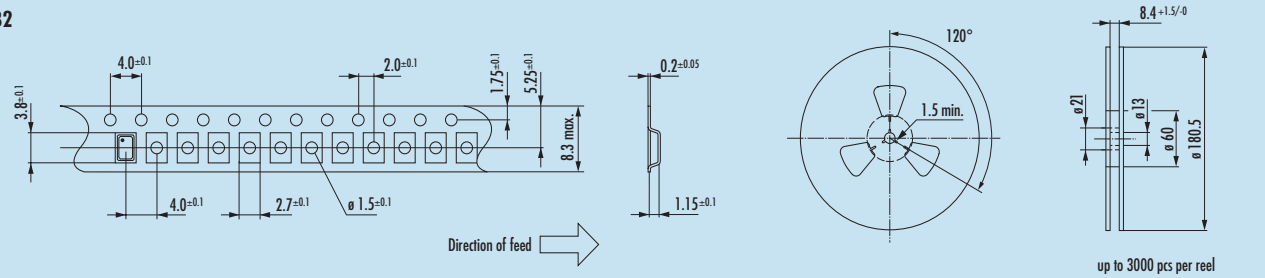
up to 3000 pcs per reel

2.5 x 2.0 x 0.75
JSO22



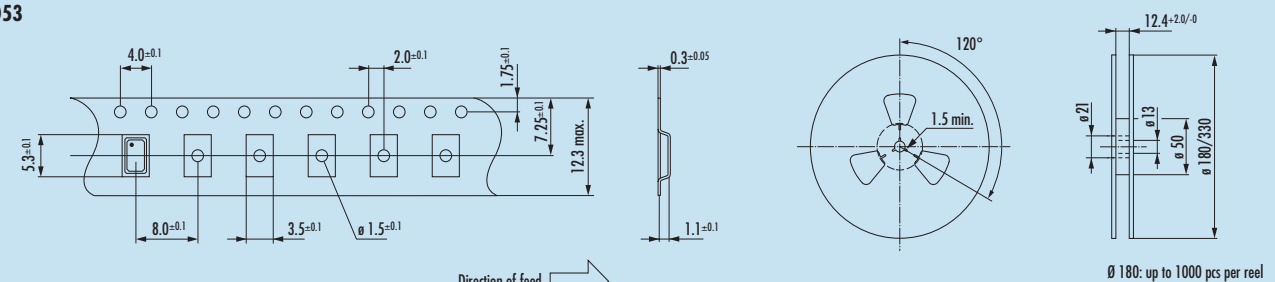
up to 3000 pcs per reel

3.2 x 2.5 x 0.75
JSO32



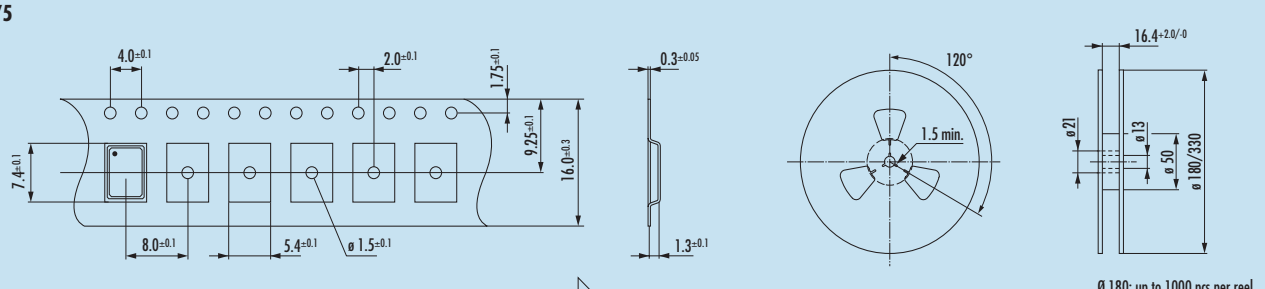
up to 3000 pcs per reel

5.0 x 3.2 x 0.75
JSO53



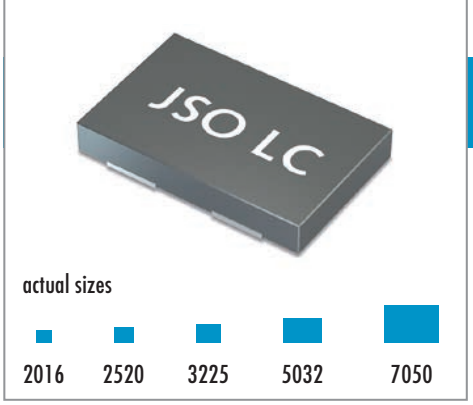
Ø 180: up to 1000 pcs per reel
Ø 330: up to 3000 pcs per reel

7.0 x 5.0 x 0.90
JSO75



Ø 180: up to 1000 pcs per reel
Ø 330: up to 3000 pcs per reel

in mm



MEMS-Oscillator · JSO LC series · 2.5 V ~ 3.3 V

- low power oscillator with HCMOS/LVCMOS output
- compatible to industry standard packages 2016 – 7050
- configured to customer's specification
- extended shock & vibration resistance
- very fast delivery service
- 500 million hours MTBF

General Data

type		JSOxxCxLC 2.5 V ~ 3.3 V
frequency range		1.0 ~ 110.0 MHz (temp. range T0 ~ T8)
		115.0 ~ 137.0 MHz (temp. range T0 ~ T1)
frequency stability over all		±20 ppm ~ ±50 ppm (see table 1)
current consumption		see table 2
supply voltage V_{DC}		2.5 V – 10% ~ 3.3 V + 10%
temperature	operating	T0 = -20°C ~ +70°C
		T1 = -40°C ~ +85°C
		T2 = -40°C ~ +105°C
		T3 = -40°C ~ +125°C
		T8 = -55°C ~ +125°C
	storage	-55°C ~ +150°C
output	logic	HCMOS/LVCMOS
	rise & fall time	4.0 ns max. at 15 pF / 6.6 ns max. at 30 pF (see table 4)
	load max.	30 pF max. recommended (≤ 76.0 MHz)
		15 pF max. recommended (> 76.0 MHz)
		other load capacitances possible, see supplementary document
	current max.	3 mA
	low level max.	0.1 x V_{DC}
	high level min.	0.9 x V_{DC}
standby function (e/d)		stop (S), tristate-only (T) or none (N), see table 3
output enable time max.		5 ms (S) / 150 ns (T)
output disable time max.		150 ns
start-up time max.		5 ms
standby current max.		3 µA (for stop (S), see table 3)
phase jitter 12 kHz ~ 20 MHz		< 3.0 ps RMS
symmetry at 0.5 x V_{DC}		45% ~ 55% (standard)

note: some frequencies can't be configured, see table 5.

Packing Note / Marking

QTY < 250 pcs. → cut tape
QTY 250/500/1K/3K pcs. → tape and reel
Marking: lot code only

RoHS compliant | Pb free | REACH compliant | Conflict mineral free

Table 1: Frequency Stability Code

stability code / temp. code*		B ±50 ppm	G ±30 ppm	C ±25 ppm	D ±20 ppm	
-20°C ~ +70°C	T0	○	○	○	○	
-40°C ~ +85°C	T1	○	○	○	○	
-40°C ~ +105°C	T2	○	○	○	○	
-40°C ~ +125°C	T3	○	○	○	○	
-55°C ~ +125°C	T8	○	○	○		
○ available						

* includes stability at 25°C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption typ. (for max. add 30%)

current at load	5 pF	15 pF	30 pF	60 pF	unit
output disabled	4.0	4.0	4.0	4.0	mA
1.0 ~ 19.9 MHz	4.0	4.6	5.6	7.6	mA
20.0 ~ 29.9 MHz	4.6	5.7	7.4	10.9	mA
30.0 ~ 49.9 MHz	5.1	6.7	9.2	14.3	mA
50.0 ~ 79.9 MHz	6.4	9.0	13.2		mA
80.0 ~ 110.0 MHz	7.7	11.2	17.0		mA
115.0 ~ 137.0 MHz	(10.0)	(14.5)			mA

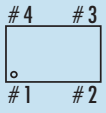
note: current at default edge control setting "D", also refer to table 4.

Table 3: Configurable Standby Function Options (e/d)

pin #1 (e/d control)	option	functionality
low "0" ($V_{IL} \leq 0.2\ V_{DC}$)	S = Stop	output weakly pulled down, oscillator in sleep mode
	T = TriState	output high impedance, oscillator operates
	N = None	oscillator output active
high "1" ($V_{IH} \geq 0.8\ V_{DC}$)	all	oscillator output active
open*	all	oscillator output active

* a pull up resistor is recommended in EMI stressed circuit environments.

Pin Connection



#4: V_{DC} #3: output
#1: e/d #2: GND

note: a capacitor of 0.1 µF between V_{DC} and GND is recommended.

Jauch MEMS – Uses SiTime's MEMS First™ technology

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full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Table 4: Max. Rise & Fall Time vs. Load Capacitance

C_L	5 pF	15 pF	30 pF	5 pF	15 pF	30 pF
edge control	at 10% ~ 90% of V_{DC} (ns)			at 20% ~ 80% of V_{DC} (ns)		
0	1.2	2.4	5.2	0.8	1.7	3.4
1	1.4	2.6	5.8	0.9	1.9	3.8
2	1.6	3.0	6.0	1.1	2.1	4.0
D = 3*	1.8	4.0	6.6	1.2	2.6	4.6
4	3.2	6.4	11.0	2.2	4.4	7.8
5	4.4	8.4	14.6	2.9	5.8	10.4
6	6.6	12.4	23.0	4.4	8.6	15.2
7	12.8	25.0	46.0	8.6	16.6	30.0

* default edge control setting "D" at V_{DC} = 2.5 V ~ 3.3 V, please also refer to the supplementary information on our homepage for typical values and more details.

Table 5: Non-Configurable Frequencies

operating temperature option		operating temperature option	
T2 – (-40°C ~ +105°C) T3 – (-40°C ~ +125°C)		T8 – (-55°C ~ +125°C)	
from (MHz)	to (MHz)	from (MHz)	to (MHz)
61.223	61.674	61.223	61.974
69.796	70.485	69.240	70.827
79.063	79.162	78.715	79.561
81.428	82.232	80.160	80.174
91.834	92.155	80.780	82.632
94.249	94.430	91.834	95.474
94.875	94.994	96.192	96.209
97.714	98.679	96.936	99.158
110.0	115.194	110.0	119.342
117.811	118.038	–	–
118.594	118.743	120.239	120.262
122.142	122.705	121.170	121.243
123.022	123.348	121.601	123.948

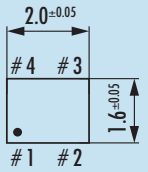
Order Information

Example: O 26.123456 – JSO 75 C1 L C – B – 2V3 – T0 – S – D

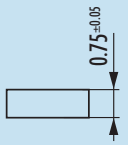
- **O** = Oscillator
- **frequency (8 digits),** see also table 5
  1.0 ~ 110.0 MHz
  115.0 ~ 137.0 MHz
- **JSO** = Jauch Silicon Oscillator
- **package**
  75 = 7050, 53 = 5032, 32 = 3225, 22 = 2520, 21 = 2016
- **frequency range**
  C1 = 1.0 ~ 110.0 MHz
  C2 = 115.0 ~ 137.0 MHz
- **function/feature**
  L = lowpower
- **output I/F**
  C = (H)CMOS
- **edge control**
  D = default
  0 – 7, see table 4
- **standby function options**
  S = Stop
  T = TriState
  N = None
- **temperature range**
  T0 = -20°C ~ +70°C, T1 = -40°C ~ +85°C, T2 = -40°C ~ +105°C, T3 = -40°C ~ +125°C, T8 = -55°C ~ +125°C
- **supply voltage**
  3.3 = 3.3 V, 3.0 = 3.0 V, 2.8 = 2.8 V, 2.5 = 2.5 V, 1.8 = 1.8 V, 2V3 = 2.5 V ~ 3.3 V
- **frequency stability overall**
  B = ± 50 ppm, G = ± 30 ppm, C = ± 25 ppm, D = ± 20 ppm

Dimensions

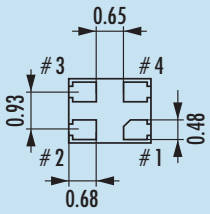
2.0 x 1.6 x 0.75
JSO21



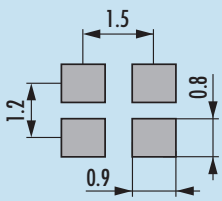
top view



side view

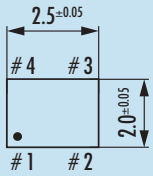


bottom view

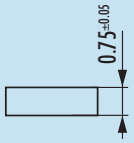


pad layout

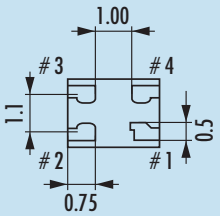
2.5 x 2.0 x 0.75
JSO22



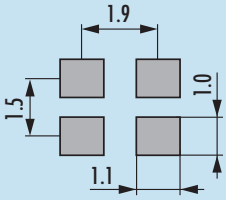
top view



side view

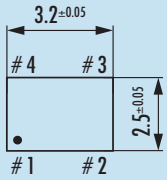


bottom view

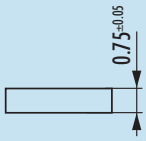


pad layout

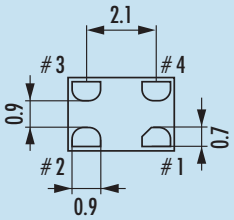
3.2 x 2.5 x 0.75
JSO32



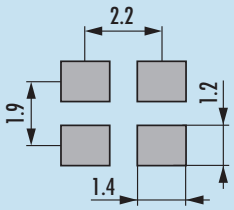
top view



side view

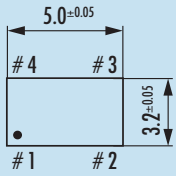


bottom view

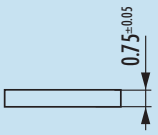


pad layout

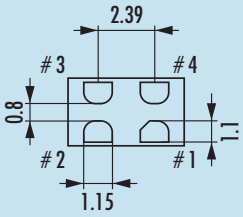
5.0 x 3.2 x 0.75
JSO53



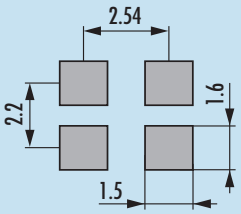
top view



side view

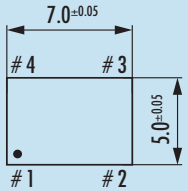


bottom view

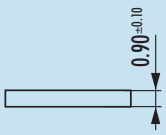


pad layout

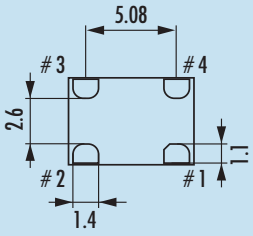
7.0 x 5.0 x 0.90
JSO75



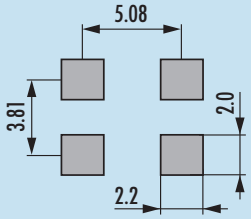
top view



side view



bottom view



pad layout

Pin connection # 1: e/d # 2: GND # 3: output # 4: V_{DC} note: a capacitor of 0.1 µF between V_{DC} and GND is recommended

in mm

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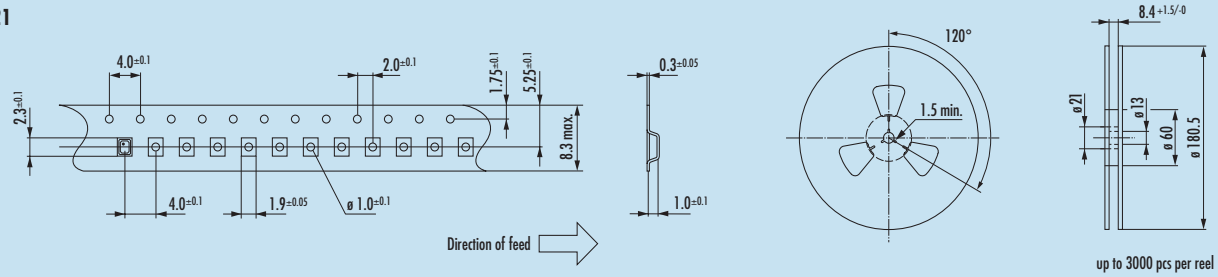
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

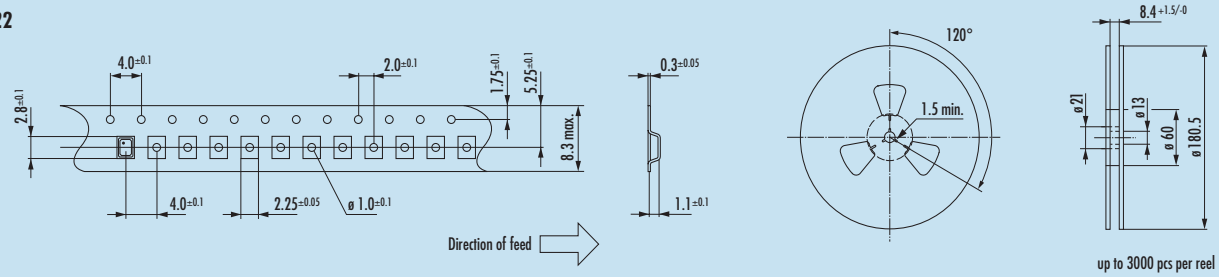
Taping Specification

2.0 x 1.6 x 0.75
JSO21



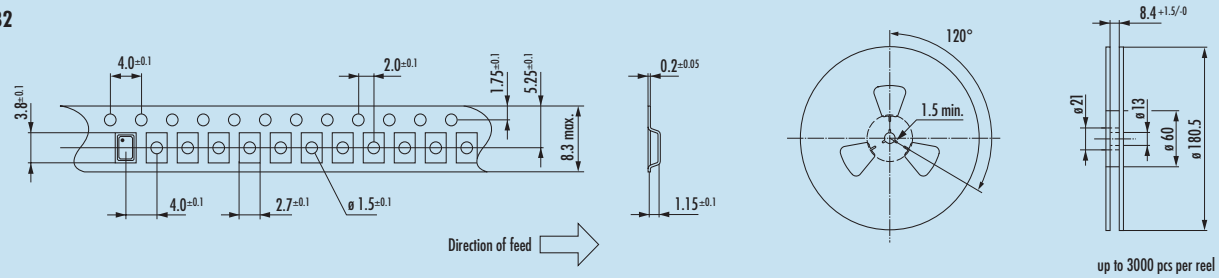
up to 3000 pcs per reel

2.5 x 2.0 x 0.75
JSO22



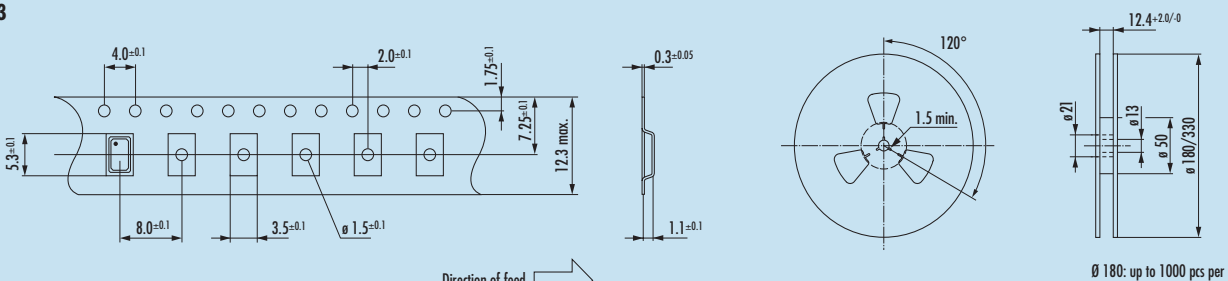
up to 3000 pcs per reel

3.2 x 2.5 x 0.75
JSO32



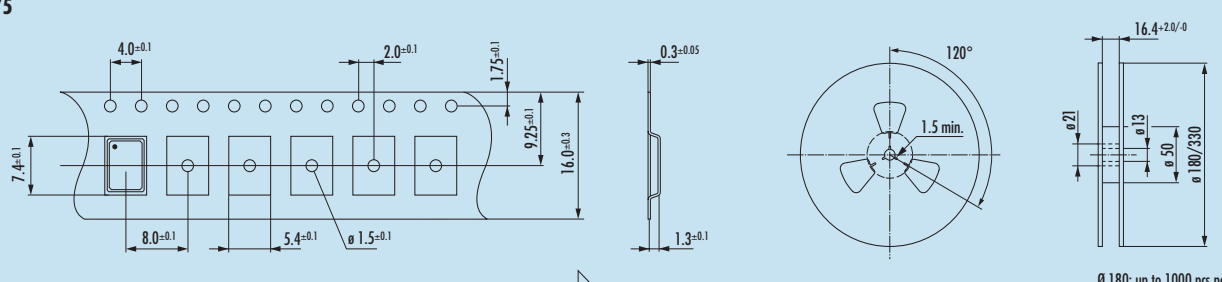
up to 3000 pcs per reel

5.0 x 3.2 x 0.75
JSO53



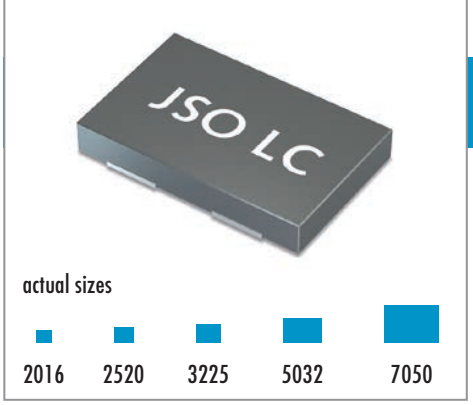
Ø 180: up to 1000 pcs per reel
Ø 330: up to 3000 pcs per reel

7.0 x 5.0 x 0.90
JSO75



Ø 180: up to 1000 pcs per reel
Ø 330: up to 3000 pcs per reel

in mm



MEMS-Oscillator · JSO LC series · 3.3 V

- low power oscillator with HCMOS/LVCMOS output
- compatible to industry standard packages 2016 – 7050
- configured to customer's specification
- extended shock & vibration resistance
- very fast delivery service
- 500 million hours MTBF

General Data

type		JSOxxCxLC 3.3 V
frequency range		1.0 ~ 110.0 MHz (temp. range T0 ~ T8)
		115.0 ~ 137.0 MHz (temp. range T0 ~ T1)
frequency stability over all		±20 ppm ~ ±50 ppm (see table 1)
current consumption		see table 2
supply voltage V_{DC}		3.3 V ± 10%
temperature	operating	T0 = -20°C ~ +70°C
		T1 = -40°C ~ +85°C
		T2 = -40°C ~ +105°C
		T3 = -40°C ~ +125°C
		T8 = -55°C ~ +125°C
	storage	-55°C ~ +150°C
output	logic	HCMOS/LVCMOS
	rise & fall time	3 ns max. at 15 pF / 6 ns max. at 30 pF (see table 4)
	load max.	30 pF max. recommended (≤ 83.0 MHz)
		15 pF max. recommended (> 83.0 MHz)
		other load capacitances possible, see supplementary document
	current max.	4 mA
	low level max.	0.1 x V_{DC}
	high level min.	0.9 x V_{DC}
standby function (e/d)		stop (S), tristate-only (T) or none (N), see table 3
output enable time max.		5 ms (S) / 150 ns (T)
output disable time max.		150 ns
start-up time max.		5 ms
standby current max.		5 µA (for stop (S), see table 3)
phase jitter 12 kHz ~ 20 MHz		< 3.0 ps RMS
symmetry at 0.5 x V_{DC}		45% ~ 55% (standard)

note: some frequencies can't be configured, see table 5.

Packing Note / Marking

QTY < 250 pcs. → cut tape
QTY 250/500/1K/3K pcs. → tape and reel
Marking: lot code only

RoHS compliant · Pb free · REACH compliant · Conflict mineral free

Table 1: Frequency Stability Code

stability code / temp. code*		B ±50 ppm	G ±30 ppm	C ±25 ppm	D ±20 ppm	
-20°C ~ +70°C	T0	○	○	○	○	
-40°C ~ +85°C	T1	○	○	○	○	
-40°C ~ +105°C	T2	○	○	○	○	
-40°C ~ +125°C	T3	○	○	○	○	
-55°C ~ +125°C	T8	○	○	○		
○ available						

* includes stability at 25°C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption typ. (for max. add 30%)

current at load	5 pF	15 pF	30 pF	60 pF	unit
output disabled	4.0	4.0	4.0	4.0	mA
1.0 ~ 19.9 MHz	4.0	4.6	5.6	7.6	mA
20.0 ~ 29.9 MHz	4.6	5.7	7.4	10.9	mA
30.0 ~ 49.9 MHz	5.1	6.7	9.2	14.3	mA
50.0 ~ 79.9 MHz	6.4	9.0	13.2		mA
80.0 ~ 110.0 MHz	7.7	11.2	17.0		mA
115.0 ~ 137.0 MHz	(10.0)	(14.5)			mA

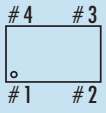
note: current at default edge control setting "D", also refer to table 4.

Table 3: Configurable Standby Function Options (e/d)

pin #1 (e/d control)	option	functionality
low "0" ($V_{IL} \leq 0.2\ V_{DC}$)	S = Stop	output weakly pulled down, oscillator in sleep mode
	T = TriState	output high impedance, oscillator operates
	N = None	oscillator output active
high "1" ($V_{IH} \geq 0.8\ V_{DC}$)	all	oscillator output active
open*	all	oscillator output active

* a pull up resistor is recommended in EMI stressed circuit environments.

Pin Connection



#4: V_{DC} · #3: output
#1: e/d · #2: GND

note: a capacitor of 0.1 µF between V_{DC} and GND is recommended.

Jauch MEMS – Uses SiTime's MEMS First™ technology

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full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Table 4: Max. Rise & Fall Time vs. Load Capacitance

C_L	5 pF	15 pF	30 pF	5 pF	15 pF	30 pF
edge control	at 10% ~ 90% of V_{DC} (ns)			at 20% ~ 80% of V_{DC} (ns)		
0	1.0	1.7	3.6	0.7	1.2	2.6
1	1.1	1.8	4.4	0.7	1.3	3.0
2	1.2	2.6	5.0	0.8	1.8	3.3
D = 3*	1.3	3.0	6.0	0.9	2.0	3.8
4	2.6	5.4	9.4	1.5	3.8	6.4
5	3.4	6.6	12.0	2.4	5.0	8.6
6	5.2	10.0	17.0	3.6	7.0	12.4
7	10.4	21.0	35.0	7.4	14.0	25.0

* default edge control setting "D" at V_{DC} = 3.3 V, please also refer to the supplementary information on our homepage for typical values and more details.

Table 5: Non-Configurable Frequencies

operating temperature option		operating temperature option	
T2 – (-40°C ~ +105°C) T3 – (-40°C ~ +125°C)		T8 – (-55°C ~ +125°C)	
from (MHz)	to (MHz)	from (MHz)	to (MHz)
61.223	61.674	61.223	61.974
69.796	70.485	69.240	70.827
79.063	79.162	78.715	79.561
81.428	82.232	80.160	80.174
91.834	92.155	80.780	82.632
94.249	94.430	91.834	95.474
94.875	94.994	96.192	96.209
97.714	98.679	96.936	99.158
110.0	115.194	110.0	119.342
117.811	118.038	–	–
118.594	118.743	120.239	120.262
122.142	122.705	121.170	121.243
123.022	123.348	121.601	123.948

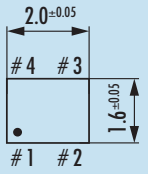
Order Information

Example: O 26.123456 – JSO 75 C1 L C – B – 3.3 – T0 – S – D

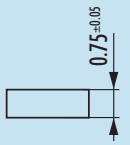
- 0 = Oscillator
- **frequency (8 digits),** see also table 5
  1.0 ~ 110.0 MHz
  115.0 ~ 137.0 MHz
- JSO = Jauch Silicon Oscillator
- **package**
  75 = 7050
  53 = 5032
  32 = 3225
  22 = 2520
  21 = 2016
- **frequency range**
  C1 = 1.0 ~ 110.0 MHz
  C2 = 115.0 ~ 137.0 MHz
- **function/feature**
  L = lowpower
- **output I/F**
  C = (H)CMOS
- **edge control**
  D = default
  0 – 7, see table 4
- **standby function options**
  S = Stop
  T = TriState
  N = None
- **temperature range**
  T0 = -20°C ~ +70°C
  T1 = -40°C ~ +85°C
  T2 = -40°C ~ +105°C
  T3 = -40°C ~ +125°C
  T8 = -55°C ~ +125°C
- **supply voltage**
  3.3 = 3.3 V
  3.0 = 3.0 V
  2.8 = 2.8 V
  2.5 = 2.5 V
  1.8 = 1.8 V
  2V3 = 2.5 V ~ 3.3 V
- **frequency stability overall**
  B = ± 50 ppm
  G = ± 30 ppm
  C = ± 25 ppm
  D = ± 20 ppm

Dimensions

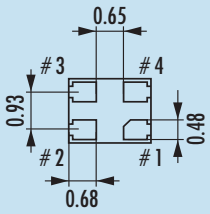
2.0 x 1.6 x 0.75
JSO21



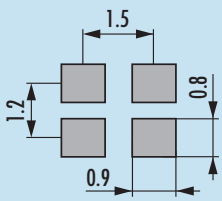
top view



side view

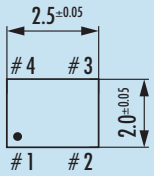


bottom view

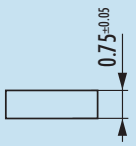


pad layout

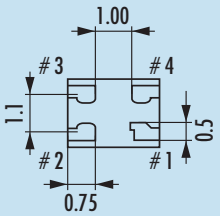
2.5 x 2.0 x 0.75
JSO22



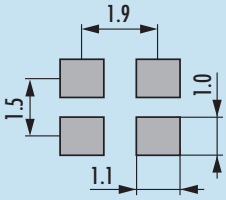
top view



side view

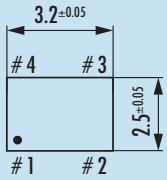


bottom view

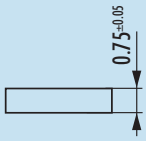


pad layout

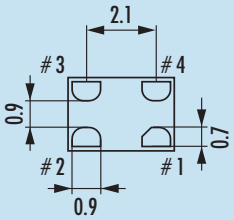
3.2 x 2.5 x 0.75
JSO32



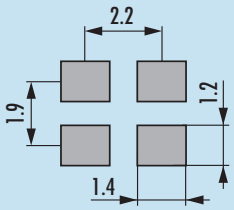
top view



side view

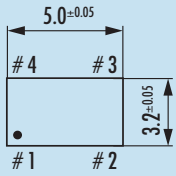


bottom view

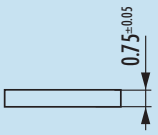


pad layout

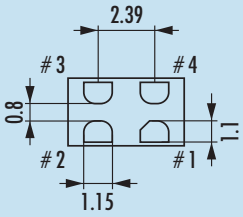
5.0 x 3.2 x 0.75
JSO53



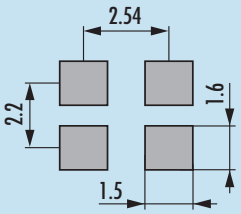
top view



side view

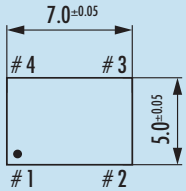


bottom view

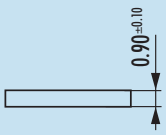


pad layout

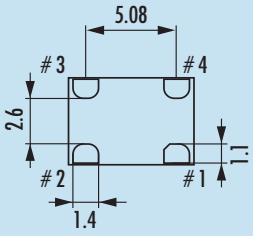
7.0 x 5.0 x 0.90
JSO75



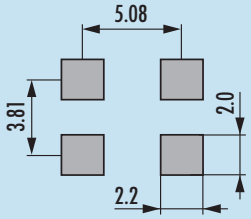
top view



side view



bottom view



pad layout

Pin connection # 1: e/d # 2: GND # 3: output # 4: V_{DC} note: a capacitor of 0.1 µF between V_{DC} and GND is recommended

in mm

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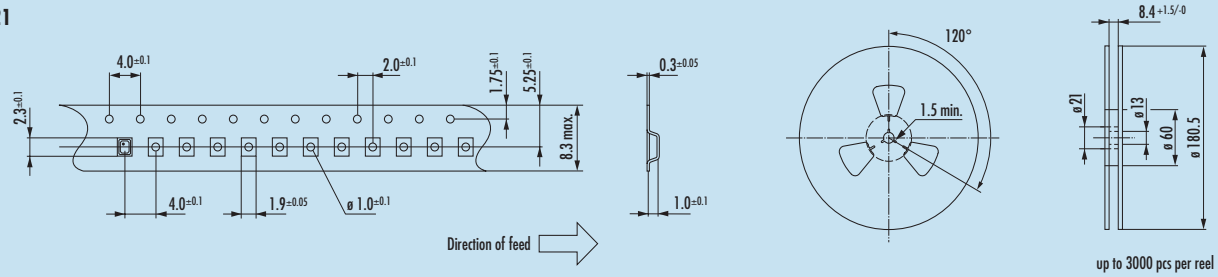
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

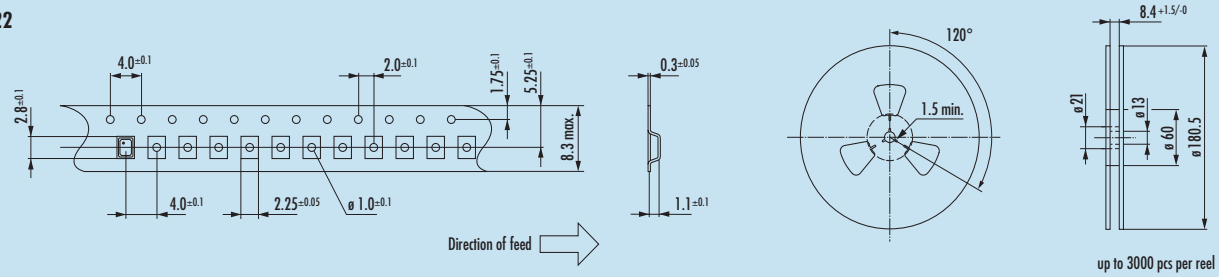
Taping Specification

2.0 x 1.6 x 0.75
JSO21



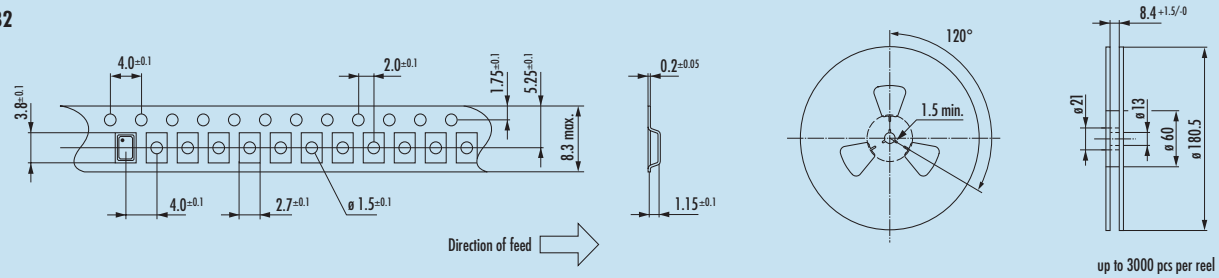
up to 3000 pcs per reel

2.5 x 2.0 x 0.75
JSO22



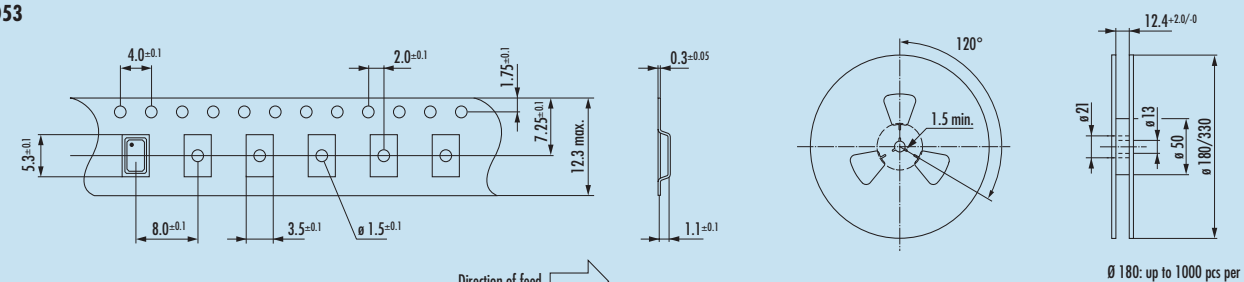
up to 3000 pcs per reel

3.2 x 2.5 x 0.75
JSO32



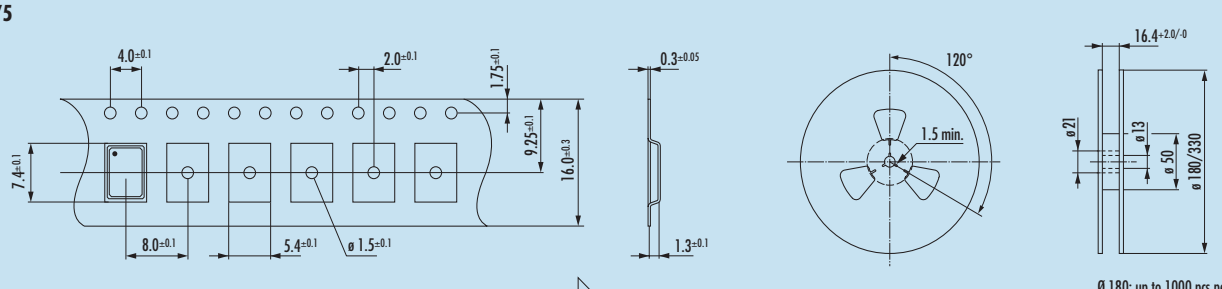
up to 3000 pcs per reel

5.0 x 3.2 x 0.75
JSO53



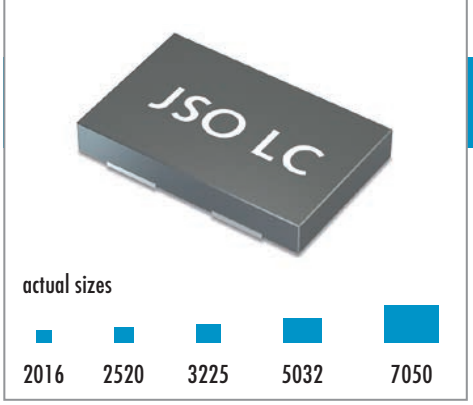
Ø 180: up to 1000 pcs per reel
Ø 330: up to 3000 pcs per reel

7.0 x 5.0 x 0.90
JSO75



Ø 180: up to 1000 pcs per reel
Ø 330: up to 3000 pcs per reel

in mm



MEMS-Oscillator · JSO LC series · 3.0 V

- low power oscillator with HCMOS/LVCMOS output
- compatible to industry standard packages 2016 – 7050
- configured to customer's specification
- extended shock & vibration resistance
- very fast delivery service
- 500 million hours MTBF

General Data

type		JSOxxCxLC 3.0 V
frequency range		1.0 ~ 110.0 MHz (temp. range T0 ~ T8)
		115.0 ~ 137.0 MHz (temp. range T0 ~ T1)
frequency stability over all		±20 ppm ~ ±50 ppm (see table 1)
current consumption		see table 2
supply voltage V_{DC}		3.0 V ± 10%
temperature	operating	T0 = -20°C ~ +70°C
		T1 = -40°C ~ +85°C
		T2 = -40°C ~ +105°C
		T3 = -40°C ~ +125°C
		T8 = -55°C ~ +125°C
	storage	-55°C ~ +150°C
output	logic	HCMOS/LVCMOS
	rise & fall time	3.3 ns max. at 15 pF / 6.2 ns max. at 30 pF (see table 4)
	load max.	30 pF max. recommended (≤ 81.0 MHz)
		15 pF max. recommended (> 81.0 MHz)
		other load capacitances possible, see supplementary document
	current max.	4 mA
	low level max.	0.1 x V_{DC}
	high level min.	0.9 x V_{DC}
standby function (e/d)		stop (S), tristate-only (T) or none (N), see table 3
output enable time max.		5 ms (S) / 150 ns (T)
output disable time max.		150 ns
start-up time max.		5 ms
standby current max.		5 µA (for stop (S), see table 3)
phase jitter 12 kHz ~ 20 MHz		< 3.0 ps RMS
symmetry at 0.5 x V_{DC}		45% ~ 55% (standard)

note: some frequencies can't be configured, see table 5.

Packing Note / Marking

QTY < 250 pcs. → cut tape
QTY 250/500/1K/3K pcs. → tape and reel
Marking: lot code only

RoHS compliant · Pb free · REACH compliant · Conflict mineral free

Table 1: Frequency Stability Code

stability code / temp. code*		B ±50 ppm	G ±30 ppm	C ±25 ppm	D ±20 ppm	
-20°C ~ +70°C	T0	○	○	○	○	
-40°C ~ +85°C	T1	○	○	○	○	
-40°C ~ +105°C	T2	○	○	○	○	
-40°C ~ +125°C	T3	○	○	○	○	
-55°C ~ +125°C	T8	○	○	○		
○ available						

* includes stability at 25°C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption typ. (for max. add 30%)

current at load	5 pF	15 pF	30 pF	60 pF	unit
output disabled	3.9	3.9	3.9	3.9	mA
1.0 ~ 19.9 MHz	4.1	4.5	5.4	7.2	mA
20.0 ~ 29.9 MHz	4.5	5.4	6.9	10.1	mA
30.0 ~ 49.9 MHz	4.9	6.3	8.6	13.2	mA
50.0 ~ 79.9 MHz	6.1	8.4	12.2		mA
80.0 ~ 110.0 MHz	7.3	10.5	15.5		mA
115.0 ~ 137.0 MHz	(9.5)	(14.0)			mA

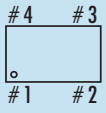
note: current at default edge control setting "D", also refer to table 4.

Table 3: Configurable Standby Function Options (e/d)

pin #1 (e/d control)	option	functionality
low "0" (V_{IL} ≤ 0.2 V_{DC})	S = Stop	output weakly pulled down, oscillator in sleep mode
	T = TriState	output high impedance, oscillator operates
	N = None	oscillator output active
high "1" (V_{IH} ≥ 0.8 V_{DC})	all	oscillator output active
open*	all	oscillator output active

* a pull up resistor is recommended in EMI stressed circuit environments.

Pin Connection



#4: V_{DC} · #3: output
#1: e/d · #2: GND

note: a capacitor of 0.1 µF between V_{DC} and GND is recommended.

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full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Table 4: Max. Rise & Fall Time vs. Load Capacitance

C_L	5 pF	15 pF	30 pF	5 pF	15 pF	30 pF
edge control	at 10% ~ 90% of V_{DC} (ns)			at 20% ~ 80% of V_{DC} (ns)		
0	1.1	2.0	4.2	0.7	1.4	2.8
1	1.2	2.2	4.8	0.8	1.6	3.3
2	1.3	2.8	5.4	0.9	1.9	3.6
D = 3*	1.5	3.3	6.2	1.0	2.2	4.0
4	2.8	5.8	10.0	1.8	4.0	6.8
5	3.8	7.4	13.0	2.6	5.2	9.0
6	5.5	11.0	19.0	3.8	7.6	13.4
7	11.4	22.0	40.0	7.8	14.6	27.0

* default edge control setting "D" at V_{DC} = 3.0 V, please also refer to the supplementary information on our homepage for typical values and more details.

Table 5: Non-Configurable Frequencies

operating temperature option		operating temperature option	
T2 – (-40°C ~ +105°C) T3 – (-40°C ~ +125°C)		T8 – (-55°C ~ +125°C)	
from (MHz)	to (MHz)	from (MHz)	to (MHz)
61.223	61.674	61.223	61.974
69.796	70.485	69.240	70.827
79.063	79.162	78.715	79.561
81.428	82.232	80.160	80.174
91.834	92.155	80.780	82.632
94.249	94.430	91.834	95.474
94.875	94.994	96.192	96.209
97.714	98.679	96.936	99.158
110.0	115.194	110.0	119.342
117.811	118.038	–	–
118.594	118.743	120.239	120.262
122.142	122.705	121.170	121.243
123.022	123.348	121.601	123.948

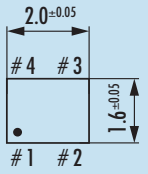
Order Information

Example: O 26.123456 – JSO 75 C1 L C – B – 3.0 – T0 – S – D

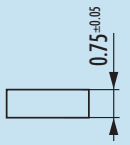
- 0 = Oscillator
- **frequency (8 digits),** see also table 5
  1.0 ~ 110.0 MHz
  115.0 ~ 137.0 MHz
- JSO = Jauch Silicon Oscillator
- **package**
  75 = 7050
  53 = 5032
  32 = 3225
  22 = 2520
  21 = 2016
- **frequency range**
  C1 = 1.0 ~ 110.0 MHz
  C2 = 115.0 ~ 137.0 MHz
- **function/feature**
  L = lowpower
- **output I/F**
  C = (H)CMOS
- **frequency stability overall**
  B = ± 50 ppm
  C = ± 25 ppm
  G = ± 30 ppm
  D = ± 20 ppm
- **supply voltage**
  3.3 = 3.3 V
  3.0 = 3.0 V
  2.8 = 2.8 V
  2.5 = 2.5 V
  1.8 = 1.8 V
  2V3 = 2.5 V ~ 3.3 V
- **temperature range**
  T0 = -20°C ~ +70°C
  T1 = -40°C ~ +85°C
  T2 = -40°C ~ +105°C
  T3 = -40°C ~ +125°C
  T8 = -55°C ~ +125°C
- **standby function options**
  S = Stop
  T = TriState
  N = None
- **edge control**
  D = default
  0 – 7, see table 4

Dimensions

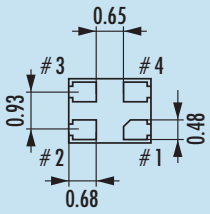
2.0 x 1.6 x 0.75
JSO21



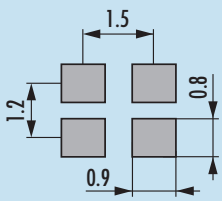
top view



side view

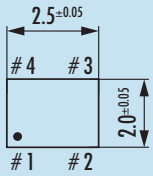


bottom view

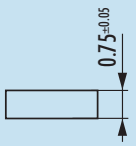


pad layout

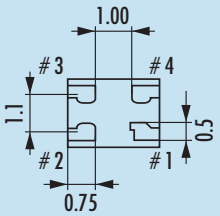
2.5 x 2.0 x 0.75
JSO22



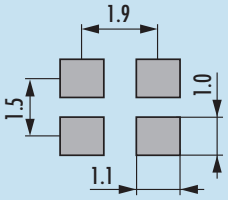
top view



side view

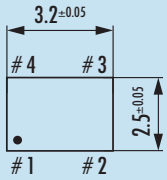


bottom view

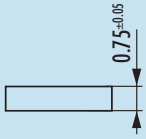


pad layout

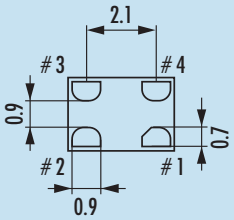
3.2 x 2.5 x 0.75
JSO32



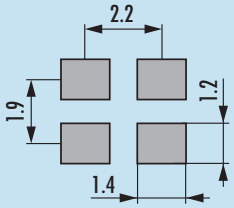
top view



side view

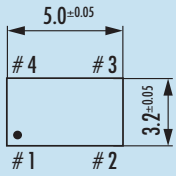


bottom view

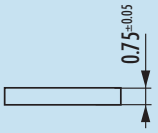


pad layout

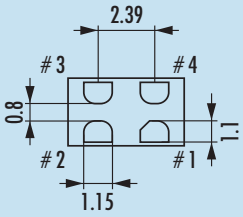
5.0 x 3.2 x 0.75
JSO53



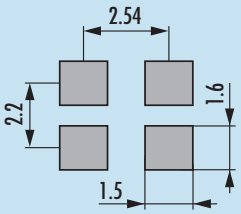
top view



side view

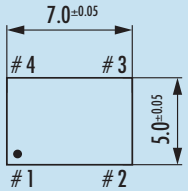


bottom view

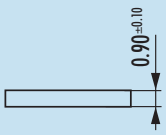


pad layout

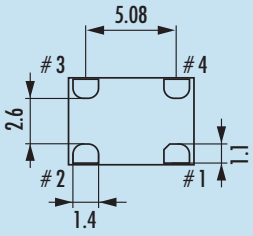
7.0 x 5.0 x 0.90
JSO75



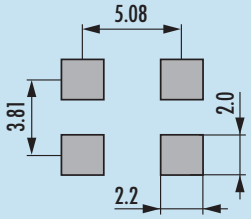
top view



side view



bottom view



pad layout

Pin connection	# 1: e/d	# 2: GND	# 3: output	# 4: V_{DC}	note: a capacitor of 0.1 µF between V_{DC} and GND is recommended

in mm

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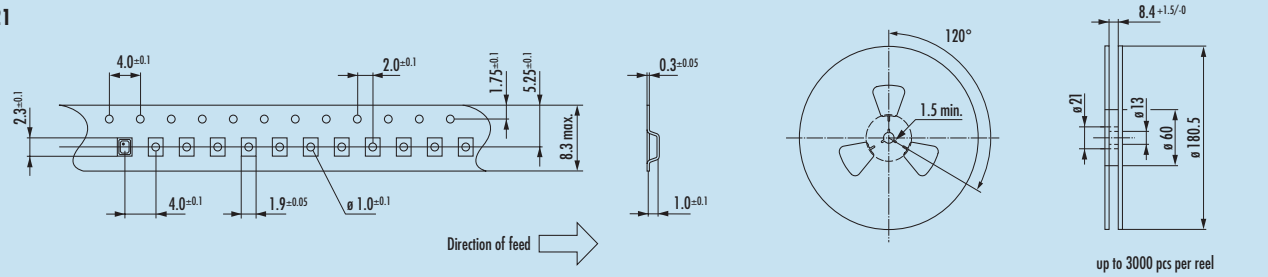
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

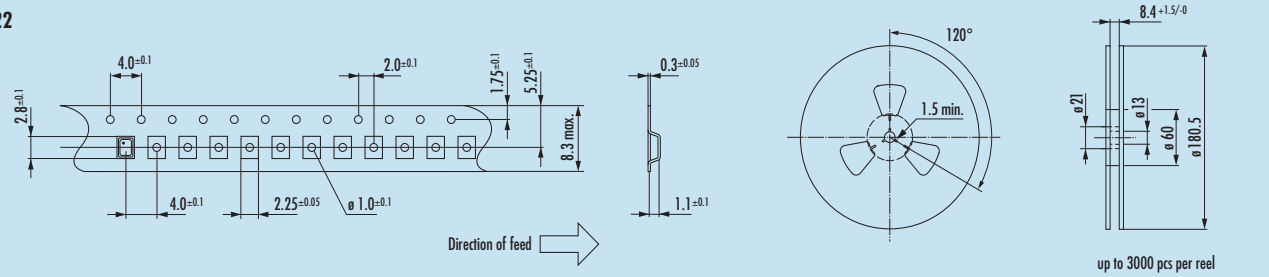
Taping Specification

2.0 x 1.6 x 0.75
JSO21



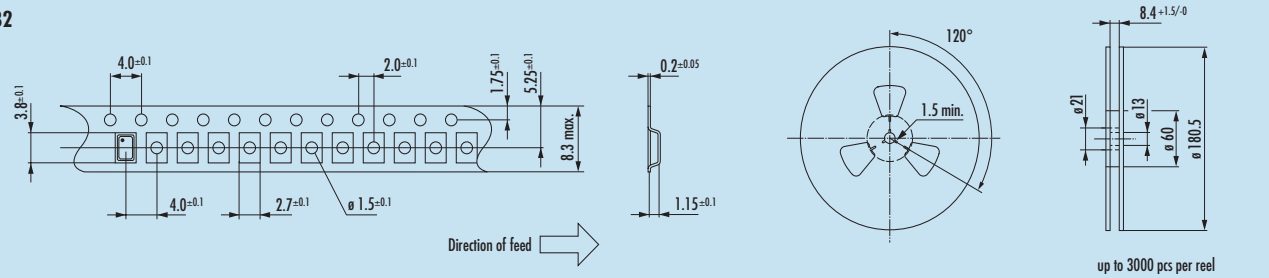
up to 3000 pcs per reel

2.5 x 2.0 x 0.75
JSO22



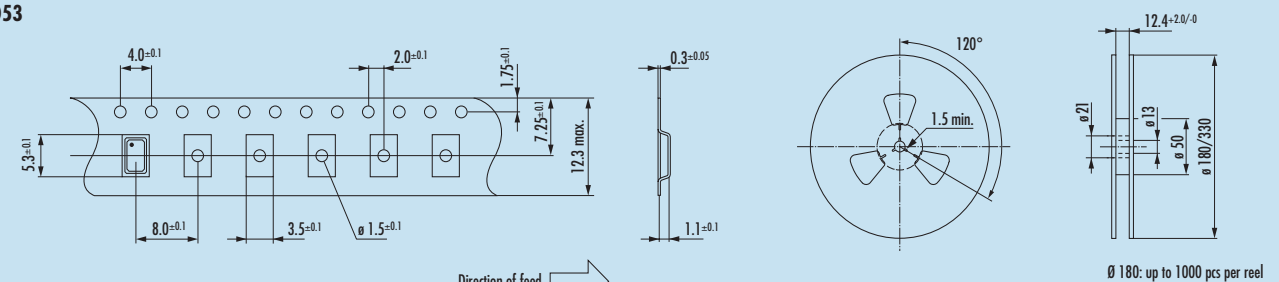
up to 3000 pcs per reel

3.2 x 2.5 x 0.75
JSO32



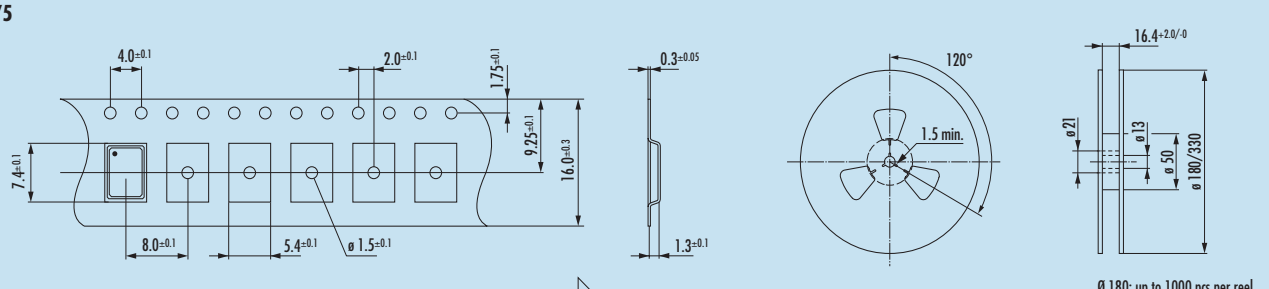
up to 3000 pcs per reel

5.0 x 3.2 x 0.75
JSO53



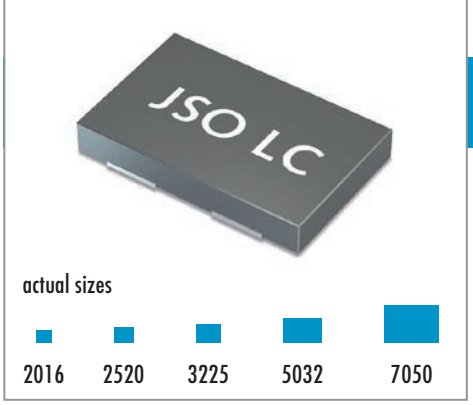
Ø 180: up to 1000 pcs per reel
Ø 330: up to 3000 pcs per reel

7.0 x 5.0 x 0.90
JSO75



Ø 180: up to 1000 pcs per reel
Ø 330: up to 3000 pcs per reel

in mm



MEMS-Oscillator · JSO LC series · 2.8 V

- low power oscillator with HCMOS/LVCMOS output
- compatible to industry standard packages 2016 – 7050
- configured to customer's specification
- extended shock & vibration resistance
- very fast delivery service
- 500 million hours MTBF

General Data

type		JSOxxCxLC 2.8 V
frequency range		1.0 ~ 110.0 MHz (temp. range T0 ~ T8)
		115.0 ~ 137.0 MHz (temp. range T0 ~ T1)
frequency stability over all		±20 ppm ~ ±50 ppm (see table 1)
current consumption		see table 2
supply voltage V_{DC}		2.8 V ± 10%
temperature	operating	T0 = -20°C ~ +70°C
		T1 = -40°C ~ +85°C
		T2 = -40°C ~ +105°C
		T3 = -40°C ~ +125°C
		T8 = -55°C ~ +125°C
	storage	-55°C ~ +150°C
output	logic	HCMOS/LVCMOS
	rise & fall time	2.9 ns max. at 15 pF / 5.7 ns max. at 30 pF (see table 4)
	load max.	30 pF max. recommended (≤ 88.0 MHz)
		15 pF max. recommended (> 88.0 MHz)
		other load capacitances possible, see supplementary document
	current max.	3 mA
	low level max.	0.1 x V_{DC}
	high level min.	0.9 x V_{DC}
standby function (e/d)		stop (S), tristate-only (T) or none (N), see table 3
output enable time max.		5 ms (S) / 150 ns (T)
output disable time max.		150 ns
start-up time max.		5 ms
standby current max.		4 µA (for stop (S), see table 3)
phase jitter 12 kHz ~ 20 MHz		< 3.0 ps RMS
symmetry at 0.5 x V_{DC}		45% ~ 55% (standard)

note: some frequencies can't be configured, see table 5.

Packing Note / Marking

QTY < 250 pcs. → cut tape
QTY 250/500/1K/3K pcs. → tape and reel
Marking: lot code only

RoHS compliant · Pb free · REACH compliant · Conflict mineral free

Table 1: Frequency Stability Code

stability code / temp. code*		B ±50 ppm	G ±30 ppm	C ±25 ppm	D ±20 ppm	
-20°C ~ +70°C	T0	○	○	○	○	
-40°C ~ +85°C	T1	○	○	○	○	
-40°C ~ +105°C	T2	○	○	○	○	
-40°C ~ +125°C	T3	○	○	○	○	
-55°C ~ +125°C	T8	○	○	○		
○ available						

* includes stability at 25°C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption typ. (for max. add 30%)

current at load	5 pF	15 pF	30 pF	60 pF	unit
output disabled	3.8	3.8	3.8	3.8	mA
1.0 ~ 19.9 MHz	4.1	4.3	5.2	6.9	mA
20.0 ~ 29.9 MHz	4.4	5.2	6.7	9.8	mA
30.0 ~ 49.9 MHz	4.8	6.2	8.3	12.7	mA
50.0 ~ 79.9 MHz	6.1	8.1	11.7		mA
80.0 ~ 110.0 MHz	7.0	10.0			mA
115.0 ~ 137.0 MHz	(9.0)	(14.0)			mA

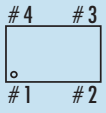
note: current at default edge control setting "D", also refer to table 4.

Table 3: Configurable Standby Function Options (e/d)

pin #1 (e/d control)	option	functionality
low "0" ($V_{IL} \leq 0.2\ V_{DC}$)	S = Stop	output weakly pulled down, oscillator in sleep mode
	T = TriState	output high impedance, oscillator operates
	N = None	oscillator output active
high "1" ($V_{IH} \geq 0.8\ V_{DC}$)	all	oscillator output active
open*	all	oscillator output active

* a pull up resistor is recommended in EMI stressed circuit environments.

Pin Connection



#4: V_{DC} · #3: output
#1: e/d · #2: GND

note: a capacitor of 0.1 µF between V_{DC} and GND is recommended.

Jauch MEMS – Uses SiTime's MEMS First™ technology

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full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Table 4: Max. Rise & Fall Time vs. Load Capacitance

C_L	5 pF	15 pF	30 pF	5 pF	15 pF	30 pF
edge control	at 10% ~ 90% of V_{DC} (ns)			at 20% ~ 80% of V_{DC} (ns)		
0	1.2	2.2	4.6	0.8	1.6	3.0
1	1.3	2.4	5.2	0.9	1.8	3.5
D = 2*	1.5	2.9	5.7	1.0	2.0	3.8
3	1.6	3.6	6.4	1.1	2.4	4.4
4	3.0	6.2	10.4	2.0	4.2	7.4
5	4.0	7.6	13.6	2.8	5.4	9.4
6	5.8	11.6	21.0	4.0	8.0	14.2
7	12.0	23.0	42.0	8.2	15.2	28.0

* default edge control setting "D" at V_{DC} = 2.8 V, please also refer to the supplementary information on our homepage for typical values and more details.

Table 5: Non-Configurable Frequencies

operating temperature option		operating temperature option	
T2 – (-40°C ~ +105°C) T3 – (-40°C ~ +125°C)		T8 – (-55°C ~ +125°C)	
from (MHz)	to (MHz)	from (MHz)	to (MHz)
61.223	61.674	61.223	61.974
69.796	70.485	69.240	70.827
79.063	79.162	78.715	79.561
81.428	82.232	80.160	80.174
91.834	92.155	80.780	82.632
94.249	94.430	91.834	95.474
94.875	94.994	96.192	96.209
97.714	98.679	96.936	99.158
110.0	115.194	110.0	119.342
117.811	118.038	–	–
118.594	118.743	120.239	120.262
122.142	122.705	121.170	121.243
123.022	123.348	121.601	123.948

Order Information

Example: O 26.123456 – JSO 75 C1 L C – B – 2.8 – T0 – S – D

O = Oscillator

frequency (8 digits), see also table 5
1.0 ~ 110.0 MHz
115.0 ~ 137.0 MHz

JSO = Jauch Silicon Oscillator

package
75 = 7050
53 = 5032
32 = 3225
22 = 2520
21 = 2016

frequency range
C1 = 1.0 ~ 110.0 MHz
C2 = 115.0 ~ 137.0 MHz

function/feature
L = lowpower

output I/F
C = (H)CMOS

frequency stability overall
B = ± 50 ppm
C = ± 25 ppm
G = ± 30 ppm
D = ± 20 ppm

supply voltage
3.3 = 3.3 V
3.0 = 3.0 V
2.8 = 2.8 V
2.5 = 2.5 V
1.8 = 1.8 V
2V3 = 2.5 V ~ 3.3 V

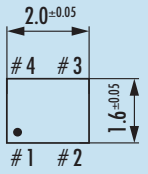
temperature range
T0 = -20°C ~ +70°C
T1 = -40°C ~ +85°C
T2 = -40°C ~ +105°C
T3 = -40°C ~ +125°C
T8 = -55°C ~ +125°C

standby function options
S = Stop
T = TriState
N = None

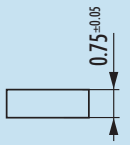
edge control
D = default
0 – 7, see table 4

Dimensions

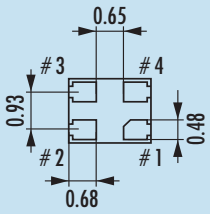
2.0 x 1.6 x 0.75
JSO21



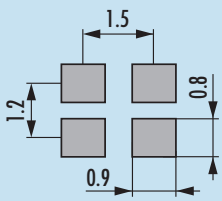
top view



side view

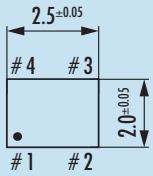


bottom view

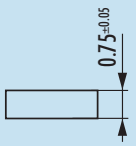


pad layout

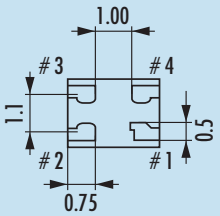
2.5 x 2.0 x 0.75
JSO22



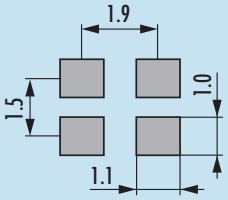
top view



side view

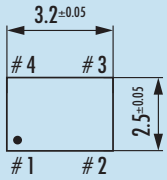


bottom view

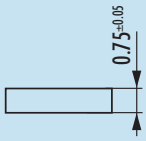


pad layout

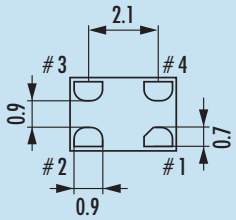
3.2 x 2.5 x 0.75
JSO32



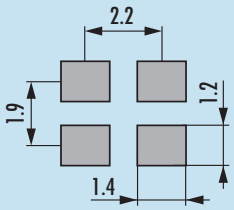
top view



side view

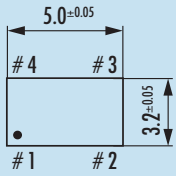


bottom view

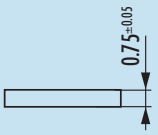


pad layout

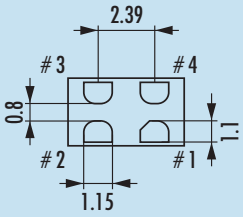
5.0 x 3.2 x 0.75
JSO53



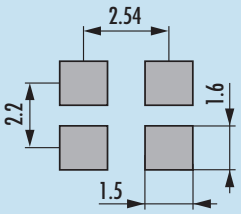
top view



side view

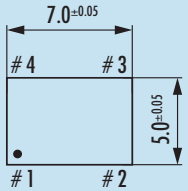


bottom view

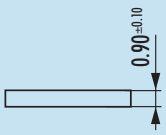


pad layout

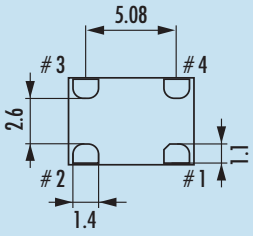
7.0 x 5.0 x 0.90
JSO75



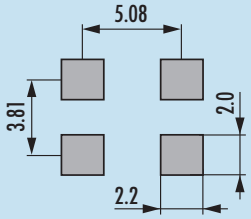
top view



side view



bottom view



pad layout

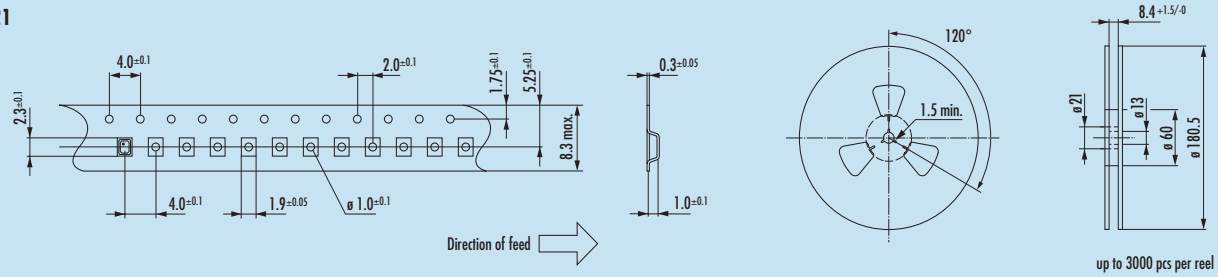
Pin connection	# 1: e/d	# 2: GND	# 3: output	# 4: V_{DC}	note: a capacitor of 0.1 µF between V_{DC} and GND is recommended

in mm

Jauch Quartz GmbH • e-mail: info@jauch.de
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

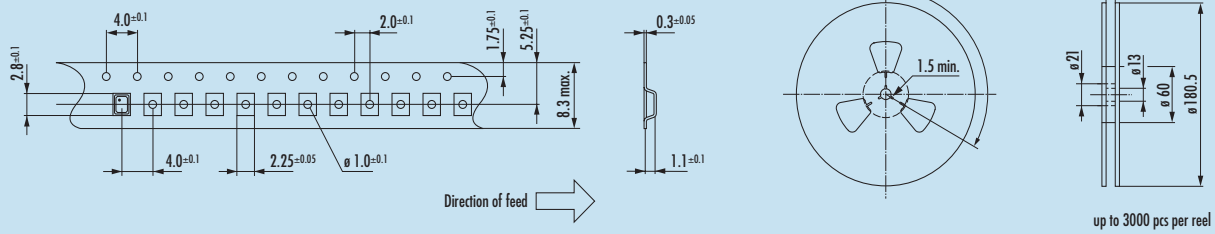
Taping Specification

2.0 x 1.6 x 0.75
JSO21



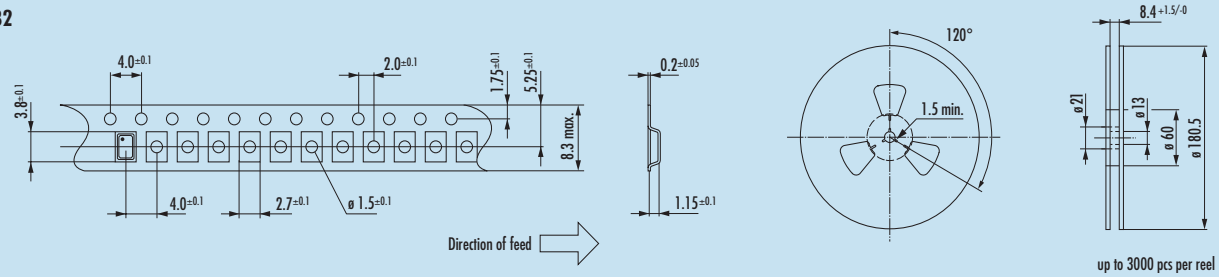
up to 3000 pcs per reel

2.5 x 2.0 x 0.75
JSO22



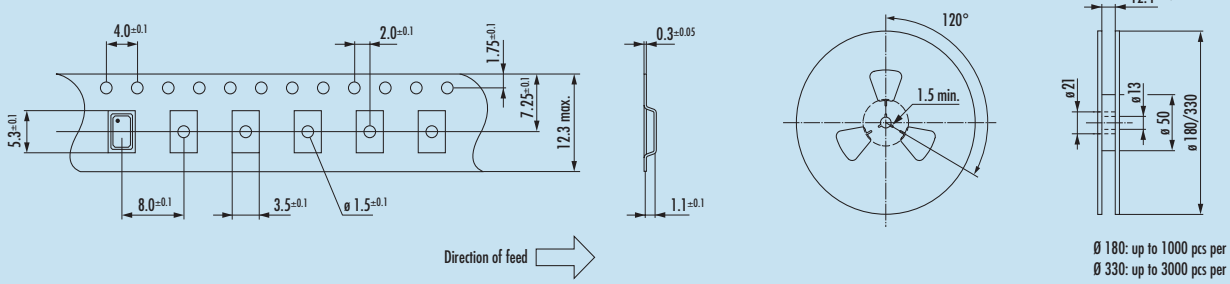
up to 3000 pcs per reel

3.2 x 2.5 x 0.75
JSO32



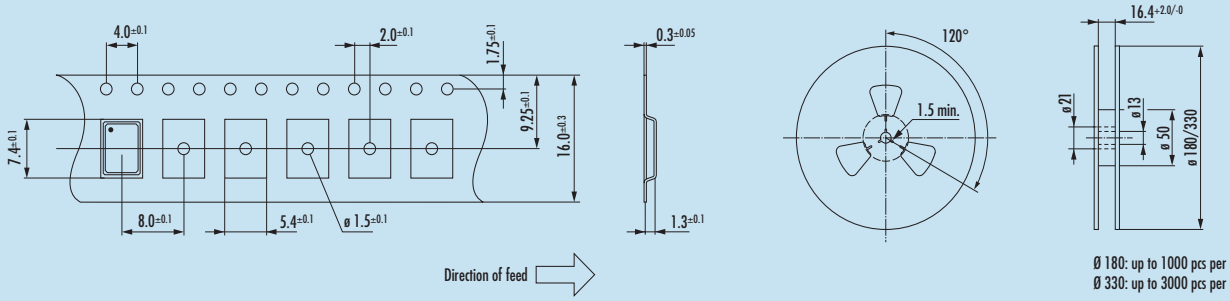
up to 3000 pcs per reel

5.0 x 3.2 x 0.75
JSO53



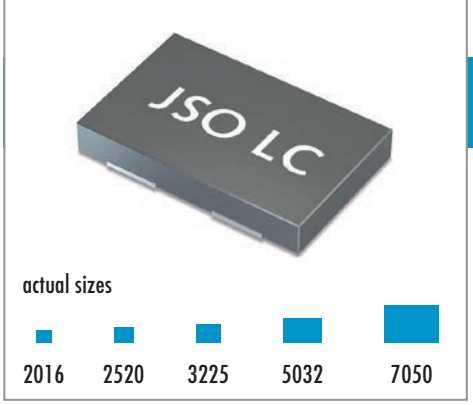
Ø 180: up to 1000 pcs per reel
Ø 330: up to 3000 pcs per reel

7.0 x 5.0 x 0.90
JSO75



Ø 180: up to 1000 pcs per reel
Ø 330: up to 3000 pcs per reel

in mm



MEMS-Oscillator · JSO LC series · 2.5 V

- low power oscillator with HCMOS/LVCMOS output
- compatible to industry standard packages 2016 – 7050
- configured to customer's specification
- extended shock & vibration resistance
- very fast delivery service
- 500 million hours MTBF

General Data

type		JSOxxCxLC 2.5 V
frequency range		1.0 ~ 110.0 MHz (temp. range T0 ~ T8)
		115.0 ~ 137.0 MHz (temp. range T0 ~ T1)
frequency stability over all		±20 ppm ~ ±50 ppm (see table 1)
current consumption		see table 2
supply voltage V_{DC}		2.5 V ± 10%
temperature	operating	T0 = -20°C ~ +70°C
		T1 = -40°C ~ +85°C
		T2 = -40°C ~ +105°C
		T3 = -40°C ~ +125°C
		T8 = -55°C ~ +125°C
	storage	-55°C ~ +150°C
output	logic	HCMOS/LVCMOS
	rise & fall time	3.0 ns max. at 15 pF / 6.0 ns max. at 30 pF (see table 4)
	load max.	30 pF max. recommended (≤ 83.0 MHz)
		15 pF max. recommended (> 83.0 MHz)
		other load capacitances possible, see supplementary document
	current max.	3 mA
	low level max.	0.1 x V_{DC}
	high level min.	0.9 x V_{DC}
standby function (e/d)		stop (S), tristate-only (T) or none (N), see table 3
output enable time max.		5 ms (S) / 150 ns (T)
output disable time max.		150 ns
start-up time max.		5 ms
standby current max.		3 µA (for stop (S), see table 3)
phase jitter 12 kHz ~ 20 MHz		< 3.0 ps RMS
symmetry at 0.5 x V_{DC}		45% ~ 55% (standard)

note: some frequencies can't be configured, see table 5.

Packing Note / Marking

QTY < 250 pcs. → cut tape
QTY 250/500/1K/3K pcs. → tape and reel
Marking: lot code only

RoHS compliant · Pb free · REACH compliant · Conflict mineral free

Table 1: Frequency Stability Code

stability code / temp. code*		B ±50 ppm	G ±30 ppm	C ±25 ppm	D ±20 ppm	
-20°C ~ +70°C	T0	○	○	○	○	
-40°C ~ +85°C	T1	○	○	○	○	
-40°C ~ +105°C	T2	○	○	○	○	
-40°C ~ +125°C	T3	○	○	○	○	
-55°C ~ +125°C	T8	○	○	○		
○ available						

* includes stability at 25°C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption typ. (for max. add 30%)

current at load	5 pF	15 pF	30 pF	60 pF	unit
output disabled	3.7	3.7	3.7	3.7	mA
1.0 ~ 19.9 MHz	3.8	4.2	5.0	6.4	mA
20.0 ~ 29.9 MHz	4.3	5.0	6.4	9.0	mA
30.0 ~ 49.9 MHz	4.7	5.8	7.8	11.6	mA
50.0 ~ 79.9 MHz	5.6	7.6	10.7		mA
80.0 ~ 110.0 MHz	6.6	9.2			mA
115.0 ~ 137.0 MHz	(8.5)	(13.0)			mA

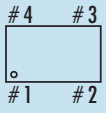
note: current at default edge control setting "D", also refer to table 4.

Table 3: Configurable Standby Function Options (e/d)

pin #1 (e/d control)	option	functionality
low "0" ($V_{IL} \leq 0.2\ V_{DC}$)	S = Stop	output weakly pulled down, oscillator in sleep mode
	T = TriState	output high impedance, oscillator operates
	N = None	oscillator output active
high "1" ($V_{IH} \geq 0.8\ V_{DC}$)	all	oscillator output active
open*	all	oscillator output active

* a pull up resistor is recommended in EMI stressed circuit environments.

Pin Connection



#4: V_{DC} · #3: output
#1: e/d · #2: GND

note: a capacitor of 0.1 µF between V_{DC} and GND is recommended.

Jauch MEMS – Uses SiTime's MEMS First™ technology

Jauch Quartz GmbH • e-mail: info@jauch.de
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Table 4: Max. Rise & Fall Time vs. Load Capacitance

C_L	5 pF	15 pF	30 pF	5 pF	15 pF	30 pF
edge control	at 10% ~ 90% of V_{DC} (ns)			at 20% ~ 80% of V_{DC} (ns)		
0	1.2	2.4	5.2	0.8	1.7	3.4
1	1.4	2.6	5.8	0.9	1.9	3.8
D = 2*	1.6	3.0	6.0	1.1	2.1	4.0
3	1.8	4.0	6.6	1.2	2.6	4.6
4	3.2	6.4	11.0	2.2	4.4	7.8
5	4.4	8.4	14.6	2.9	5.8	10.4
6	6.6	12.4	23.0	4.4	8.6	15.2
7	12.8	25.0	46.0	8.6	16.6	30.0

* default edge control setting "D" at V_{DC} = 2.5 V, please also refer to the supplementary information on our homepage for typical values and more details.

Table 5: Non-Configurable Frequencies

operating temperature option		operating temperature option	
T2 – (-40°C ~ +105°C) T3 – (-40°C ~ +125°C)		T8 – (-55°C ~ +125°C)	
from (MHz)	to (MHz)	from (MHz)	to (MHz)
61.223	61.674	61.223	61.974
69.796	70.485	69.240	70.827
79.063	79.162	78.715	79.561
81.428	82.232	80.160	80.174
91.834	92.155	80.780	82.632
94.249	94.430	91.834	95.474
94.875	94.994	96.192	96.209
97.714	98.679	96.936	99.158
110.0	115.194	110.0	119.342
117.811	118.038	–	–
118.594	118.743	120.239	120.262
122.142	122.705	121.170	121.243
123.022	123.348	121.601	123.948

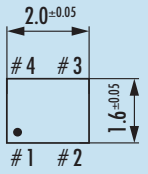
Order Information

Example: O 26.123456 – JSO 75 C1 L C – B – 2.5 – T0 – S – D

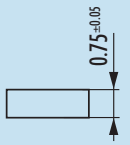
- **O** = Oscillator
- **frequency (8 digits),** see also table 5
  1.0 ~ 110.0 MHz
  115.0 ~ 137.0 MHz
- **JSO** = Jauch Silicon Oscillator
- **package**
  75 = 7050, 53 = 5032, 32 = 3225, 22 = 2520, 21 = 2016
- **frequency range**
  C1 = 1.0 ~ 110.0 MHz
  C2 = 115.0 ~ 137.0 MHz
- **function/feature**
  L = lowpower
- **output I/F**
  C = (H)CMOS
- **edge control**
  D = default
  0 – 7, see table 4
- **standby function options**
  S = Stop
  T = TriState
  N = None
- **temperature range**
  T0 = -20°C ~ +70°C, T1 = -40°C ~ +85°C, T2 = -40°C ~ +105°C, T3 = -40°C ~ +125°C, T8 = -55°C ~ +125°C
- **supply voltage**
  3.3 = 3.3 V, 3.0 = 3.0 V, 2.8 = 2.8 V, 2.5 = 2.5 V, 1.8 = 1.8 V, 2V3 = 2.5 V ~ 3.3 V
- **frequency stability overall**
  B = ± 50 ppm, G = ± 30 ppm, C = ± 25 ppm, D = ± 20 ppm

Dimensions

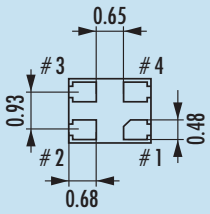
2.0 x 1.6 x 0.75
JSO21



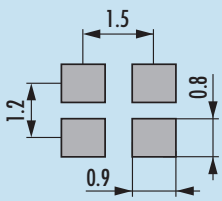
top view



side view

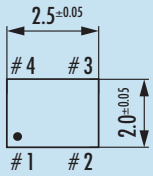


bottom view

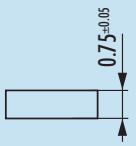


pad layout

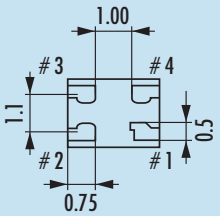
2.5 x 2.0 x 0.75
JSO22



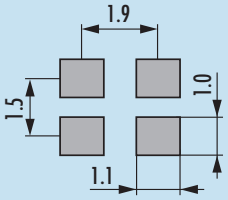
top view



side view

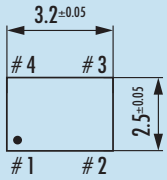


bottom view

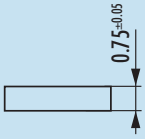


pad layout

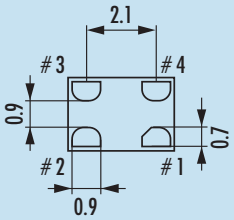
3.2 x 2.5 x 0.75
JSO32



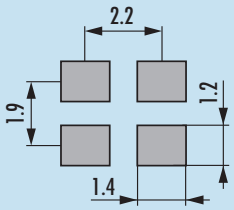
top view



side view

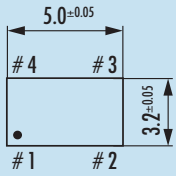


bottom view

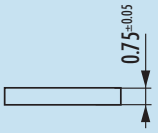


pad layout

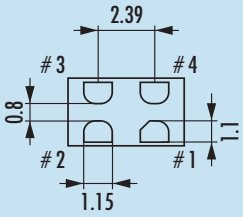
5.0 x 3.2 x 0.75
JSO53



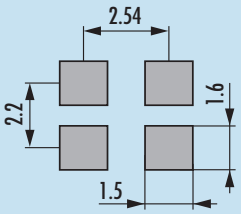
top view



side view

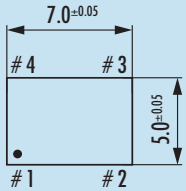


bottom view

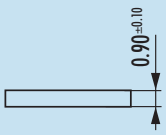


pad layout

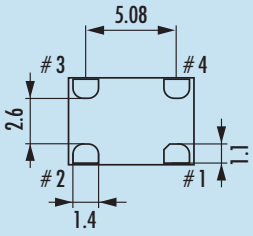
7.0 x 5.0 x 0.90
JSO75



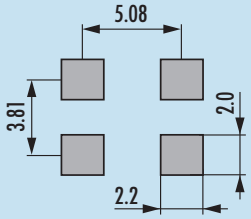
top view



side view



bottom view



pad layout

Pin connection # 1: e/d # 2: GND # 3: output # 4: V_{DC} note: a capacitor of 0.1 µF between V_{DC} and GND is recommended

in mm

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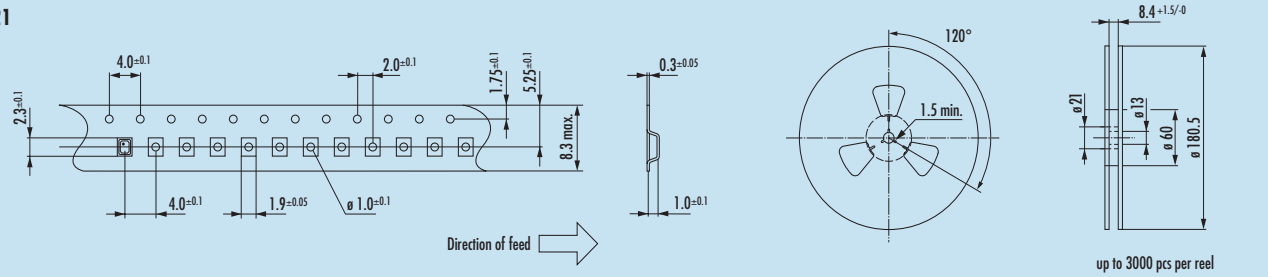
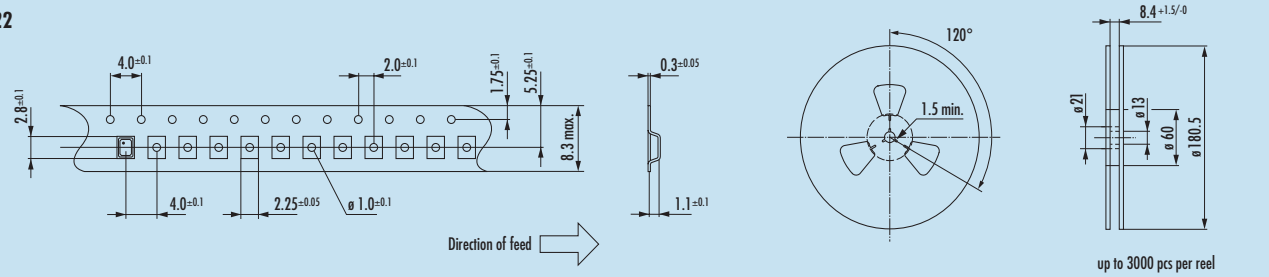
Taping Specification

2.0 x 1.6 x 0.75
JSO21



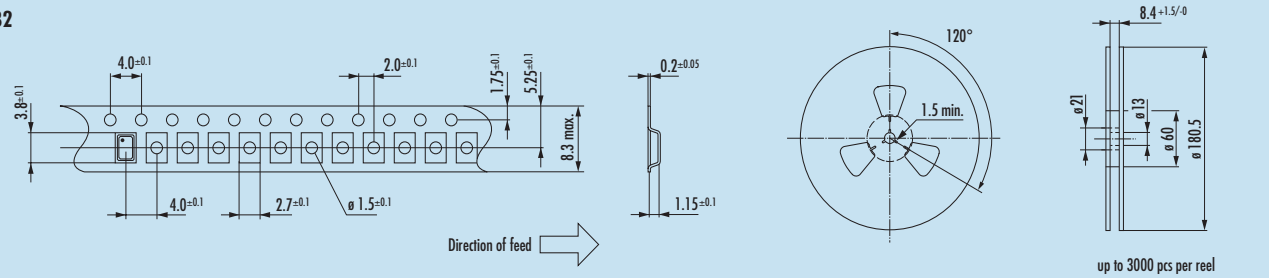
up to 3000 pcs per reel

2.5 x 2.0 x 0.75
JSO22



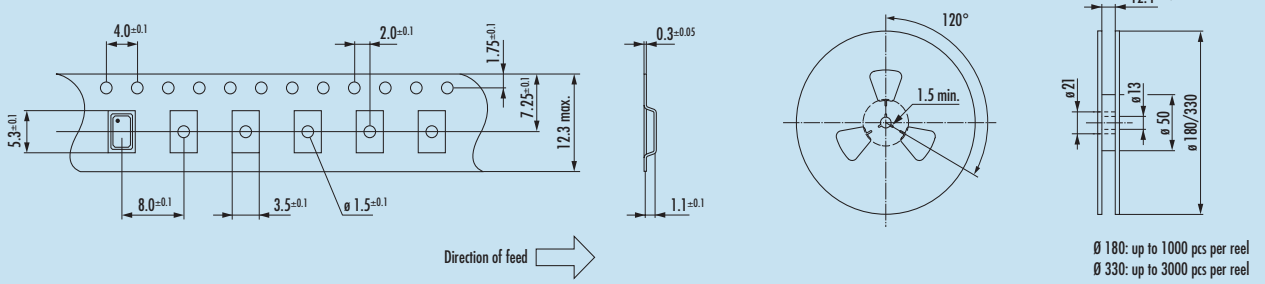
up to 3000 pcs per reel

3.2 x 2.5 x 0.75
JSO32



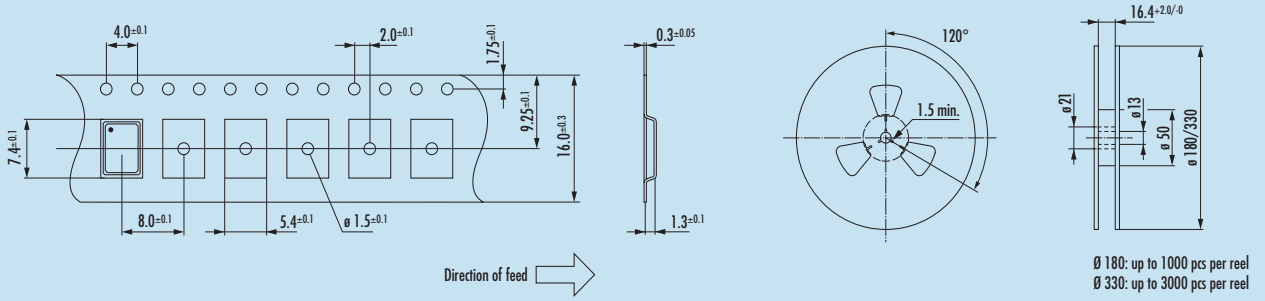
up to 3000 pcs per reel

5.0 x 3.2 x 0.75
JSO53



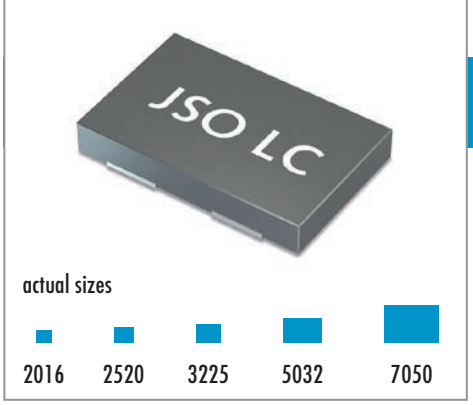
Ø 180: up to 1000 pcs per reel
Ø 330: up to 3000 pcs per reel

7.0 x 5.0 x 0.90
JSO75



Ø 180: up to 1000 pcs per reel
Ø 330: up to 3000 pcs per reel

in mm



MEMS-Oscillator · JSO LC series · 1.8 V

- low power oscillator with HCMOS/LVCMOS output
- compatible to industry standard packages 2016 – 7050
- configured to customer's specification
- extended shock & vibration resistance
- very fast delivery service
- 500 million hours MTBF

General Data

type		JSOxxCxLC 1.8 V
frequency range		1.0 ~ 110.0 MHz (temp. range T0 ~ T8)
		115.0 ~ 137.0 MHz (temp. range T0 ~ T1)
frequency stability over all		±20 ppm ~ ±50 ppm (see table 1)
current consumption		see table 2
supply voltage V_{DC}		1.8 V ± 10%
temperature	operating	T0 = -20°C ~ +70°C
		T1 = -40°C ~ +85°C
		T2 = -40°C ~ +105°C
		T3 = -40°C ~ +125°C
		T8 = -55°C ~ +125°C
	storage	-55°C ~ +150°C
output	logic	HCMOS/LVCMOS
	rise & fall time	4.2 ns max. at 15 pF / 6.8 ns max. at 30 pF (see table 4)
	load max.	30 pF max. recommended (≤ 74.0 MHz)
		15 pF max. recommended (> 74.0 MHz)
		other load capacitances possible, see supplementary document
	current max.	2 mA
	low level max.	0.1 x V_{DC}
	high level min.	0.9 x V_{DC}
standby function (e/d)		stop (S), tristate-only (T) or none (N), see table 3
output enable time max.		5 ms (S) / 150 ns (T)
output disable time max.		150 ns
start-up time max.		5 ms
standby current max.		2 µA (for stop (S), see table 3)
phase jitter 12 kHz ~ 20 MHz		< 3.0 ps RMS
symmetry at 0.5 x V_{DC}		45% ~ 55% (standard)

note: some frequencies can't be configured, see table 5.

Packing Note / Marking

QTY < 250 pcs. → cut tape
QTY 250/500/1K/3K pcs. → tape and reel
Marking: lot code only

RoHS compliant | Pb free | REACH compliant | Conflict mineral free

Table 1: Frequency Stability Code

stability code / temp. code*		B ±50 ppm	G ±30 ppm	C ±25 ppm	D ±20 ppm	
-20°C ~ +70°C	T0	○	○	○	○	
-40°C ~ +85°C	T1	○	○	○	○	
-40°C ~ +105°C	T2	○	○	○	○	
-40°C ~ +125°C	T3	○	○	○	○	
-55°C ~ +125°C	T8	○	○	○		
○ available						

* includes stability at 25°C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption typ. (for max. add 30%)

current at load	5 pF	15 pF	30 pF	60 pF	unit
output disabled	3.5	3.5	3.5	3.5	mA
1.0 ~ 19.9 MHz	3.6	3.9	4.4	5.5	mA
20.0 ~ 29.9 MHz	4.2	4.5	5.4	6.5	mA
30.0 ~ 49.9 MHz	4.5	5.1	6.5		mA
50.0 ~ 79.9 MHz	4.9	6.3			mA
80.0 ~ 110.0 MHz	5.7	7.6			mA
115.0 ~ 137.0 MHz	(8.0)	(13.0)			mA

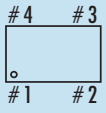
note: current at default edge control setting "D", also refer to table 4.

Table 3: Configurable Standby Function Options (e/d)

pin #1 (e/d control)	option	functionality
low "0" ($V_{IL} \leq 0.2\ V_{DC}$)	S = Stop	output weakly pulled down, oscillator in sleep mode
	T = TriState	output high impedance, oscillator operates
	N = None	oscillator output active
high "1" ($V_{IH} \geq 0.8\ V_{DC}$)	all	oscillator output active
open*	all	oscillator output active

* a pull up resistor is recommended in EMI stressed circuit environments.

Pin Connection



#4: V_{DC} #3: output
#1: e/d #2: GND

note: a capacitor of 0.1 µF between V_{DC} and GND is recommended.

Jauch MEMS – Uses SiTime's MEMS First™ technology

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Table 4: Max. Rise & Fall Time vs. Load Capacitance

C_L	5 pF	15 pF	30 pF	5 pF	15 pF	30 pF
edge control	at 10% ~ 90% of V_{DC} (ns)			at 20% ~ 80% of V_{DC} (ns)		
D = 0*	1.8	4.2	6.8	1.2	2.8	4.8
1	2.2	5.0	7.6	1.4	3.4	5.2
2	2.4	5.6	8.8	1.6	3.8	6.0
3	2.8	6.0	10.0	1.8	4.2	6.8
4	4.8	9.8	17.0	3.4	6.6	11.6
5	6.6	12.6	21.0	4.4	8.6	15.0
6	10.0	18.0	32.0	6.6	12.0	22.0
7	18.0	34.0	62.0	12.4	24.0	44.0

* default edge control setting "D" at V_{DC} = 1.8 V, please also refer to the supplementary information on our homepage for typical values and more details.

Table 5: Non-Configurable Frequencies

operating temperature option		operating temperature option	
T2 – (-40°C ~ +105°C) T3 – (-40°C ~ +125°C)		T8 – (-55°C ~ +125°C)	
from (MHz)	to (MHz)	from (MHz)	to (MHz)
61.223	61.674	61.223	61.974
69.796	70.485	69.240	70.827
79.063	79.162	78.715	79.561
81.428	82.232	80.160	80.174
91.834	92.155	80.780	82.632
94.249	94.430	91.834	95.474
94.875	94.994	96.192	96.209
97.714	98.679	96.936	99.158
110.0	115.194	110.0	119.342
117.811	118.038	–	–
118.594	118.743	120.239	120.262
122.142	122.705	121.170	121.243
123.022	123.348	121.601	123.948

Order Information

Example: O 26.123456 – JSO 75 C1 L C – B – 1.8 – T0 – S – D

O = Oscillator

frequency (8 digits), see also table 5
1.0 ~ 110.0 MHz
115.0 ~ 137.0 MHz

JSO = Jauch Silicon Oscillator

package
75 = 7050
53 = 5032
32 = 3225
22 = 2520
21 = 2016

frequency range
C1 = 1.0 ~ 110.0 MHz
C2 = 115.0 ~ 137.0 MHz

function/feature
L = lowpower

output I/F
C = (H)CMOS

edge control
D = default
0 – 7, see table 4

standby function options
S = Stop
T = TriState
N = None

temperature range
T0 = -20°C ~ +70°C
T1 = -40°C ~ +85°C
T2 = -40°C ~ +105°C
T3 = -40°C ~ +125°C
T8 = -55°C ~ +125°C

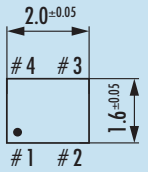
supply voltage
3.3 = 3.3 V
3.0 = 3.0 V
2.8 = 2.8 V
2.5 = 2.5 V
1.8 = 1.8 V
2V3 = 2.5 V ~ 3.3 V

frequency stability overall
B = ± 50 ppm
G = ± 30 ppm
C = ± 25 ppm
D = ± 20 ppm

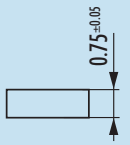
MEMS-Oscillator · JSO LC series · 1.8 V

Dimensions

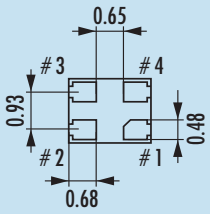
2.0 x 1.6 x 0.75
JSO21



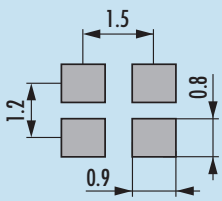
top view



side view

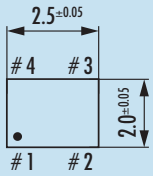


bottom view

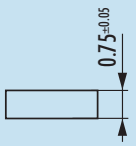


pad layout

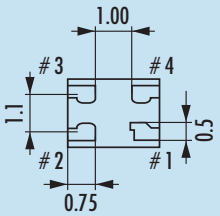
2.5 x 2.0 x 0.75
JSO22



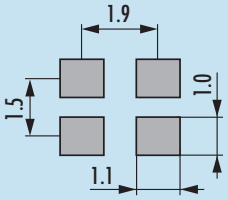
top view



side view

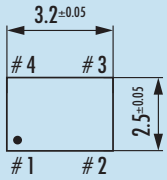


bottom view

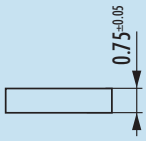


pad layout

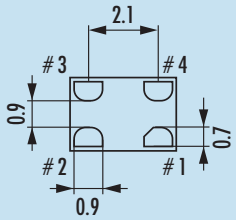
3.2 x 2.5 x 0.75
JSO32



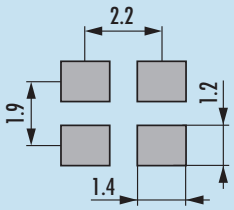
top view



side view

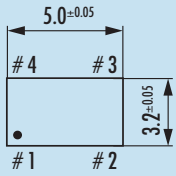


bottom view

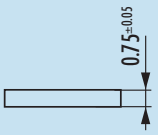


pad layout

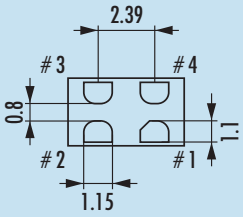
5.0 x 3.2 x 0.75
JSO53



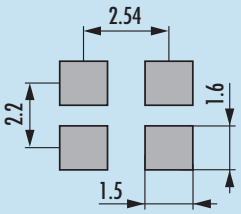
top view



side view

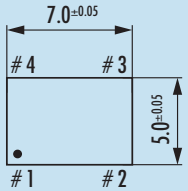


bottom view

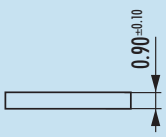


pad layout

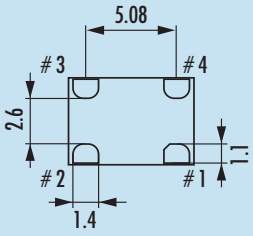
7.0 x 5.0 x 0.90
JSO75



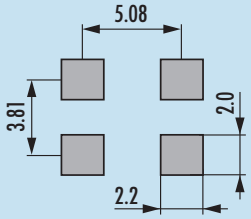
top view



side view



bottom view



pad layout

Pin connection	# 1: e/d	# 2: GND	# 3: output	# 4: V_{DC}	note: a capacitor of 0.1 µF between V_{DC} and GND is recommended

in mm

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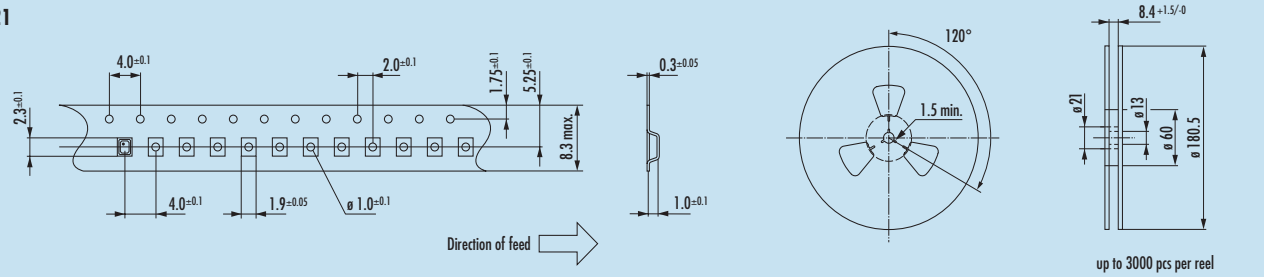
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

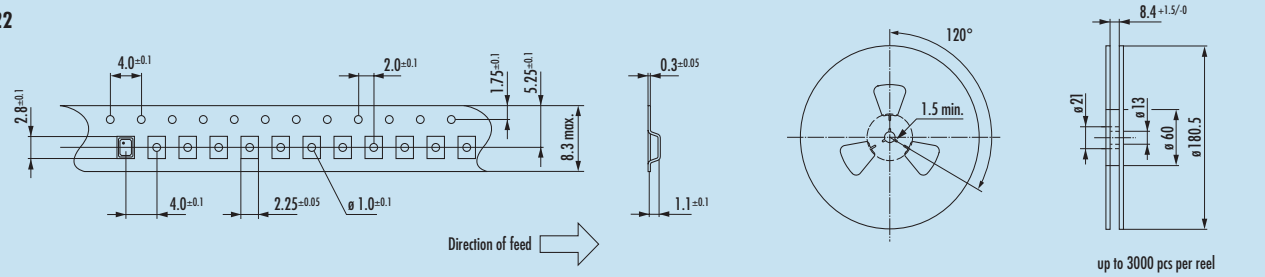
Taping Specification

2.0 x 1.6 x 0.75
JSO21



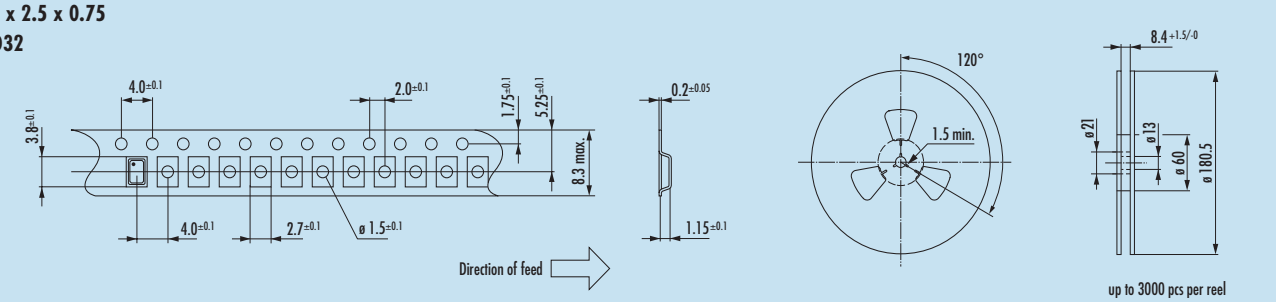
up to 3000 pcs per reel

2.5 x 2.0 x 0.75
JSO22



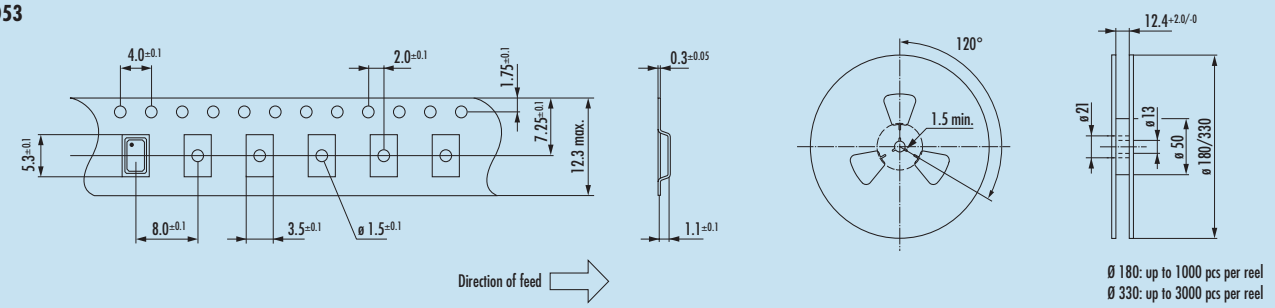
up to 3000 pcs per reel

3.2 x 2.5 x 0.75
JSO32



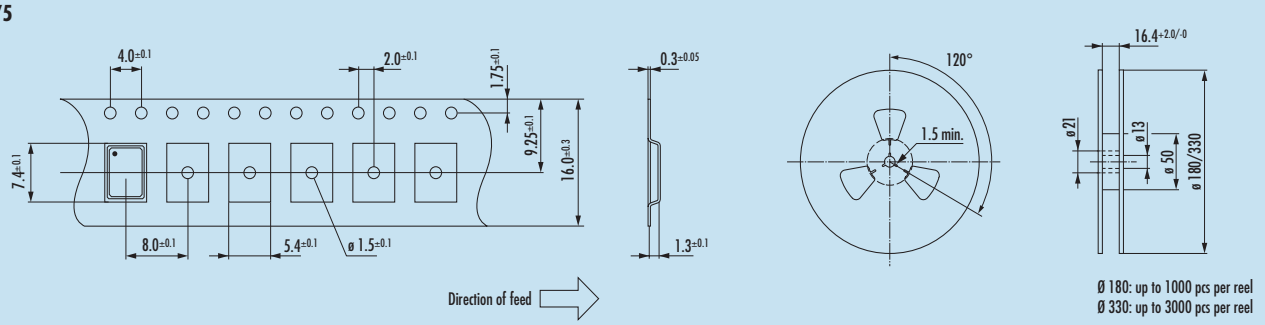
up to 3000 pcs per reel

5.0 x 3.2 x 0.75
JSO53



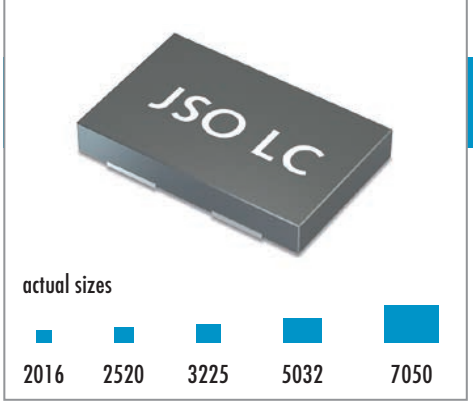
Ø 180: up to 1000 pcs per reel
Ø 330: up to 3000 pcs per reel

7.0 x 5.0 x 0.90
JSO75



Ø 180: up to 1000 pcs per reel
Ø 330: up to 3000 pcs per reel

in mm



MEMS-Oscillator · JSO LC series · 2.5 V ~ 3.3 V

- low power oscillator with HCMOS/LVCMOS output
- compatible to industry standard packages 2016 – 7050
- configured to customer's specification
- extended shock & vibration resistance
- very fast delivery service
- 500 million hours MTBF

General Data

type		JSOxxCxLC 2.5 V ~ 3.3 V
frequency range		1.0 ~ 110.0 MHz (temp. range T0 ~ T8)
		115.0 ~ 137.0 MHz (temp. range T0 ~ T1)
frequency stability over all		±20 ppm ~ ±50 ppm (see table 1)
current consumption		see table 2
supply voltage V_{DC}		2.5 V – 10% ~ 3.3 V + 10%
temperature	operating	T0 = -20°C ~ +70°C
		T1 = -40°C ~ +85°C
		T2 = -40°C ~ +105°C
		T3 = -40°C ~ +125°C
		T8 = -55°C ~ +125°C
	storage	-55°C ~ +150°C
output	logic	HCMOS/LVCMOS
	rise & fall time	4.0 ns max. at 15 pF / 6.6 ns max. at 30 pF (see table 4)
	load max.	30 pF max. recommended (≤ 76.0 MHz)
		15 pF max. recommended (> 76.0 MHz)
		other load capacitances possible, see supplementary document
	current max.	3 mA
	low level max.	0.1 x V_{DC}
	high level min.	0.9 x V_{DC}
standby function (e/d)		stop (S), tristate-only (T) or none (N), see table 3
output enable time max.		5 ms (S) / 150 ns (T)
output disable time max.		150 ns
start-up time max.		5 ms
standby current max.		3 µA (for stop (S), see table 3)
phase jitter 12 kHz ~ 20 MHz		< 3.0 ps RMS
symmetry at 0.5 x V_{DC}		45% ~ 55% (standard)

note: some frequencies can't be configured, see table 5.

Packing Note / Marking

QTY < 250 pcs. → cut tape
QTY 250/500/1K/3K pcs. → tape and reel
Marking: lot code only

RoHS compliant | Pb free | REACH compliant | Conflict mineral free

Table 1: Frequency Stability Code

stability code / temp. code*		B ±50 ppm	G ±30 ppm	C ±25 ppm	D ±20 ppm	
-20°C ~ +70°C	T0	○	○	○	○	
-40°C ~ +85°C	T1	○	○	○	○	
-40°C ~ +105°C	T2	○	○	○	○	
-40°C ~ +125°C	T3	○	○	○	○	
-55°C ~ +125°C	T8	○	○	○		
○ available						

* includes stability at 25°C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption typ. (for max. add 30%)

current at load	5 pF	15 pF	30 pF	60 pF	unit
output disabled	4.0	4.0	4.0	4.0	mA
1.0 ~ 19.9 MHz	4.0	4.6	5.6	7.6	mA
20.0 ~ 29.9 MHz	4.6	5.7	7.4	10.9	mA
30.0 ~ 49.9 MHz	5.1	6.7	9.2	14.3	mA
50.0 ~ 79.9 MHz	6.4	9.0	13.2		mA
80.0 ~ 110.0 MHz	7.7	11.2	17.0		mA
115.0 ~ 137.0 MHz	(10.0)	(14.5)			mA

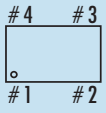
note: current at default edge control setting "D", also refer to table 4.

Table 3: Configurable Standby Function Options (e/d)

pin #1 (e/d control)	option	functionality
low "0" ($V_{IL} \leq 0.2\ V_{DC}$)	S = Stop	output weakly pulled down, oscillator in sleep mode
	T = TriState	output high impedance, oscillator operates
	N = None	oscillator output active
high "1" ($V_{IH} \geq 0.8\ V_{DC}$)	all	oscillator output active
open*	all	oscillator output active

* a pull up resistor is recommended in EMI stressed circuit environments.

Pin Connection



#4: V_{DC} #3: output
#1: e/d #2: GND

note: a capacitor of 0.1 µF between V_{DC} and GND is recommended.

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Jauch Quartz GmbH • e-mail: info@jauch.de
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Table 4: Max. Rise & Fall Time vs. Load Capacitance

C_L	5 pF	15 pF	30 pF	5 pF	15 pF	30 pF
edge control	at 10% ~ 90% of V_{DC} (ns)			at 20% ~ 80% of V_{DC} (ns)		
0	1.2	2.4	5.2	0.8	1.7	3.4
1	1.4	2.6	5.8	0.9	1.9	3.8
2	1.6	3.0	6.0	1.1	2.1	4.0
D = 3*	1.8	4.0	6.6	1.2	2.6	4.6
4	3.2	6.4	11.0	2.2	4.4	7.8
5	4.4	8.4	14.6	2.9	5.8	10.4
6	6.6	12.4	23.0	4.4	8.6	15.2
7	12.8	25.0	46.0	8.6	16.6	30.0

* default edge control setting "D" at V_{DC} = 2.5 V ~ 3.3 V, please also refer to the supplementary information on our homepage for typical values and more details.

Table 5: Non-Configurable Frequencies

operating temperature option		operating temperature option	
T2 – (-40°C ~ +105°C) T3 – (-40°C ~ +125°C)		T8 – (-55°C ~ +125°C)	
from (MHz)	to (MHz)	from (MHz)	to (MHz)
61.223	61.674	61.223	61.974
69.796	70.485	69.240	70.827
79.063	79.162	78.715	79.561
81.428	82.232	80.160	80.174
91.834	92.155	80.780	82.632
94.249	94.430	91.834	95.474
94.875	94.994	96.192	96.209
97.714	98.679	96.936	99.158
110.0	115.194	110.0	119.342
117.811	118.038	–	–
118.594	118.743	120.239	120.262
122.142	122.705	121.170	121.243
123.022	123.348	121.601	123.948

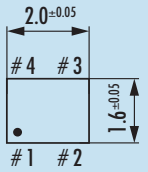
Order Information

Example: O 26.123456 – JSO 75 C1 L C – B – 2V3 – T0 – S – D

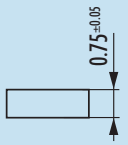
- **O** = Oscillator
- **frequency (8 digits),** see also table 5
  1.0 ~ 110.0 MHz
  115.0 ~ 137.0 MHz
- **JSO** = Jauch Silicon Oscillator
- **package**
  75 = 7050, 53 = 5032, 32 = 3225, 22 = 2520, 21 = 2016
- **frequency range**
  C1 = 1.0 ~ 110.0 MHz
  C2 = 115.0 ~ 137.0 MHz
- **function/feature**
  L = lowpower
- **output I/F**
  C = (H)CMOS
- **edge control**
  D = default
  0 – 7, see table 4
- **standby function options**
  S = Stop
  T = TriState
  N = None
- **temperature range**
  T0 = -20°C ~ +70°C, T1 = -40°C ~ +85°C, T2 = -40°C ~ +105°C, T3 = -40°C ~ +125°C, T8 = -55°C ~ +125°C
- **supply voltage**
  3.3 = 3.3 V, 3.0 = 3.0 V, 2.8 = 2.8 V, 2.5 = 2.5 V, 1.8 = 1.8 V, 2V3 = 2.5 V ~ 3.3 V
- **frequency stability overall**
  B = ± 50 ppm, G = ± 30 ppm, C = ± 25 ppm, D = ± 20 ppm

Dimensions

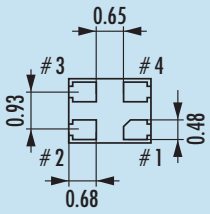
2.0 x 1.6 x 0.75
JSO21



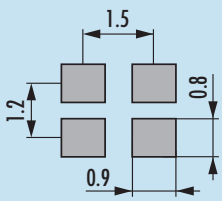
top view



side view

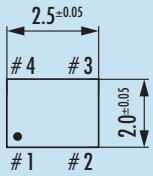


bottom view

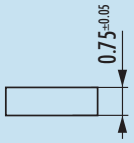


pad layout

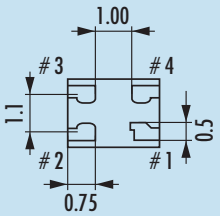
2.5 x 2.0 x 0.75
JSO22



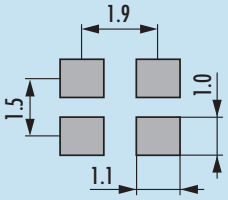
top view



side view

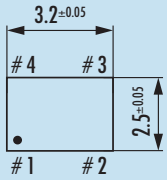


bottom view

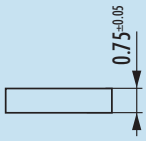


pad layout

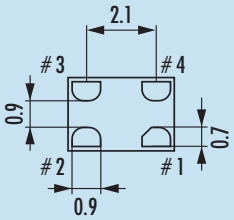
3.2 x 2.5 x 0.75
JSO32



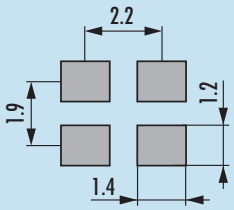
top view



side view

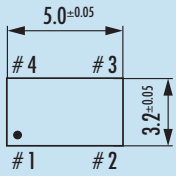


bottom view

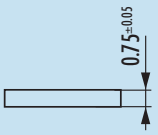


pad layout

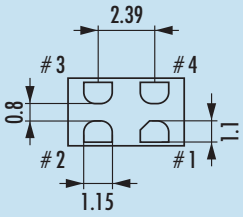
5.0 x 3.2 x 0.75
JSO53



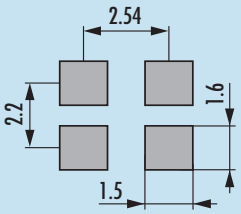
top view



side view

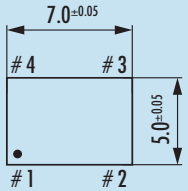


bottom view

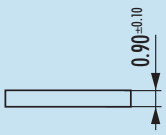


pad layout

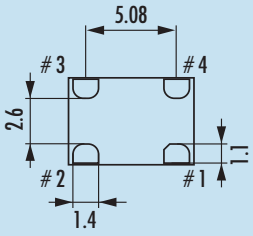
7.0 x 5.0 x 0.90
JSO75



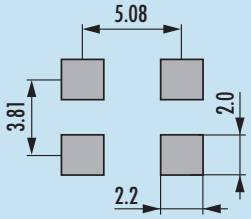
top view



side view



bottom view



pad layout

Pin connection	# 1: e/d	# 2: GND	# 3: output	# 4: V_{DC}	note: a capacitor of 0.1 µF between V_{DC} and GND is recommended

in mm

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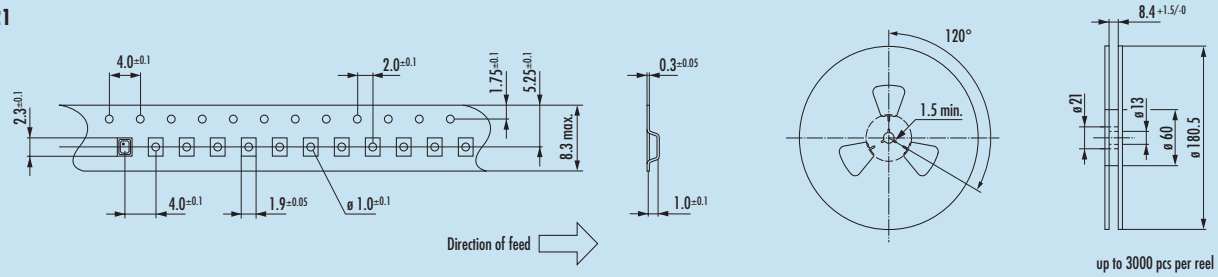
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

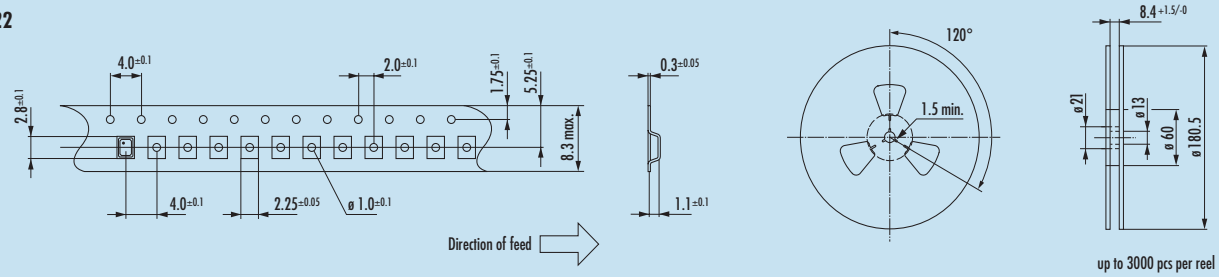
Taping Specification

2.0 x 1.6 x 0.75
JSO21



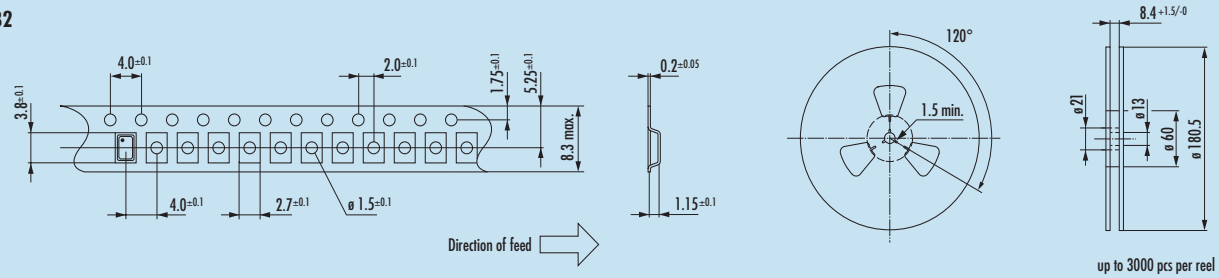
up to 3000 pcs per reel

2.5 x 2.0 x 0.75
JSO22



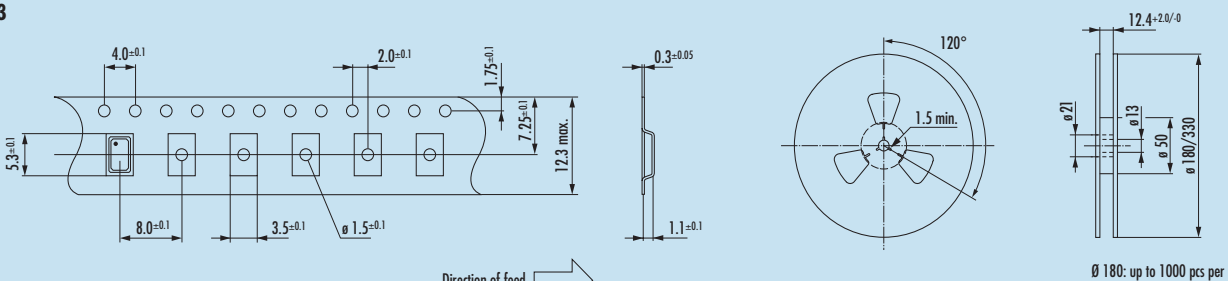
up to 3000 pcs per reel

3.2 x 2.5 x 0.75
JSO32



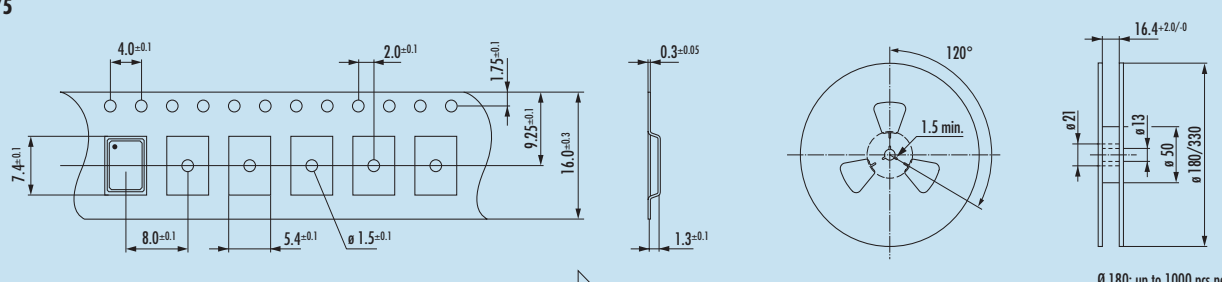
up to 3000 pcs per reel

5.0 x 3.2 x 0.75
JSO53



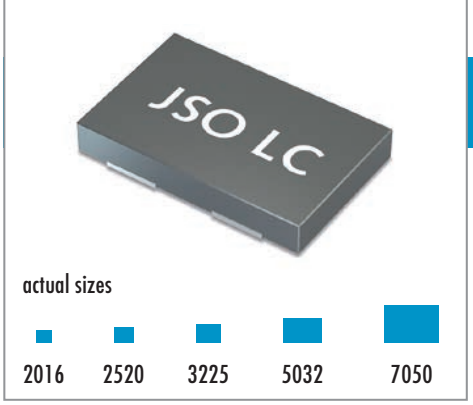
Ø 180: up to 1000 pcs per reel
Ø 330: up to 3000 pcs per reel

7.0 x 5.0 x 0.90
JSO75



Ø 180: up to 1000 pcs per reel
Ø 330: up to 3000 pcs per reel

in mm



MEMS-Oscillator · JSO LC series · 3.3 V

- low power oscillator with HCMOS/LVCMOS output
- compatible to industry standard packages 2016 – 7050
- configured to customer's specification
- extended shock & vibration resistance
- very fast delivery service
- 500 million hours MTBF

General Data

type		JSOxxCxLC 3.3 V
frequency range		1.0 ~ 110.0 MHz (temp. range T0 ~ T8)
		115.0 ~ 137.0 MHz (temp. range T0 ~ T1)
frequency stability over all		±20 ppm ~ ±50 ppm (see table 1)
current consumption		see table 2
supply voltage V_{DC}		3.3 V ± 10%
temperature	operating	T0 = -20°C ~ +70°C
		T1 = -40°C ~ +85°C
		T2 = -40°C ~ +105°C
		T3 = -40°C ~ +125°C
		T8 = -55°C ~ +125°C
	storage	-55°C ~ +150°C
output	logic	HCMOS/LVCMOS
	rise & fall time	3 ns max. at 15 pF / 6 ns max. at 30 pF (see table 4)
	load max.	30 pF max. recommended (≤ 83.0 MHz)
		15 pF max. recommended (> 83.0 MHz)
		other load capacitances possible, see supplementary document
	current max.	4 mA
	low level max.	0.1 x V_{DC}
	high level min.	0.9 x V_{DC}
standby function (e/d)		stop (S), tristate-only (T) or none (N), see table 3
output enable time max.		5 ms (S) / 150 ns (T)
output disable time max.		150 ns
start-up time max.		5 ms
standby current max.		5 µA (for stop (S), see table 3)
phase jitter 12 kHz ~ 20 MHz		< 3.0 ps RMS
symmetry at 0.5 x V_{DC}		45% ~ 55% (standard)

note: some frequencies can't be configured, see table 5.

Packing Note / Marking

QTY < 250 pcs. → cut tape
QTY 250/500/1K/3K pcs. → tape and reel
Marking: lot code only

RoHS compliant · Pb free · REACH compliant · Conflict mineral free

Table 1: Frequency Stability Code

stability code / temp. code*		B ±50 ppm	G ±30 ppm	C ±25 ppm	D ±20 ppm	
-20°C ~ +70°C	T0	○	○	○	○	
-40°C ~ +85°C	T1	○	○	○	○	
-40°C ~ +105°C	T2	○	○	○	○	
-40°C ~ +125°C	T3	○	○	○	○	
-55°C ~ +125°C	T8	○	○	○		
○ available						

* includes stability at 25°C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption typ. (for max. add 30%)

current at load	5 pF	15 pF	30 pF	60 pF	unit
output disabled	4.0	4.0	4.0	4.0	mA
1.0 ~ 19.9 MHz	4.0	4.6	5.6	7.6	mA
20.0 ~ 29.9 MHz	4.6	5.7	7.4	10.9	mA
30.0 ~ 49.9 MHz	5.1	6.7	9.2	14.3	mA
50.0 ~ 79.9 MHz	6.4	9.0	13.2		mA
80.0 ~ 110.0 MHz	7.7	11.2	17.0		mA
115.0 ~ 137.0 MHz	(10.0)	(14.5)			mA

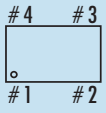
note: current at default edge control setting "D", also refer to table 4.

Table 3: Configurable Standby Function Options (e/d)

pin #1 (e/d control)	option	functionality
low "0" ($V_{IL} \leq 0.2\ V_{DC}$)	S = Stop	output weakly pulled down, oscillator in sleep mode
	T = TriState	output high impedance, oscillator operates
	N = None	oscillator output active
high "1" ($V_{IH} \geq 0.8\ V_{DC}$)	all	oscillator output active
open*	all	oscillator output active

* a pull up resistor is recommended in EMI stressed circuit environments.

Pin Connection



#4: V_{DC} · #3: output
#1: e/d · #2: GND

note: a capacitor of 0.1 µF between V_{DC} and GND is recommended.

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full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Table 4: Max. Rise & Fall Time vs. Load Capacitance

C_L	5 pF	15 pF	30 pF	5 pF	15 pF	30 pF
edge control	at 10% ~ 90% of V_{DC} (ns)			at 20% ~ 80% of V_{DC} (ns)		
0	1.0	1.7	3.6	0.7	1.2	2.6
1	1.1	1.8	4.4	0.7	1.3	3.0
2	1.2	2.6	5.0	0.8	1.8	3.3
D = 3*	1.3	3.0	6.0	0.9	2.0	3.8
4	2.6	5.4	9.4	1.5	3.8	6.4
5	3.4	6.6	12.0	2.4	5.0	8.6
6	5.2	10.0	17.0	3.6	7.0	12.4
7	10.4	21.0	35.0	7.4	14.0	25.0

* default edge control setting "D" at V_{DC} = 3.3 V, please also refer to the supplementary information on our homepage for typical values and more details.

Table 5: Non-Configurable Frequencies

operating temperature option		operating temperature option	
T2 – (-40°C ~ +105°C) T3 – (-40°C ~ +125°C)		T8 – (-55°C ~ +125°C)	
from (MHz)	to (MHz)	from (MHz)	to (MHz)
61.223	61.674	61.223	61.974
69.796	70.485	69.240	70.827
79.063	79.162	78.715	79.561
81.428	82.232	80.160	80.174
91.834	92.155	80.780	82.632
94.249	94.430	91.834	95.474
94.875	94.994	96.192	96.209
97.714	98.679	96.936	99.158
110.0	115.194	110.0	119.342
117.811	118.038	–	–
118.594	118.743	120.239	120.262
122.142	122.705	121.170	121.243
123.022	123.348	121.601	123.948

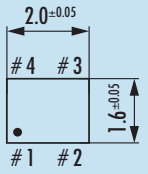
Order Information

Example: O 26.123456 – JSO 75 C1 L C – B – 3.3 – T0 – S – D

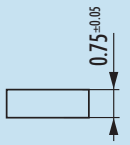
- O = Oscillator
- **frequency (8 digits),** see also table 5
  1.0 ~ 110.0 MHz
  115.0 ~ 137.0 MHz
- JSO = Jauch Silicon Oscillator
- **package**
  75 = 7050
  53 = 5032
  32 = 3225
  22 = 2520
  21 = 2016
- **frequency range**
  C1 = 1.0 ~ 110.0 MHz
  C2 = 115.0 ~ 137.0 MHz
- **function/feature**
  L = lowpower
- **output I/F**
  C = (H)CMOS
- **edge control**
  D = default
  0 – 7, see table 4
- **standby function options**
  S = Stop
  T = TriState
  N = None
- **temperature range**
  T0 = -20°C ~ +70°C
  T1 = -40°C ~ +85°C
  T2 = -40°C ~ +105°C
  T3 = -40°C ~ +125°C
  T8 = -55°C ~ +125°C
- **supply voltage**
  3.3 = 3.3 V
  3.0 = 3.0 V
  2.8 = 2.8 V
  2.5 = 2.5 V
  1.8 = 1.8 V
  2V3 = 2.5 V ~ 3.3 V
- **frequency stability overall**
  B = ± 50 ppm
  G = ± 30 ppm
  C = ± 25 ppm
  D = ± 20 ppm

Dimensions

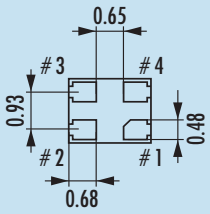
2.0 x 1.6 x 0.75
JSO21



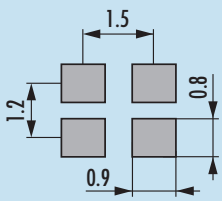
top view



side view

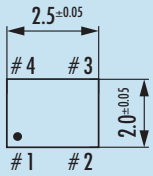


bottom view

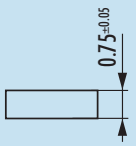


pad layout

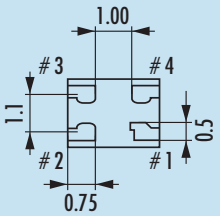
2.5 x 2.0 x 0.75
JSO22



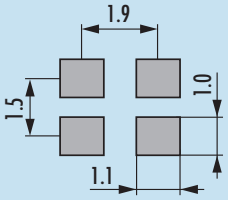
top view



side view

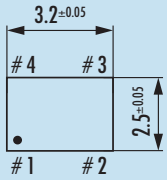


bottom view

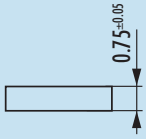


pad layout

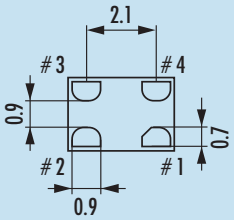
3.2 x 2.5 x 0.75
JSO32



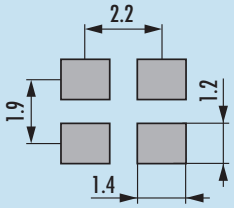
top view



side view

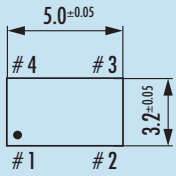


bottom view

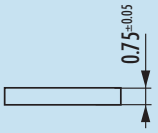


pad layout

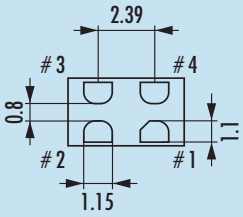
5.0 x 3.2 x 0.75
JSO53



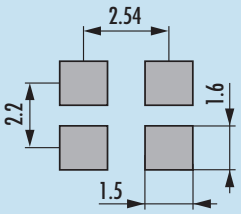
top view



side view

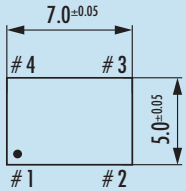


bottom view

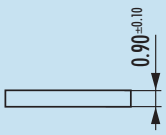


pad layout

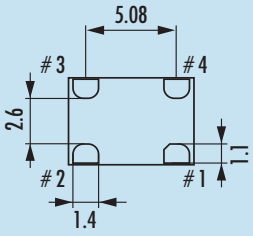
7.0 x 5.0 x 0.90
JSO75



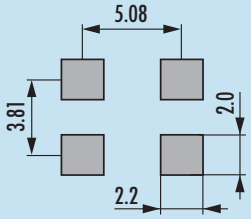
top view



side view



bottom view



pad layout

Pin connection	# 1: e/d	# 2: GND	# 3: output	# 4: V_{DC}	note: a capacitor of 0.1 µF between V_{DC} and GND is recommended

in mm

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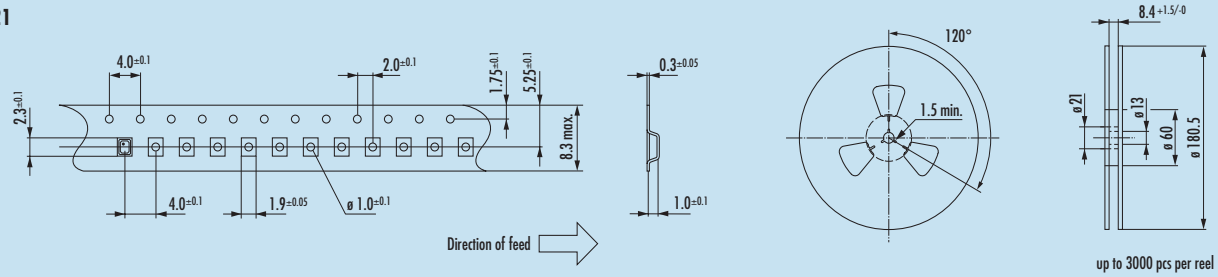
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

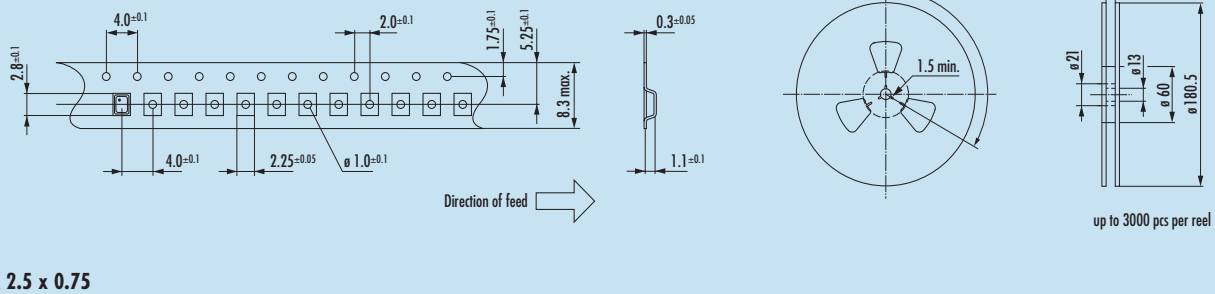
Taping Specification

2.0 x 1.6 x 0.75
JSO21



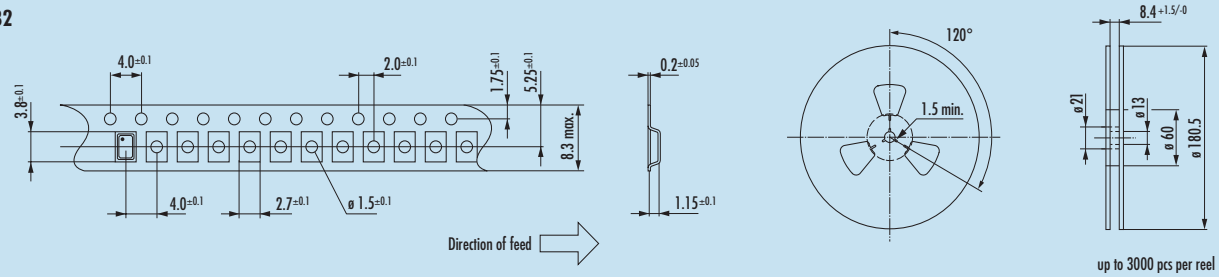
up to 3000 pcs per reel

2.5 x 2.0 x 0.75
JSO22



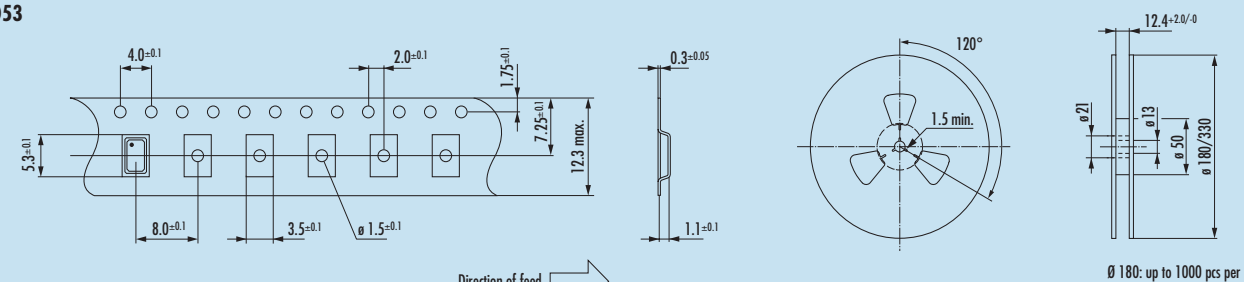
up to 3000 pcs per reel

3.2 x 2.5 x 0.75
JSO32



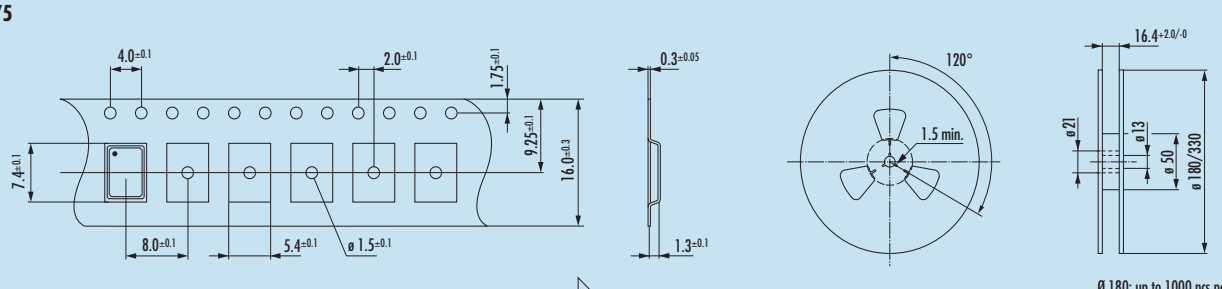
up to 3000 pcs per reel

5.0 x 3.2 x 0.75
JSO53



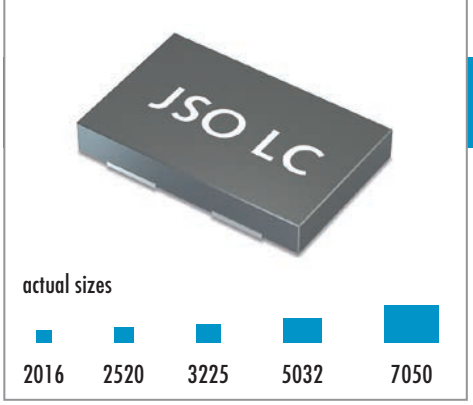
Ø 180: up to 1000 pcs per reel
Ø 330: up to 3000 pcs per reel

7.0 x 5.0 x 0.90
JSO75



Ø 180: up to 1000 pcs per reel
Ø 330: up to 3000 pcs per reel

in mm



MEMS-Oscillator · JSO LC series · 3.0 V

- low power oscillator with HCMOS/LVCMOS output
- compatible to industry standard packages 2016 – 7050
- configured to customer's specification
- extended shock & vibration resistance
- very fast delivery service
- 500 million hours MTBF

General Data

type		JSOxxCxLC 3.0 V
frequency range		1.0 ~ 110.0 MHz (temp. range T0 ~ T8)
		115.0 ~ 137.0 MHz (temp. range T0 ~ T1)
frequency stability over all		±20 ppm ~ ±50 ppm (see table 1)
current consumption		see table 2
supply voltage V_{DC}		3.0 V ± 10%
temperature	operating	T0 = -20°C ~ +70°C
		T1 = -40°C ~ +85°C
		T2 = -40°C ~ +105°C
		T3 = -40°C ~ +125°C
		T8 = -55°C ~ +125°C
	storage	-55°C ~ +150°C
output	logic	HCMOS/LVCMOS
	rise & fall time	3.3 ns max. at 15 pF / 6.2 ns max. at 30 pF (see table 4)
	load max.	30 pF max. recommended (≤ 81.0 MHz)
		15 pF max. recommended (> 81.0 MHz)
		other load capacitances possible, see supplementary document
	current max.	4 mA
	low level max.	0.1 x V_{DC}
	high level min.	0.9 x V_{DC}
standby function (e/d)		stop (S), tristate-only (T) or none (N), see table 3
output enable time max.		5 ms (S) / 150 ns (T)
output disable time max.		150 ns
start-up time max.		5 ms
standby current max.		5 µA (for stop (S), see table 3)
phase jitter 12 kHz ~ 20 MHz		< 3.0 ps RMS
symmetry at 0.5 x V_{DC}		45% ~ 55% (standard)

note: some frequencies can't be configured, see table 5.

Packing Note / Marking

QTY < 250 pcs. → cut tape
QTY 250/500/1K/3K pcs. → tape and reel
Marking: lot code only

RoHS compliant | Pb free | REACH compliant | Conflict mineral free

Table 1: Frequency Stability Code

stability code / temp. code*		B ±50 ppm	G ±30 ppm	C ±25 ppm	D ±20 ppm	
-20°C ~ +70°C	T0	○	○	○	○	
-40°C ~ +85°C	T1	○	○	○	○	
-40°C ~ +105°C	T2	○	○	○	○	
-40°C ~ +125°C	T3	○	○	○	○	
-55°C ~ +125°C	T8	○	○	○		
○ available						

* includes stability at 25°C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption typ. (for max. add 30%)

current at load	5 pF	15 pF	30 pF	60 pF	unit
output disabled	3.9	3.9	3.9	3.9	mA
1.0 ~ 19.9 MHz	4.1	4.5	5.4	7.2	mA
20.0 ~ 29.9 MHz	4.5	5.4	6.9	10.1	mA
30.0 ~ 49.9 MHz	4.9	6.3	8.6	13.2	mA
50.0 ~ 79.9 MHz	6.1	8.4	12.2		mA
80.0 ~ 110.0 MHz	7.3	10.5	15.5		mA
115.0 ~ 137.0 MHz	(9.5)	(14.0)			mA

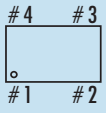
note: current at default edge control setting "D", also refer to table 4.

Table 3: Configurable Standby Function Options (e/d)

pin #1 (e/d control)	option	functionality
low "0" (V_{IL} ≤ 0.2 V_{DC})	S = Stop	output weakly pulled down, oscillator in sleep mode
	T = TriState	output high impedance, oscillator operates
	N = None	oscillator output active
high "1" (V_{IH} ≥ 0.8 V_{DC})	all	oscillator output active
open*	all	oscillator output active

* a pull up resistor is recommended in EMI stressed circuit environments.

Pin Connection



#4: V_{DC} #3: output
#1: e/d #2: GND

note: a capacitor of 0.1 µF between V_{DC} and GND is recommended.

Jauch MEMS – Uses SiTime's MEMS First™ technology

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full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Table 4: Max. Rise & Fall Time vs. Load Capacitance

C_L	5 pF	15 pF	30 pF	5 pF	15 pF	30 pF
edge control	at 10% ~ 90% of V_{DC} (ns)			at 20% ~ 80% of V_{DC} (ns)		
0	1.1	2.0	4.2	0.7	1.4	2.8
1	1.2	2.2	4.8	0.8	1.6	3.3
2	1.3	2.8	5.4	0.9	1.9	3.6
D = 3*	1.5	3.3	6.2	1.0	2.2	4.0
4	2.8	5.8	10.0	1.8	4.0	6.8
5	3.8	7.4	13.0	2.6	5.2	9.0
6	5.5	11.0	19.0	3.8	7.6	13.4
7	11.4	22.0	40.0	7.8	14.6	27.0

* default edge control setting "D" at V_{DC} = 3.0 V, please also refer to the supplementary information on our homepage for typical values and more details.

Table 5: Non-Configurable Frequencies

operating temperature option		operating temperature option	
T2 – (-40°C ~ +105°C) T3 – (-40°C ~ +125°C)		T8 – (-55°C ~ +125°C)	
from (MHz)	to (MHz)	from (MHz)	to (MHz)
61.223	61.674	61.223	61.974
69.796	70.485	69.240	70.827
79.063	79.162	78.715	79.561
81.428	82.232	80.160	80.174
91.834	92.155	80.780	82.632
94.249	94.430	91.834	95.474
94.875	94.994	96.192	96.209
97.714	98.679	96.936	99.158
110.0	115.194	110.0	119.342
117.811	118.038	–	–
118.594	118.743	120.239	120.262
122.142	122.705	121.170	121.243
123.022	123.348	121.601	123.948

Order Information

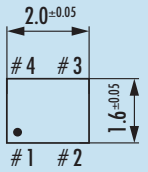
Example: O 26.123456 – JSO 75 C1 L C – B – 3.0 – T0 – S – D

- 0 = Oscillator
- **frequency (8 digits),** see also table 5
  1.0 ~ 110.0 MHz
  115.0 ~ 137.0 MHz
- JSO = Jauch Silicon Oscillator
- **package**
  75 = 7050
  53 = 5032
  32 = 3225
  22 = 2520
  21 = 2016
- **frequency range**
  C1 = 1.0 ~ 110.0 MHz
  C2 = 115.0 ~ 137.0 MHz
- **function/feature**
  L = lowpower
- **output I/F**
  C = (H)CMOS
- **edge control**
  D = default
  0 – 7, see table 4
- **standby function options**
  S = Stop
  T = TriState
  N = None
- **temperature range**
  T0 = -20°C ~ +70°C
  T1 = -40°C ~ +85°C
  T2 = -40°C ~ +105°C
  T3 = -40°C ~ +125°C
  T8 = -55°C ~ +125°C
- **supply voltage**
  3.3 = 3.3 V
  3.0 = 3.0 V
  2.8 = 2.8 V
  2.5 = 2.5 V
  1.8 = 1.8 V
  2V3 = 2.5 V ~ 3.3 V
- **frequency stability overall**
  B = ± 50 ppm
  G = ± 30 ppm
  C = ± 25 ppm
  D = ± 20 ppm

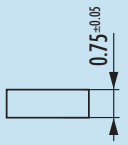
MEMS-Oscillator · JSO LC series · 3.0 V

Dimensions

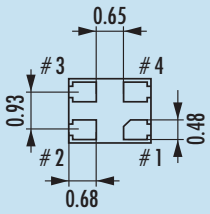
2.0 x 1.6 x 0.75
JSO21



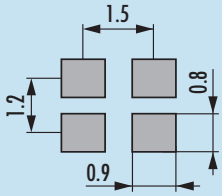
top view



side view

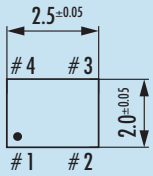


bottom view

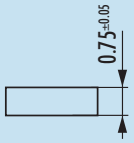


pad layout

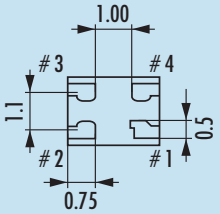
2.5 x 2.0 x 0.75
JSO22



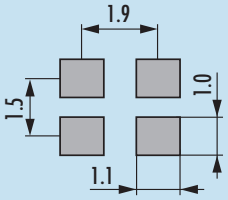
top view



side view

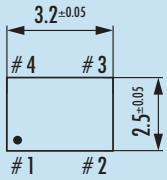


bottom view

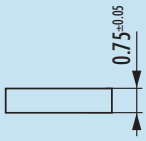


pad layout

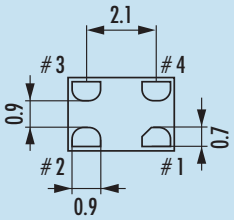
3.2 x 2.5 x 0.75
JSO32



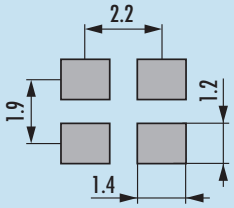
top view



side view

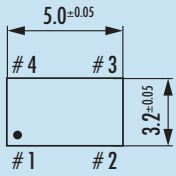


bottom view

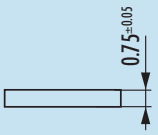


pad layout

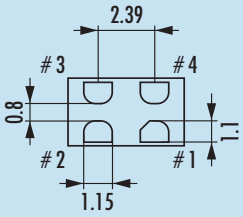
5.0 x 3.2 x 0.75
JSO53



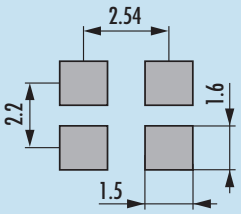
top view



side view

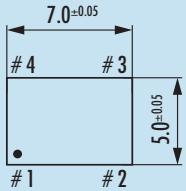


bottom view

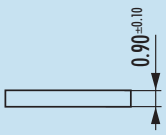


pad layout

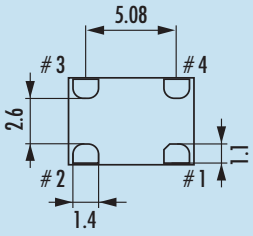
7.0 x 5.0 x 0.90
JSO75



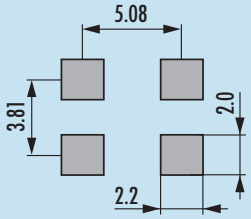
top view



side view



bottom view



pad layout

Pin connection	# 1: e/d	# 2: GND	# 3: output	# 4: V_{DC}	note: a capacitor of 0.1 µF between V_{DC} and GND is recommended

in mm

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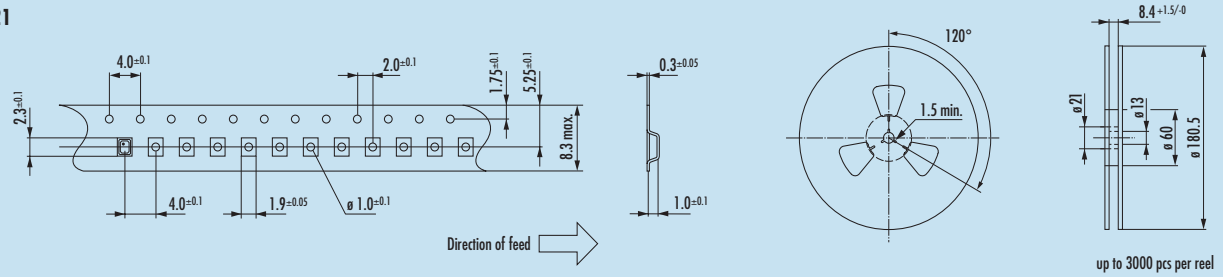
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

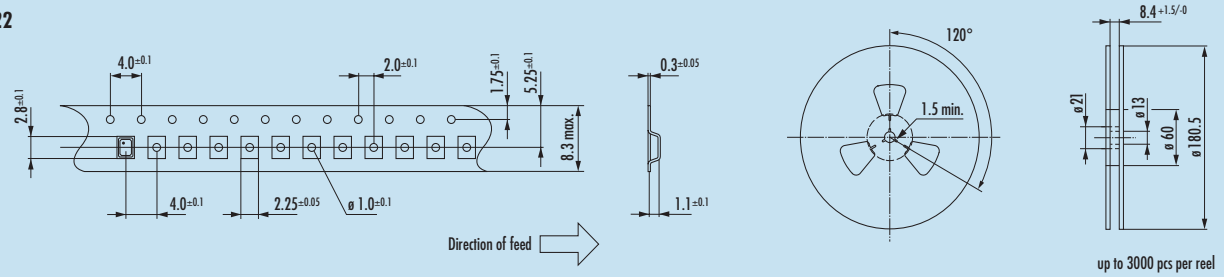
Taping Specification

2.0 x 1.6 x 0.75
JSO21



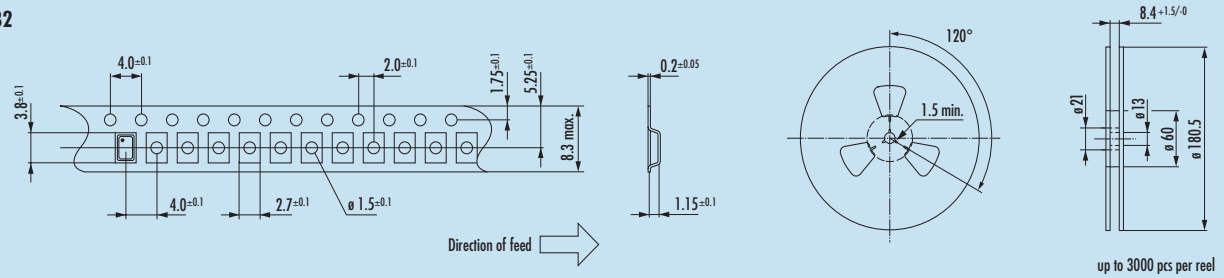
up to 3000 pcs per reel

2.5 x 2.0 x 0.75
JSO22



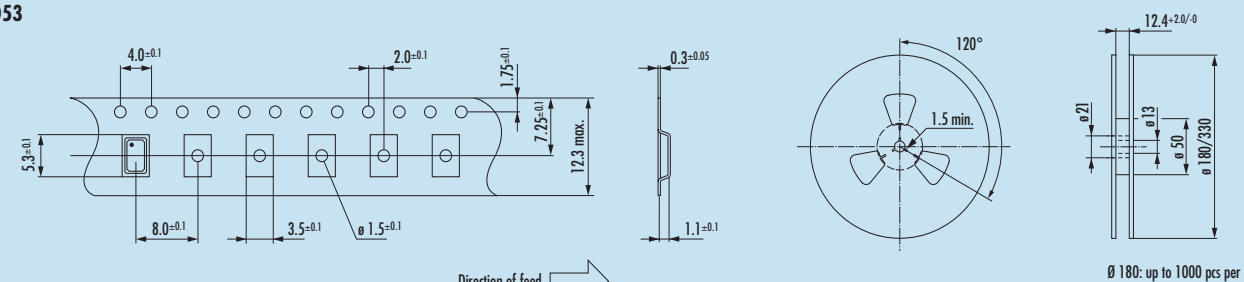
up to 3000 pcs per reel

3.2 x 2.5 x 0.75
JSO32



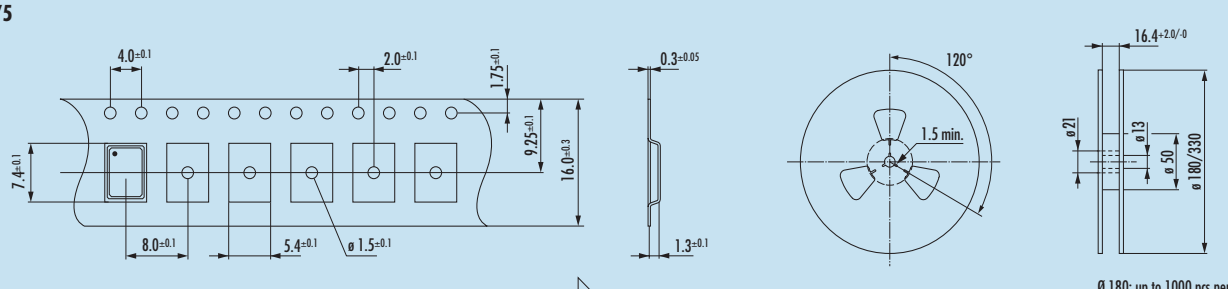
up to 3000 pcs per reel

5.0 x 3.2 x 0.75
JSO53



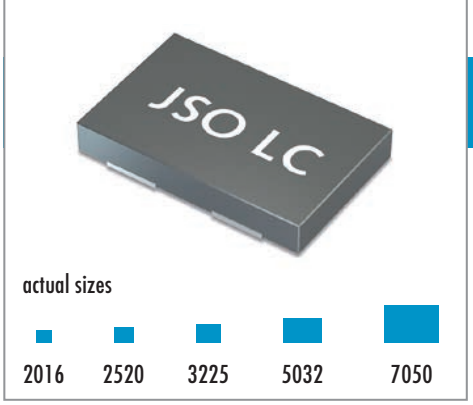
Ø 180: up to 1000 pcs per reel
Ø 330: up to 3000 pcs per reel

7.0 x 5.0 x 0.90
JSO75



Ø 180: up to 1000 pcs per reel
Ø 330: up to 3000 pcs per reel

in mm



MEMS-Oscillator · JSO LC series · 2.8 V

- low power oscillator with HCMOS/LVCMOS output
- compatible to industry standard packages 2016 – 7050
- configured to customer's specification
- extended shock & vibration resistance
- very fast delivery service
- 500 million hours MTBF

General Data

type		JSOxxCxLC 2.8 V
frequency range		1.0 ~ 110.0 MHz (temp. range T0 ~ T8)
		115.0 ~ 137.0 MHz (temp. range T0 ~ T1)
frequency stability over all		±20 ppm ~ ±50 ppm (see table 1)
current consumption		see table 2
supply voltage V_{DC}		2.8 V ± 10%
temperature	operating	T0 = -20°C ~ +70°C
		T1 = -40°C ~ +85°C
		T2 = -40°C ~ +105°C
		T3 = -40°C ~ +125°C
		T8 = -55°C ~ +125°C
	storage	-55°C ~ +150°C
output	logic	HCMOS/LVCMOS
	rise & fall time	2.9 ns max. at 15 pF / 5.7 ns max. at 30 pF (see table 4)
	load max.	30 pF max. recommended (≤ 88.0 MHz)
		15 pF max. recommended (> 88.0 MHz)
		other load capacitances possible, see supplementary document
	current max.	3 mA
	low level max.	0.1 x V_{DC}
	high level min.	0.9 x V_{DC}
standby function (e/d)		stop (S), tristate-only (T) or none (N), see table 3
output enable time max.		5 ms (S) / 150 ns (T)
output disable time max.		150 ns
start-up time max.		5 ms
standby current max.		4 µA (for stop (S), see table 3)
phase jitter 12 kHz ~ 20 MHz		< 3.0 ps RMS
symmetry at 0.5 x V_{DC}		45% ~ 55% (standard)

note: some frequencies can't be configured, see table 5.

Packing Note / Marking

QTY < 250 pcs. → cut tape
QTY 250/500/1K/3K pcs. → tape and reel
Marking: lot code only

RoHS compliant · Pb free · REACH compliant · Conflict mineral free

Table 1: Frequency Stability Code

stability code / temp. code*		B ±50 ppm	G ±30 ppm	C ±25 ppm	D ±20 ppm	
-20°C ~ +70°C	T0	○	○	○	○	
-40°C ~ +85°C	T1	○	○	○	○	
-40°C ~ +105°C	T2	○	○	○	○	
-40°C ~ +125°C	T3	○	○	○	○	
-55°C ~ +125°C	T8	○	○	○		
○ available						

* includes stability at 25°C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption typ. (for max. add 30%)

current at load	5 pF	15 pF	30 pF	60 pF	unit
output disabled	3.8	3.8	3.8	3.8	mA
1.0 ~ 19.9 MHz	4.1	4.3	5.2	6.9	mA
20.0 ~ 29.9 MHz	4.4	5.2	6.7	9.8	mA
30.0 ~ 49.9 MHz	4.8	6.2	8.3	12.7	mA
50.0 ~ 79.9 MHz	6.1	8.1	11.7		mA
80.0 ~ 110.0 MHz	7.0	10.0			mA
115.0 ~ 137.0 MHz	(9.0)	(14.0)			mA

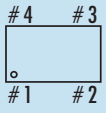
note: current at default edge control setting "D", also refer to table 4.

Table 3: Configurable Standby Function Options (e/d)

pin #1 (e/d control)	option	functionality
low "0" ($V_{IL} \leq 0.2\ V_{DC}$)	S = Stop	output weakly pulled down, oscillator in sleep mode
	T = TriState	output high impedance, oscillator operates
	N = None	oscillator output active
high "1" ($V_{IH} \geq 0.8\ V_{DC}$)	all	oscillator output active
open*	all	oscillator output active

* a pull up resistor is recommended in EMI stressed circuit environments.

Pin Connection



#4: V_{DC} · #3: output
#1: e/d · #2: GND

note: a capacitor of 0.1 µF between V_{DC} and GND is recommended.

Jauch MEMS – Uses SiTime's MEMS First™ technology

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full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Table 4: Max. Rise & Fall Time vs. Load Capacitance

C_L	5 pF	15 pF	30 pF	5 pF	15 pF	30 pF
edge control	at 10% ~ 90% of V_{DC} (ns)			at 20% ~ 80% of V_{DC} (ns)		
0	1.2	2.2	4.6	0.8	1.6	3.0
1	1.3	2.4	5.2	0.9	1.8	3.5
D = 2*	1.5	2.9	5.7	1.0	2.0	3.8
3	1.6	3.6	6.4	1.1	2.4	4.4
4	3.0	6.2	10.4	2.0	4.2	7.4
5	4.0	7.6	13.6	2.8	5.4	9.4
6	5.8	11.6	21.0	4.0	8.0	14.2
7	12.0	23.0	42.0	8.2	15.2	28.0

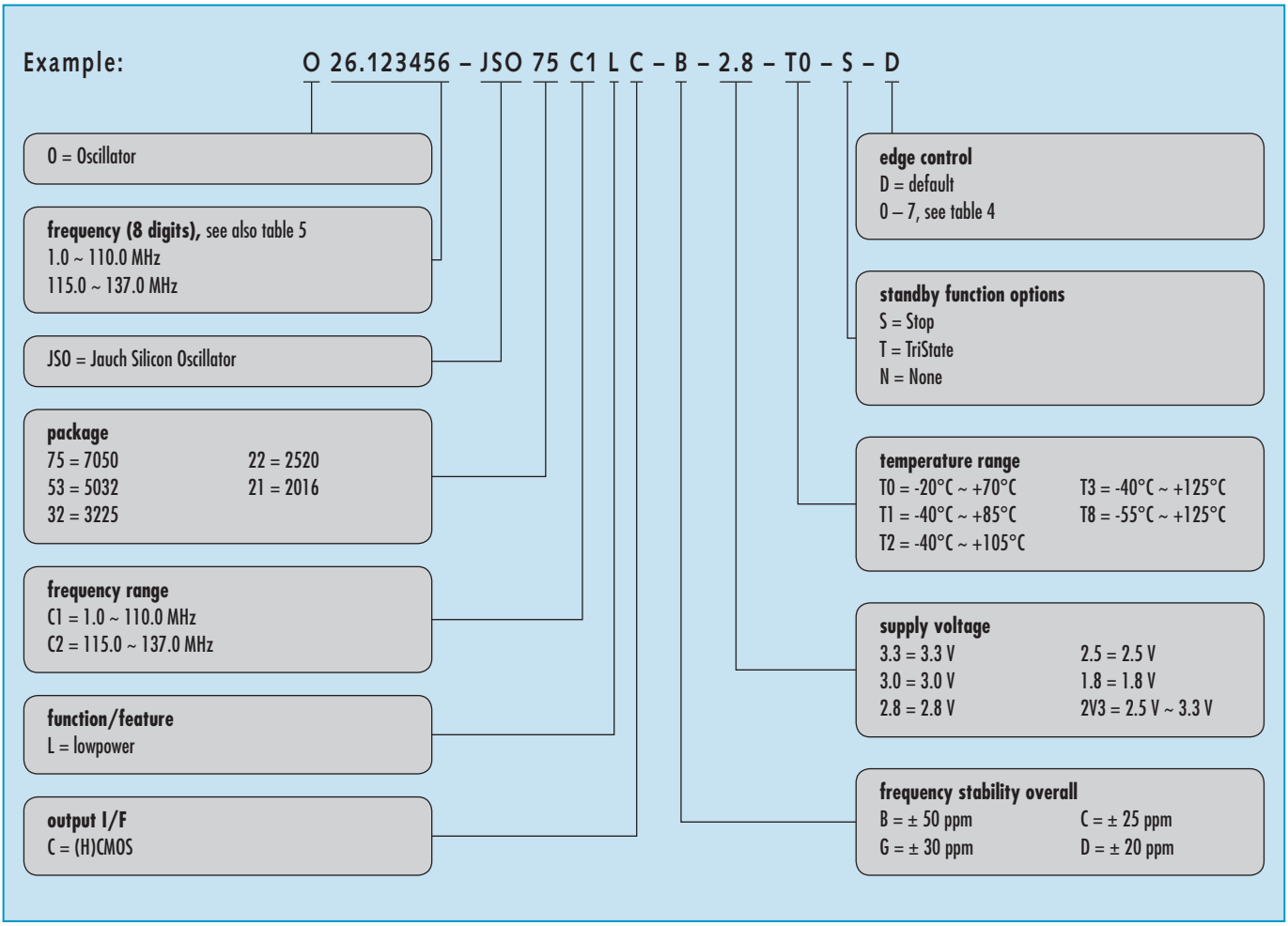
* default edge control setting "D" at V_{DC} = 2.8 V, please also refer to the supplementary information on our homepage for typical values and more details.

Table 5: Non-Configurable Frequencies

operating temperature option		operating temperature option	
T2 – (-40°C ~ +105°C) T3 – (-40°C ~ +125°C)		T8 – (-55°C ~ +125°C)	
from (MHz)	to (MHz)	from (MHz)	to (MHz)
61.223	61.674	61.223	61.974
69.796	70.485	69.240	70.827
79.063	79.162	78.715	79.561
81.428	82.232	80.160	80.174
91.834	92.155	80.780	82.632
94.249	94.430	91.834	95.474
94.875	94.994	96.192	96.209
97.714	98.679	96.936	99.158
110.0	115.194	110.0	119.342
117.811	118.038	–	–
118.594	118.743	120.239	120.262
122.142	122.705	121.170	121.243
123.022	123.348	121.601	123.948

Order Information

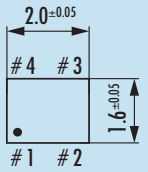
Example: O 26.123456 – JSO 75 C1 L C – B – 2.8 – T0 – S – D



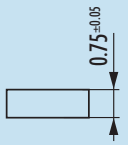
MEMS-Oscillator · JSO LC series · 2.8 V

Dimensions

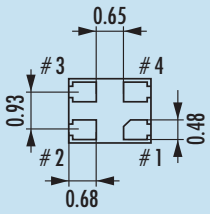
2.0 x 1.6 x 0.75
JSO21



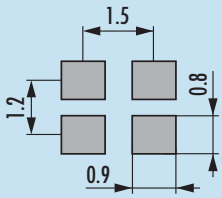
top view



side view

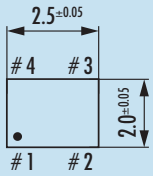


bottom view

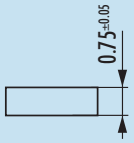


pad layout

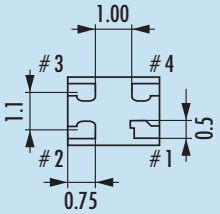
2.5 x 2.0 x 0.75
JSO22



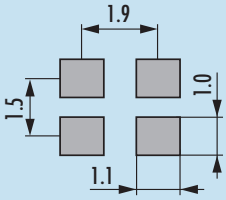
top view



side view

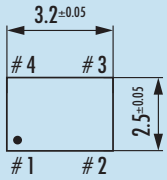


bottom view

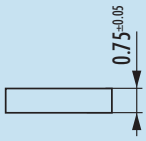


pad layout

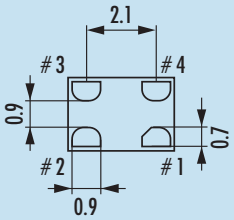
3.2 x 2.5 x 0.75
JSO32



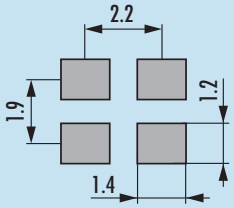
top view



side view

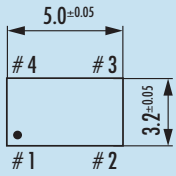


bottom view

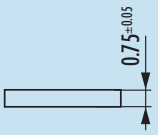


pad layout

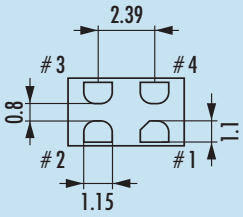
5.0 x 3.2 x 0.75
JSO53



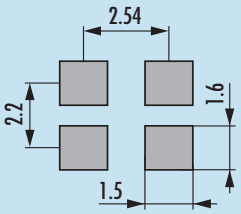
top view



side view

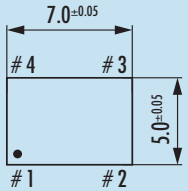


bottom view

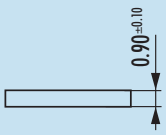


pad layout

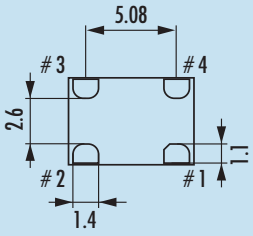
7.0 x 5.0 x 0.90
JSO75



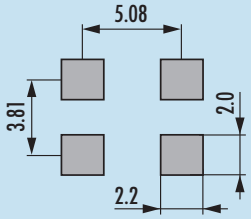
top view



side view



bottom view



pad layout

Pin connection	# 1: e/d	# 2: GND	# 3: output	# 4: V_{DC}	note: a capacitor of 0.1 µF between V_{DC} and GND is recommended

in mm

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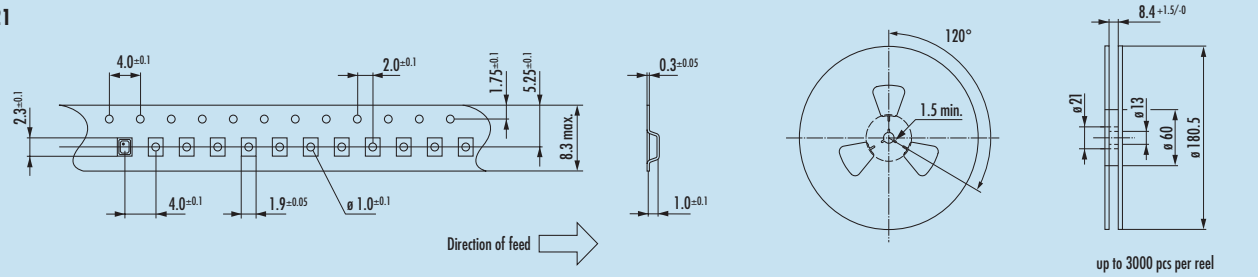
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

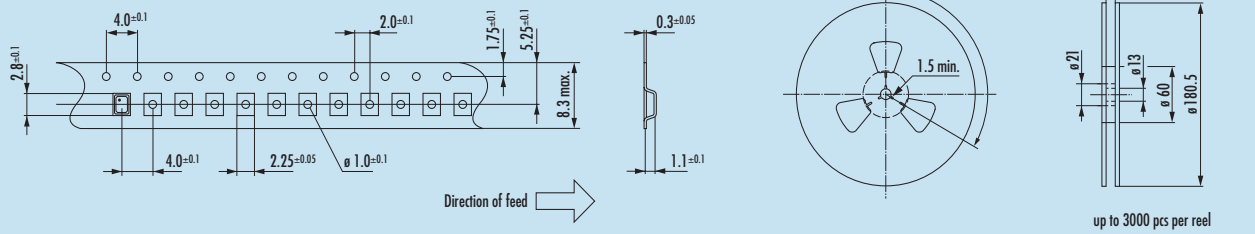
Taping Specification

2.0 x 1.6 x 0.75
JSO21



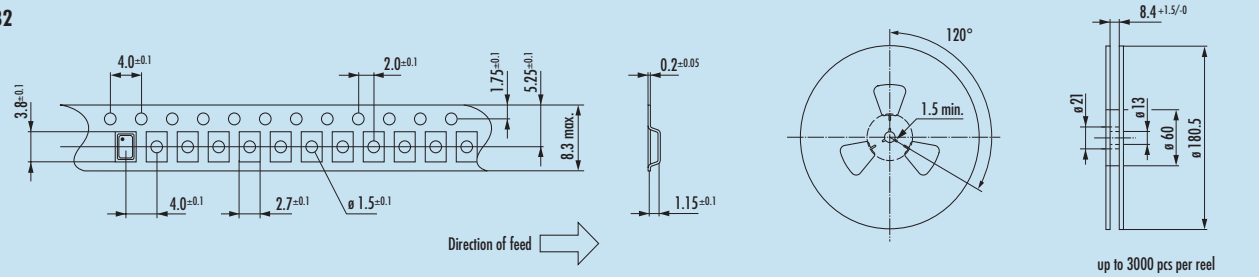
up to 3000 pcs per reel

2.5 x 2.0 x 0.75
JSO22



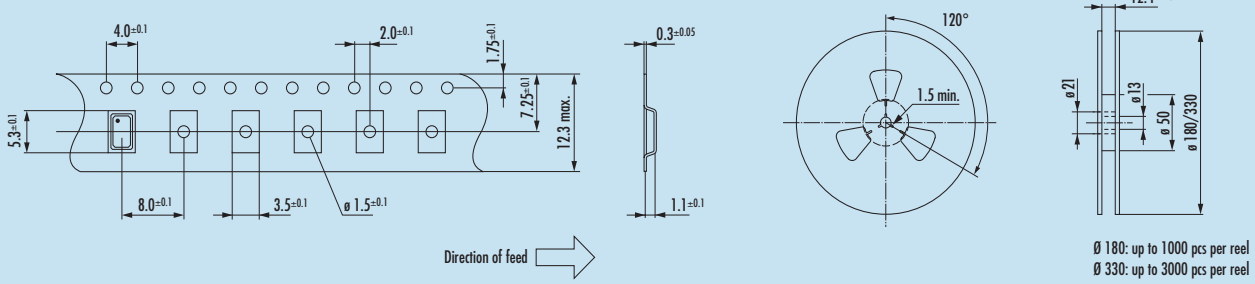
up to 3000 pcs per reel

3.2 x 2.5 x 0.75
JSO32



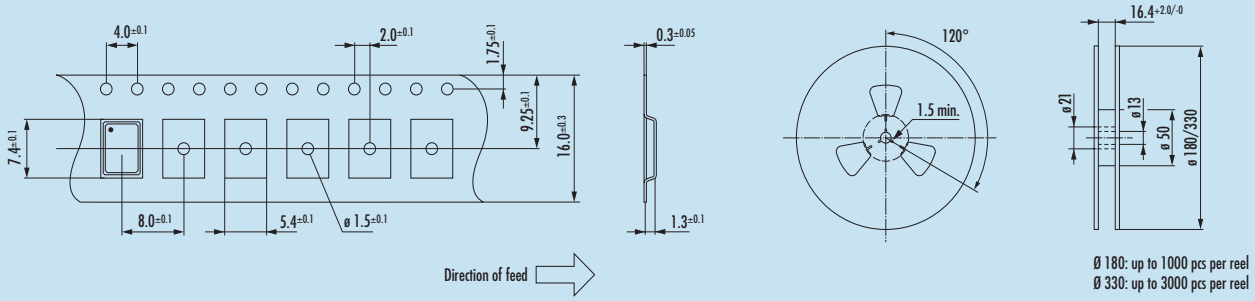
up to 3000 pcs per reel

5.0 x 3.2 x 0.75
JSO53



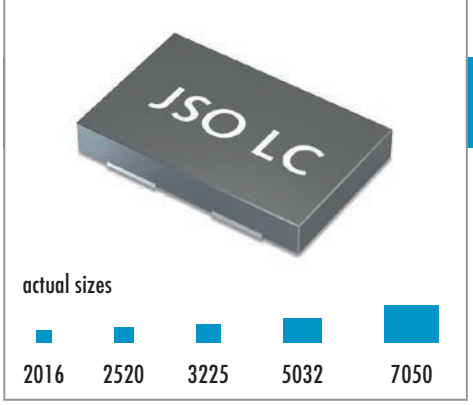
Ø 180: up to 1000 pcs per reel
Ø 330: up to 3000 pcs per reel

7.0 x 5.0 x 0.90
JSO75



Ø 180: up to 1000 pcs per reel
Ø 330: up to 3000 pcs per reel

in mm



MEMS-Oscillator · JSO LC series · 2.5 V

- low power oscillator with HCMOS/LVCMOS output
- compatible to industry standard packages 2016 – 7050
- configured to customer's specification
- extended shock & vibration resistance
- very fast delivery service
- 500 million hours MTBF

General Data

type		JSOxxCxLC 2.5 V
frequency range		1.0 ~ 110.0 MHz (temp. range T0 ~ T8)
		115.0 ~ 137.0 MHz (temp. range T0 ~ T1)
frequency stability over all		±20 ppm ~ ±50 ppm (see table 1)
current consumption		see table 2
supply voltage V_{DC}		2.5 V ± 10%
temperature	operating	T0 = -20°C ~ +70°C
		T1 = -40°C ~ +85°C
		T2 = -40°C ~ +105°C
		T3 = -40°C ~ +125°C
		T8 = -55°C ~ +125°C
	storage	-55°C ~ +150°C
output	logic	HCMOS/LVCMOS
	rise & fall time	3.0 ns max. at 15 pF / 6.0 ns max. at 30 pF (see table 4)
	load max.	30 pF max. recommended (≤ 83.0 MHz)
		15 pF max. recommended (> 83.0 MHz)
		other load capacitances possible, see supplementary document
	current max.	3 mA
	low level max.	0.1 x V_{DC}
	high level min.	0.9 x V_{DC}
standby function (e/d)		stop (S), tristate-only (T) or none (N), see table 3
output enable time max.		5 ms (S) / 150 ns (T)
output disable time max.		150 ns
start-up time max.		5 ms
standby current max.		3 µA (for stop (S), see table 3)
phase jitter 12 kHz ~ 20 MHz		< 3.0 ps RMS
symmetry at 0.5 x V_{DC}		45% ~ 55% (standard)

note: some frequencies can't be configured, see table 5.

Packing Note / Marking

QTY < 250 pcs. → cut tape
QTY 250/500/1K/3K pcs. → tape and reel
Marking: lot code only

RoHS compliant · Pb free · REACH compliant · Conflict mineral free

Table 1: Frequency Stability Code

stability code / temp. code*		B ±50 ppm	G ±30 ppm	C ±25 ppm	D ±20 ppm	
-20°C ~ +70°C	T0	○	○	○	○	
-40°C ~ +85°C	T1	○	○	○	○	
-40°C ~ +105°C	T2	○	○	○	○	
-40°C ~ +125°C	T3	○	○	○	○	
-55°C ~ +125°C	T8	○	○	○		
○ available						

* includes stability at 25°C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption typ. (for max. add 30%)

current at load	5 pF	15 pF	30 pF	60 pF	unit
output disabled	3.7	3.7	3.7	3.7	mA
1.0 ~ 19.9 MHz	3.8	4.2	5.0	6.4	mA
20.0 ~ 29.9 MHz	4.3	5.0	6.4	9.0	mA
30.0 ~ 49.9 MHz	4.7	5.8	7.8	11.6	mA
50.0 ~ 79.9 MHz	5.6	7.6	10.7		mA
80.0 ~ 110.0 MHz	6.6	9.2			mA
115.0 ~ 137.0 MHz	(8.5)	(13.0)			mA

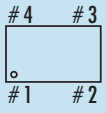
note: current at default edge control setting "D", also refer to table 4.

Table 3: Configurable Standby Function Options (e/d)

pin #1 (e/d control)	option	functionality
low "0" ($V_{IL} \leq 0.2\ V_{DC}$)	S = Stop	output weakly pulled down, oscillator in sleep mode
	T = TriState	output high impedance, oscillator operates
	N = None	oscillator output active
high "1" ($V_{IH} \geq 0.8\ V_{DC}$)	all	oscillator output active
open*	all	oscillator output active

* a pull up resistor is recommended in EMI stressed circuit environments.

Pin Connection



#4: V_{DC} · #3: output
#1: e/d · #2: GND

note: a capacitor of 0.1 µF between V_{DC} and GND is recommended.

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full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Table 4: Max. Rise & Fall Time vs. Load Capacitance

C_L	5 pF	15 pF	30 pF	5 pF	15 pF	30 pF
edge control	at 10% ~ 90% of V_{DC} (ns)			at 20% ~ 80% of V_{DC} (ns)		
0	1.2	2.4	5.2	0.8	1.7	3.4
1	1.4	2.6	5.8	0.9	1.9	3.8
D = 2*	1.6	3.0	6.0	1.1	2.1	4.0
3	1.8	4.0	6.6	1.2	2.6	4.6
4	3.2	6.4	11.0	2.2	4.4	7.8
5	4.4	8.4	14.6	2.9	5.8	10.4
6	6.6	12.4	23.0	4.4	8.6	15.2
7	12.8	25.0	46.0	8.6	16.6	30.0

* default edge control setting "D" at V_{DC} = 2.5 V, please also refer to the supplementary information on our homepage for typical values and more details.

Table 5: Non-Configurable Frequencies

operating temperature option		operating temperature option	
T2 – (-40°C ~ +105°C) T3 – (-40°C ~ +125°C)		T8 – (-55°C ~ +125°C)	
from (MHz)	to (MHz)	from (MHz)	to (MHz)
61.223	61.674	61.223	61.974
69.796	70.485	69.240	70.827
79.063	79.162	78.715	79.561
81.428	82.232	80.160	80.174
91.834	92.155	80.780	82.632
94.249	94.430	91.834	95.474
94.875	94.994	96.192	96.209
97.714	98.679	96.936	99.158
110.0	115.194	110.0	119.342
117.811	118.038	–	–
118.594	118.743	120.239	120.262
122.142	122.705	121.170	121.243
123.022	123.348	121.601	123.948

Order Information

Example: O 26.123456 – JSO 75 C1 L C – B – 2.5 – T0 – S – D

O = Oscillator

frequency (8 digits), see also table 5
1.0 ~ 110.0 MHz
115.0 ~ 137.0 MHz

JSO = Jauch Silicon Oscillator

package
75 = 7050
53 = 5032
32 = 3225
22 = 2520
21 = 2016

frequency range
C1 = 1.0 ~ 110.0 MHz
C2 = 115.0 ~ 137.0 MHz

function/feature
L = lowpower

output I/F
C = (H)CMOS

edge control
D = default
0 – 7, see table 4

standby function options
S = Stop
T = TriState
N = None

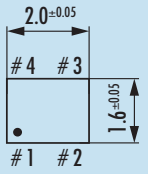
temperature range
T0 = -20°C ~ +70°C
T1 = -40°C ~ +85°C
T2 = -40°C ~ +105°C
T3 = -40°C ~ +125°C
T8 = -55°C ~ +125°C

supply voltage
3.3 = 3.3 V
3.0 = 3.0 V
2.8 = 2.8 V
2.5 = 2.5 V
1.8 = 1.8 V
2V3 = 2.5 V ~ 3.3 V

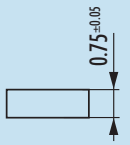
frequency stability overall
B = ± 50 ppm
G = ± 30 ppm
C = ± 25 ppm
D = ± 20 ppm

Dimensions

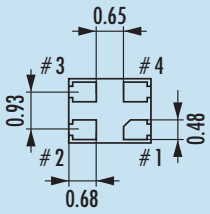
2.0 x 1.6 x 0.75
JSO21



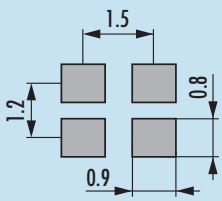
top view



side view

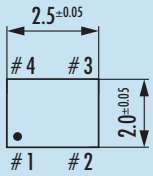


bottom view

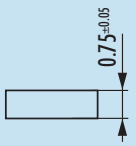


pad layout

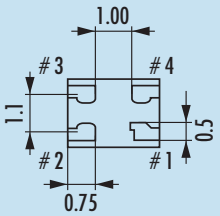
2.5 x 2.0 x 0.75
JSO22



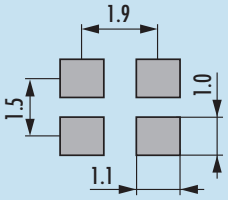
top view



side view

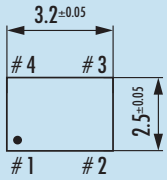


bottom view

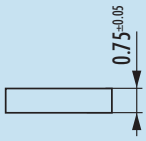


pad layout

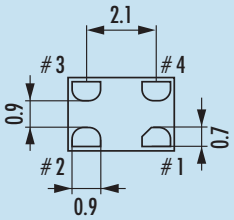
3.2 x 2.5 x 0.75
JSO32



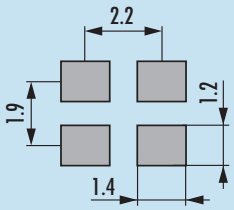
top view



side view

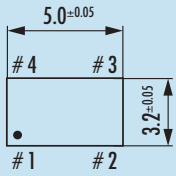


bottom view

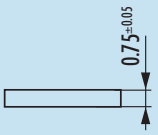


pad layout

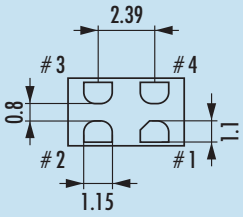
5.0 x 3.2 x 0.75
JSO53



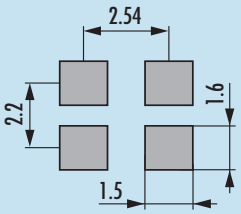
top view



side view

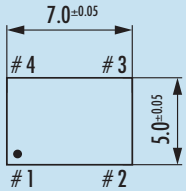


bottom view

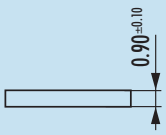


pad layout

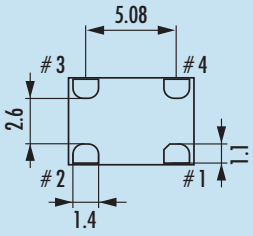
7.0 x 5.0 x 0.90
JSO75



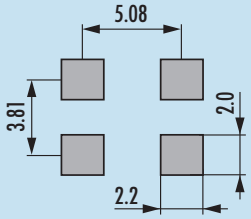
top view



side view



bottom view



pad layout

Pin connection	# 1: e/d	# 2: GND	# 3: output	# 4: V_{DC}	note: a capacitor of 0.1 µF between V_{DC} and GND is recommended

in mm

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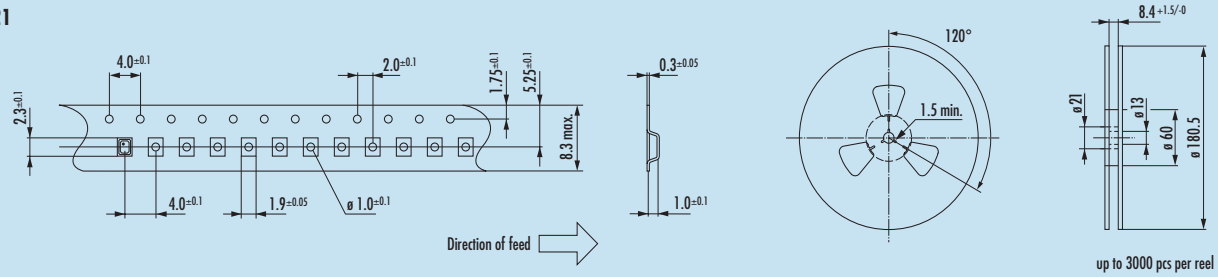
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

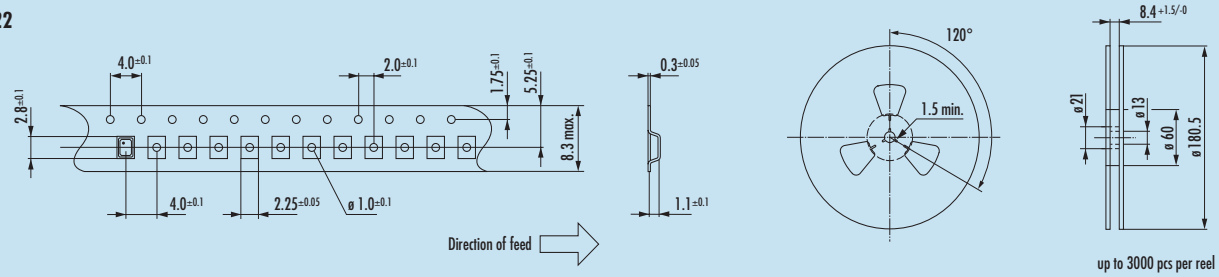
Taping Specification

2.0 x 1.6 x 0.75
JSO21



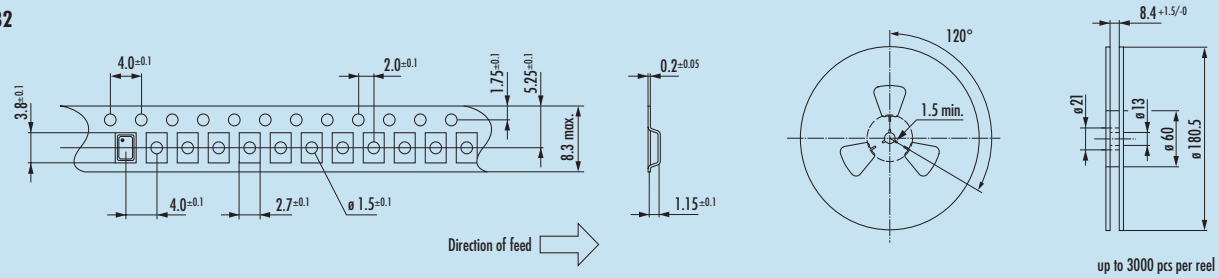
up to 3000 pcs per reel

2.5 x 2.0 x 0.75
JSO22



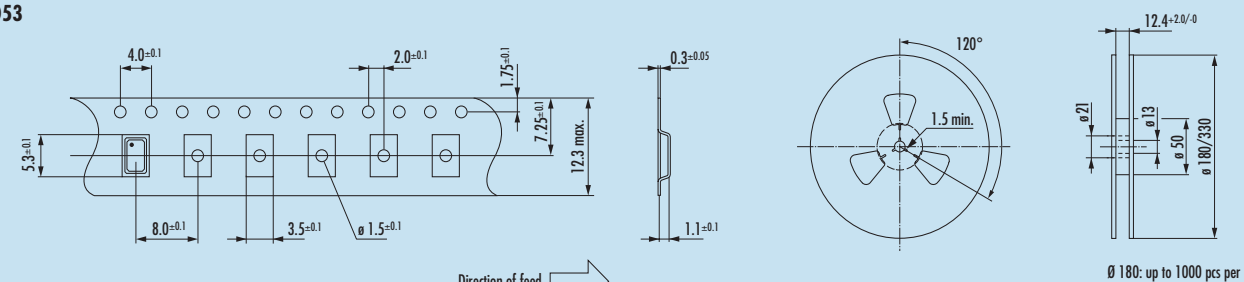
up to 3000 pcs per reel

3.2 x 2.5 x 0.75
JSO32



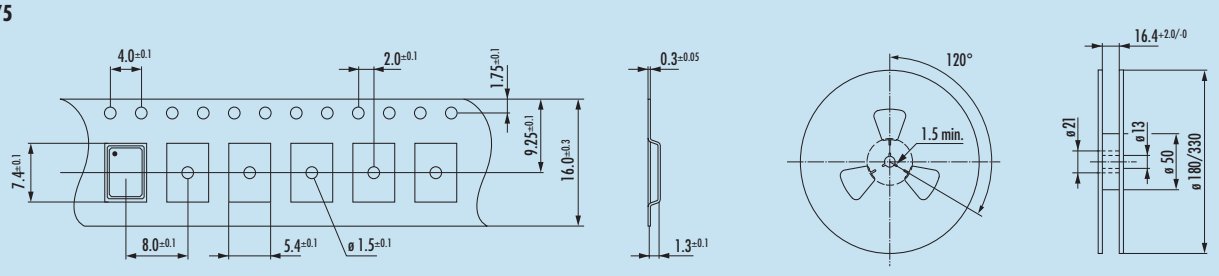
up to 3000 pcs per reel

5.0 x 3.2 x 0.75
JSO53



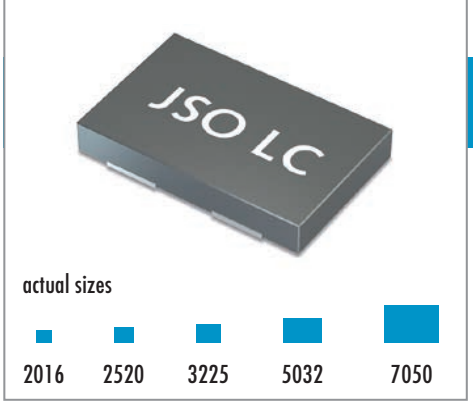
Ø 180: up to 1000 pcs per reel
Ø 330: up to 3000 pcs per reel

7.0 x 5.0 x 0.90
JSO75



Ø 180: up to 1000 pcs per reel
Ø 330: up to 3000 pcs per reel

in mm



MEMS-Oscillator · JSO LC series · 1.8 V

- low power oscillator with HCMOS/LVCMOS output
- compatible to industry standard packages 2016 – 7050
- configured to customer's specification
- extended shock & vibration resistance
- very fast delivery service
- 500 million hours MTBF

General Data

type		JSOxxCxLC 1.8 V
frequency range		1.0 ~ 110.0 MHz (temp. range T0 ~ T8)
		115.0 ~ 137.0 MHz (temp. range T0 ~ T1)
frequency stability over all		±20 ppm ~ ±50 ppm (see table 1)
current consumption		see table 2
supply voltage V_{DC}		1.8 V ± 10%
temperature	operating	T0 = -20°C ~ +70°C
		T1 = -40°C ~ +85°C
		T2 = -40°C ~ +105°C
		T3 = -40°C ~ +125°C
		T8 = -55°C ~ +125°C
	storage	-55°C ~ +150°C
output	logic	HCMOS/LVCMOS
	rise & fall time	4.2 ns max. at 15 pF / 6.8 ns max. at 30 pF (see table 4)
	load max.	30 pF max. recommended (≤ 74.0 MHz)
		15 pF max. recommended (> 74.0 MHz)
		other load capacitances possible, see supplementary document
	current max.	2 mA
	low level max.	0.1 x V_{DC}
	high level min.	0.9 x V_{DC}
standby function (e/d)		stop (S), tristate-only (T) or none (N), see table 3
output enable time max.		5 ms (S) / 150 ns (T)
output disable time max.		150 ns
start-up time max.		5 ms
standby current max.		2 µA (for stop (S), see table 3)
phase jitter 12 kHz ~ 20 MHz		< 3.0 ps RMS
symmetry at 0.5 x V_{DC}		45% ~ 55% (standard)

note: some frequencies can't be configured, see table 5.

Packing Note / Marking

QTY < 250 pcs. → cut tape
QTY 250/500/1K/3K pcs. → tape and reel
Marking: lot code only

RoHS compliant · Pb free · REACH compliant · Conflict mineral free

Table 1: Frequency Stability Code

stability code / temp. code*		B ±50 ppm	G ±30 ppm	C ±25 ppm	D ±20 ppm	
-20°C ~ +70°C	T0	○	○	○	○	
-40°C ~ +85°C	T1	○	○	○	○	
-40°C ~ +105°C	T2	○	○	○	○	
-40°C ~ +125°C	T3	○	○	○	○	
-55°C ~ +125°C	T8	○	○	○		
○ available						

* includes stability at 25°C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption typ. (for max. add 30%)

current at load	5 pF	15 pF	30 pF	60 pF	unit
output disabled	3.5	3.5	3.5	3.5	mA
1.0 ~ 19.9 MHz	3.6	3.9	4.4	5.5	mA
20.0 ~ 29.9 MHz	4.2	4.5	5.4	6.5	mA
30.0 ~ 49.9 MHz	4.5	5.1	6.5		mA
50.0 ~ 79.9 MHz	4.9	6.3			mA
80.0 ~ 110.0 MHz	5.7	7.6			mA
115.0 ~ 137.0 MHz	(8.0)	(13.0)			mA

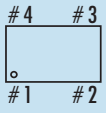
note: current at default edge control setting "D", also refer to table 4.

Table 3: Configurable Standby Function Options (e/d)

pin #1 (e/d control)	option	functionality
low "0" (V_{IL} ≤ 0.2 V_{DC})	S = Stop	output weakly pulled down, oscillator in sleep mode
	T = TriState	output high impedance, oscillator operates
	N = None	oscillator output active
high "1" (V_{IH} ≥ 0.8 V_{DC})	all	oscillator output active
open*	all	oscillator output active

* a pull up resistor is recommended in EMI stressed circuit environments.

Pin Connection



#4: V_{DC} · #3: output
#1: e/d · #2: GND

note: a capacitor of 0.1 µF between V_{DC} and GND is recommended.

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full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Table 4: Max. Rise & Fall Time vs. Load Capacitance

C_L	5 pF	15 pF	30 pF	5 pF	15 pF	30 pF
edge control	at 10% ~ 90% of V_{DC} (ns)			at 20% ~ 80% of V_{DC} (ns)		
D = 0*	1.8	4.2	6.8	1.2	2.8	4.8
1	2.2	5.0	7.6	1.4	3.4	5.2
2	2.4	5.6	8.8	1.6	3.8	6.0
3	2.8	6.0	10.0	1.8	4.2	6.8
4	4.8	9.8	17.0	3.4	6.6	11.6
5	6.6	12.6	21.0	4.4	8.6	15.0
6	10.0	18.0	32.0	6.6	12.0	22.0
7	18.0	34.0	62.0	12.4	24.0	44.0

* default edge control setting "D" at V_{DC} = 1.8 V, please also refer to the supplementary information on our homepage for typical values and more details.

Table 5: Non-Configurable Frequencies

operating temperature option		operating temperature option	
T2 – (-40°C ~ +105°C) T3 – (-40°C ~ +125°C)		T8 – (-55°C ~ +125°C)	
from (MHz)	to (MHz)	from (MHz)	to (MHz)
61.223	61.674	61.223	61.974
69.796	70.485	69.240	70.827
79.063	79.162	78.715	79.561
81.428	82.232	80.160	80.174
91.834	92.155	80.780	82.632
94.249	94.430	91.834	95.474
94.875	94.994	96.192	96.209
97.714	98.679	96.936	99.158
110.0	115.194	110.0	119.342
117.811	118.038	–	–
118.594	118.743	120.239	120.262
122.142	122.705	121.170	121.243
123.022	123.348	121.601	123.948

Order Information

Example: O 26.123456 – JSO 75 C1 L C – B – 1.8 – T0 – S – D

0 = Oscillator

frequency (8 digits), see also table 5
1.0 ~ 110.0 MHz
115.0 ~ 137.0 MHz

JSO = Jauch Silicon Oscillator

package
75 = 7050
53 = 5032
32 = 3225
22 = 2520
21 = 2016

frequency range
C1 = 1.0 ~ 110.0 MHz
C2 = 115.0 ~ 137.0 MHz

function/feature
L = lowpower

output I/F
C = (H)CMOS

edge control
D = default
0 – 7, see table 4

standby function options
S = Stop
T = TriState
N = None

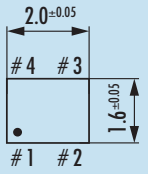
temperature range
T0 = -20°C ~ +70°C
T1 = -40°C ~ +85°C
T2 = -40°C ~ +105°C
T3 = -40°C ~ +125°C
T8 = -55°C ~ +125°C

supply voltage
3.3 = 3.3 V
3.0 = 3.0 V
2.8 = 2.8 V
2.5 = 2.5 V
1.8 = 1.8 V
2V3 = 2.5 V ~ 3.3 V

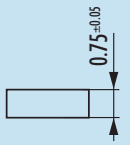
frequency stability overall
B = ± 50 ppm
G = ± 30 ppm
C = ± 25 ppm
D = ± 20 ppm

Dimensions

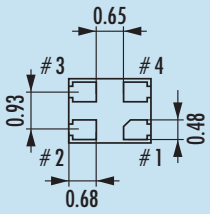
2.0 x 1.6 x 0.75
JSO21



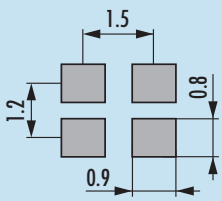
top view



side view

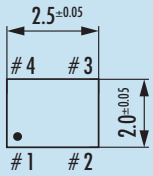


bottom view

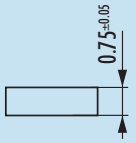


pad layout

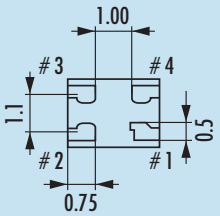
2.5 x 2.0 x 0.75
JSO22



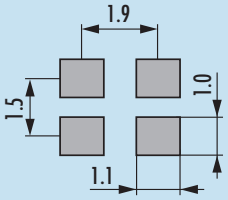
top view



side view

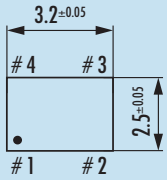


bottom view

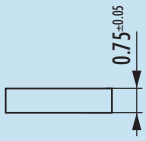


pad layout

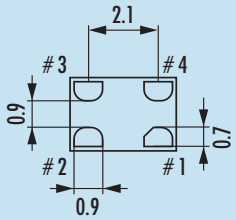
3.2 x 2.5 x 0.75
JSO32



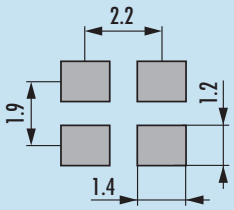
top view



side view

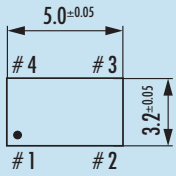


bottom view

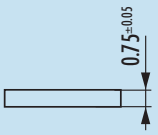


pad layout

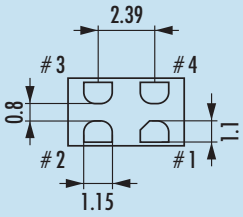
5.0 x 3.2 x 0.75
JSO53



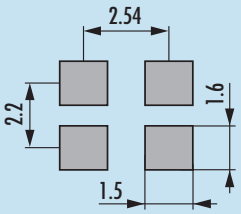
top view



side view

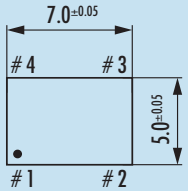


bottom view

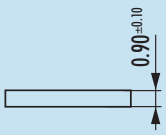


pad layout

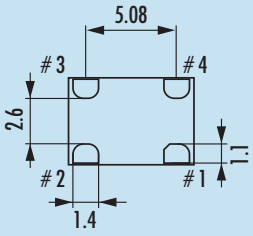
7.0 x 5.0 x 0.90
JSO75



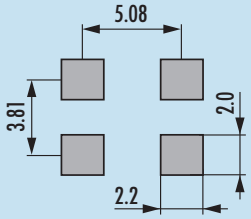
top view



side view



bottom view



pad layout

Pin connection # 1: e/d # 2: GND # 3: output # 4: V_{DC} note: a capacitor of 0.1 µF between V_{DC} and GND is recommended

in mm

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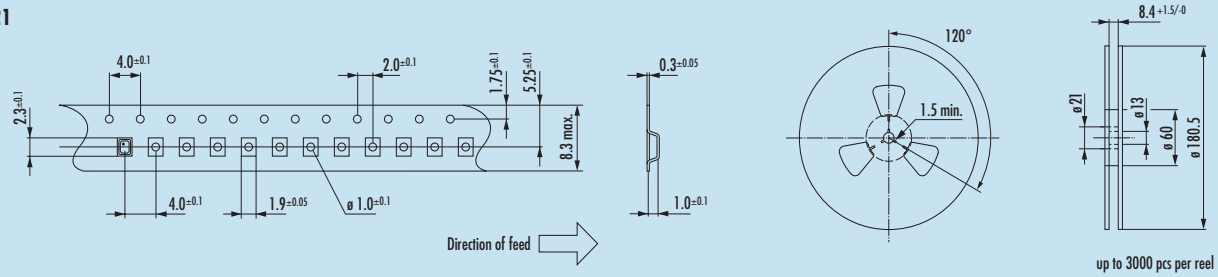
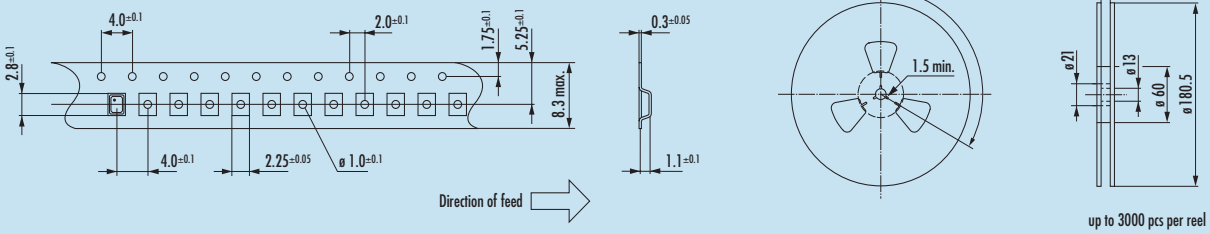
Taping Specification

2.0 x 1.6 x 0.75
JSO21



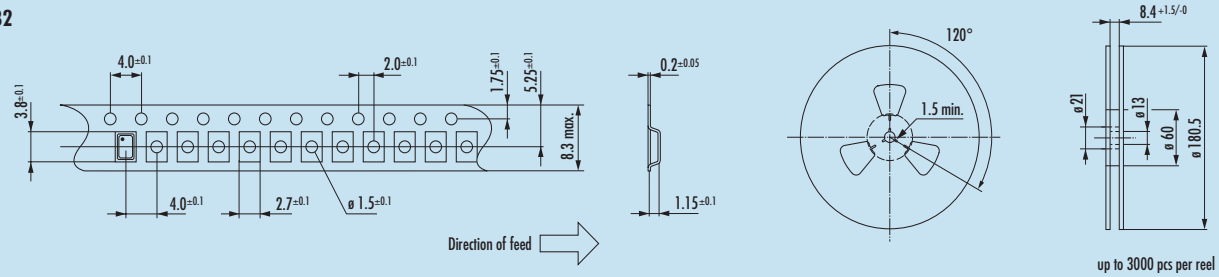
up to 3000 pcs per reel

2.5 x 2.0 x 0.75
JSO22



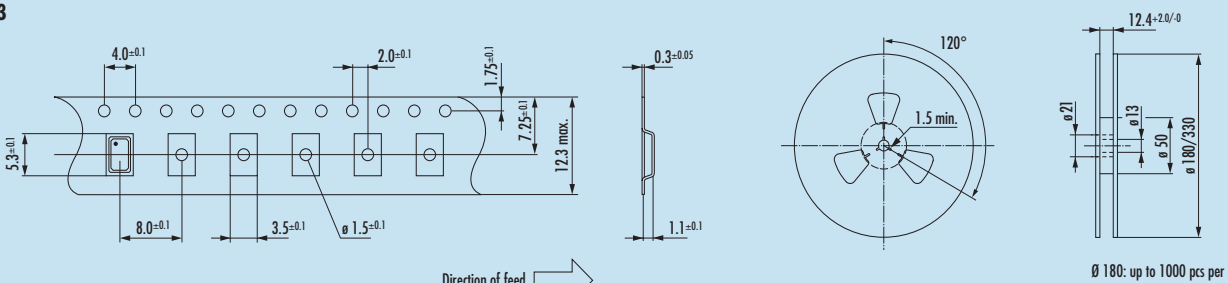
up to 3000 pcs per reel

3.2 x 2.5 x 0.75
JSO32



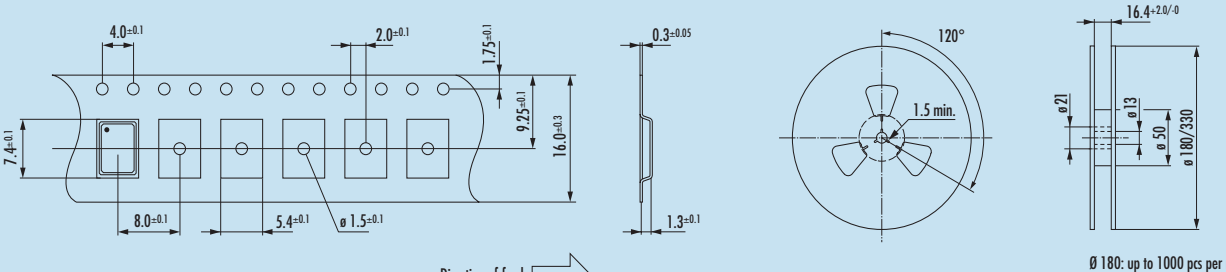
up to 3000 pcs per reel

5.0 x 3.2 x 0.75
JSO53



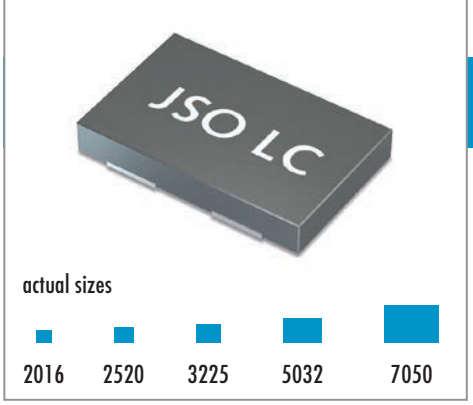
Ø 180: up to 1000 pcs per reel
Ø 330: up to 3000 pcs per reel

7.0 x 5.0 x 0.90
JSO75



Ø 180: up to 1000 pcs per reel
Ø 330: up to 3000 pcs per reel

in mm



MEMS-Oscillator · JSO LC series · 2.5 V ~ 3.3 V

- low power oscillator with HCMOS/LVCMOS output
- compatible to industry standard packages 2016 – 7050
- configured to customer's specification
- extended shock & vibration resistance
- very fast delivery service
- 500 million hours MTBF

General Data

type		JSOxxCxLC 2.5 V ~ 3.3 V
frequency range		1.0 ~ 110.0 MHz (temp. range T0 ~ T8)
		115.0 ~ 137.0 MHz (temp. range T0 ~ T1)
frequency stability over all		±20 ppm ~ ±50 ppm (see table 1)
current consumption		see table 2
supply voltage V_{DC}		2.5 V – 10% ~ 3.3 V + 10%
temperature	operating	T0 = -20°C ~ +70°C
		T1 = -40°C ~ +85°C
		T2 = -40°C ~ +105°C
		T3 = -40°C ~ +125°C
		T8 = -55°C ~ +125°C
	storage	-55°C ~ +150°C
output	logic	HCMOS/LVCMOS
	rise & fall time	4.0 ns max. at 15 pF / 6.6 ns max. at 30 pF (see table 4)
	load max.	30 pF max. recommended (≤ 76.0 MHz)
		15 pF max. recommended (> 76.0 MHz)
		other load capacitances possible, see supplementary document
	current max.	3 mA
	low level max.	0.1 x V_{DC}
	high level min.	0.9 x V_{DC}
standby function (e/d)		stop (S), tristate-only (T) or none (N), see table 3
output enable time max.		5 ms (S) / 150 ns (T)
output disable time max.		150 ns
start-up time max.		5 ms
standby current max.		3 µA (for stop (S), see table 3)
phase jitter 12 kHz ~ 20 MHz		< 3.0 ps RMS
symmetry at 0.5 x V_{DC}		45% ~ 55% (standard)

note: some frequencies can't be configured, see table 5.

Packing Note / Marking

QTY < 250 pcs. → cut tape
QTY 250/500/1K/3K pcs. → tape and reel
Marking: lot code only

RoHS compliant | Pb free | REACH compliant | Conflict mineral free

Table 1: Frequency Stability Code

stability code / temp. code*		B ±50 ppm	G ±30 ppm	C ±25 ppm	D ±20 ppm	
-20°C ~ +70°C	T0	○	○	○	○	
-40°C ~ +85°C	T1	○	○	○	○	
-40°C ~ +105°C	T2	○	○	○	○	
-40°C ~ +125°C	T3	○	○	○	○	
-55°C ~ +125°C	T8	○	○	○		
○ available						

* includes stability at 25°C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption typ. (for max. add 30%)

current at load	5 pF	15 pF	30 pF	60 pF	unit
output disabled	4.0	4.0	4.0	4.0	mA
1.0 ~ 19.9 MHz	4.0	4.6	5.6	7.6	mA
20.0 ~ 29.9 MHz	4.6	5.7	7.4	10.9	mA
30.0 ~ 49.9 MHz	5.1	6.7	9.2	14.3	mA
50.0 ~ 79.9 MHz	6.4	9.0	13.2		mA
80.0 ~ 110.0 MHz	7.7	11.2	17.0		mA
115.0 ~ 137.0 MHz	(10.0)	(14.5)			mA

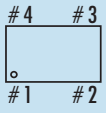
note: current at default edge control setting "D", also refer to table 4.

Table 3: Configurable Standby Function Options (e/d)

pin #1 (e/d control)	option	functionality
low "0" ($V_{IL} \leq 0.2\ V_{DC}$)	S = Stop	output weakly pulled down, oscillator in sleep mode
	T = TriState	output high impedance, oscillator operates
	N = None	oscillator output active
high "1" ($V_{IH} \geq 0.8\ V_{DC}$)	all	oscillator output active
open*	all	oscillator output active

* a pull up resistor is recommended in EMI stressed circuit environments.

Pin Connection



#4: V_{DC} #3: output
#1: e/d #2: GND

note: a capacitor of 0.1 µF between V_{DC} and GND is recommended.

Jauch MEMS – Uses SiTime's MEMS First™ technology

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full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Table 4: Max. Rise & Fall Time vs. Load Capacitance

C_L	5 pF	15 pF	30 pF	5 pF	15 pF	30 pF
edge control	at 10% ~ 90% of V_{DC} (ns)			at 20% ~ 80% of V_{DC} (ns)		
0	1.2	2.4	5.2	0.8	1.7	3.4
1	1.4	2.6	5.8	0.9	1.9	3.8
2	1.6	3.0	6.0	1.1	2.1	4.0
D = 3*	1.8	4.0	6.6	1.2	2.6	4.6
4	3.2	6.4	11.0	2.2	4.4	7.8
5	4.4	8.4	14.6	2.9	5.8	10.4
6	6.6	12.4	23.0	4.4	8.6	15.2
7	12.8	25.0	46.0	8.6	16.6	30.0

* default edge control setting "D" at V_{DC} = 2.5 V ~ 3.3 V, please also refer to the supplementary information on our homepage for typical values and more details.

Table 5: Non-Configurable Frequencies

operating temperature option		operating temperature option	
T2 – (-40°C ~ +105°C) T3 – (-40°C ~ +125°C)		T8 – (-55°C ~ +125°C)	
from (MHz)	to (MHz)	from (MHz)	to (MHz)
61.223	61.674	61.223	61.974
69.796	70.485	69.240	70.827
79.063	79.162	78.715	79.561
81.428	82.232	80.160	80.174
91.834	92.155	80.780	82.632
94.249	94.430	91.834	95.474
94.875	94.994	96.192	96.209
97.714	98.679	96.936	99.158
110.0	115.194	110.0	119.342
117.811	118.038	–	–
118.594	118.743	120.239	120.262
122.142	122.705	121.170	121.243
123.022	123.348	121.601	123.948

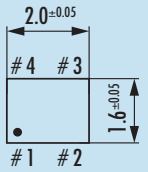
Order Information

Example: O 26.123456 – JSO 75 C1 L C – B – 2V3 – T0 – S – D

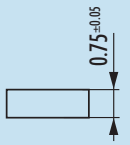
- O = Oscillator
- **frequency (8 digits),** see also table 5
  1.0 ~ 110.0 MHz
  115.0 ~ 137.0 MHz
- JSO = Jauch Silicon Oscillator
- **package**
  75 = 7050
  53 = 5032
  32 = 3225
  22 = 2520
  21 = 2016
- **frequency range**
  C1 = 1.0 ~ 110.0 MHz
  C2 = 115.0 ~ 137.0 MHz
- **function/feature**
  L = lowpower
- **output I/F**
  C = (H)CMOS
- **edge control**
  D = default
  0 – 7, see table 4
- **standby function options**
  S = Stop
  T = TriState
  N = None
- **temperature range**
  T0 = -20°C ~ +70°C
  T1 = -40°C ~ +85°C
  T2 = -40°C ~ +105°C
  T3 = -40°C ~ +125°C
  T8 = -55°C ~ +125°C
- **supply voltage**
  3.3 = 3.3 V
  3.0 = 3.0 V
  2.8 = 2.8 V
  2.5 = 2.5 V
  1.8 = 1.8 V
  2V3 = 2.5 V ~ 3.3 V
- **frequency stability overall**
  B = ± 50 ppm
  G = ± 30 ppm
  C = ± 25 ppm
  D = ± 20 ppm

Dimensions

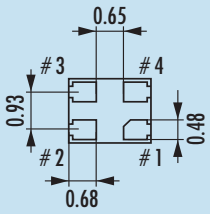
2.0 x 1.6 x 0.75
JSO21



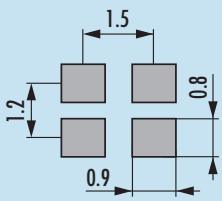
top view



side view

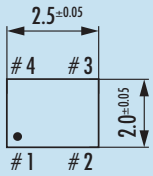


bottom view

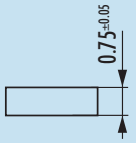


pad layout

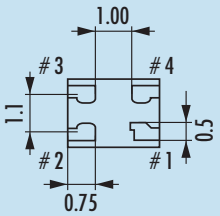
2.5 x 2.0 x 0.75
JSO22



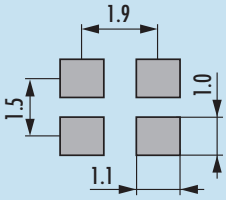
top view



side view

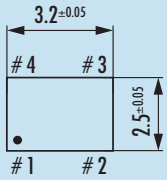


bottom view

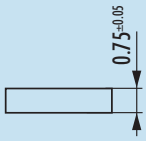


pad layout

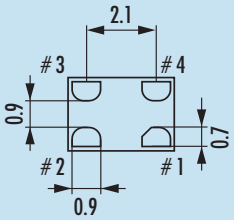
3.2 x 2.5 x 0.75
JSO32



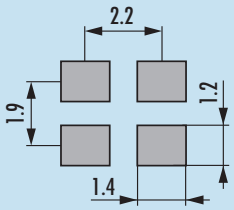
top view



side view

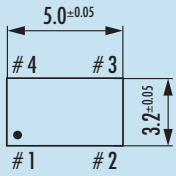


bottom view

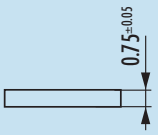


pad layout

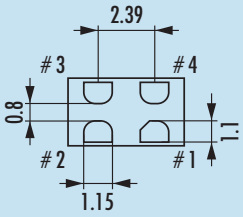
5.0 x 3.2 x 0.75
JSO53



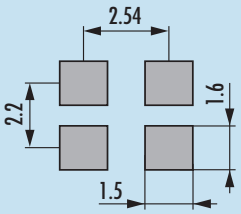
top view



side view

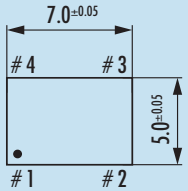


bottom view

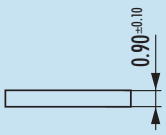


pad layout

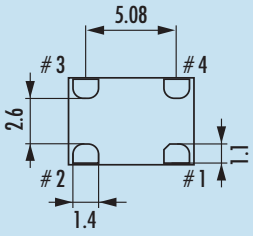
7.0 x 5.0 x 0.90
JSO75



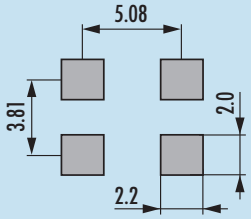
top view



side view



bottom view



pad layout

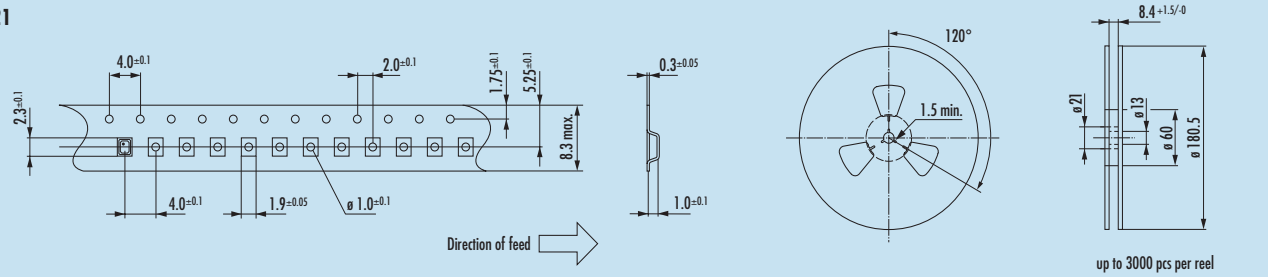
Pin connection	# 1: e/d	# 2: GND	# 3: output	# 4: V_{DC}	note: a capacitor of 0.1 µF between V_{DC} and GND is recommended

in mm

Jauch Quartz GmbH • e-mail: info@jauch.de
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

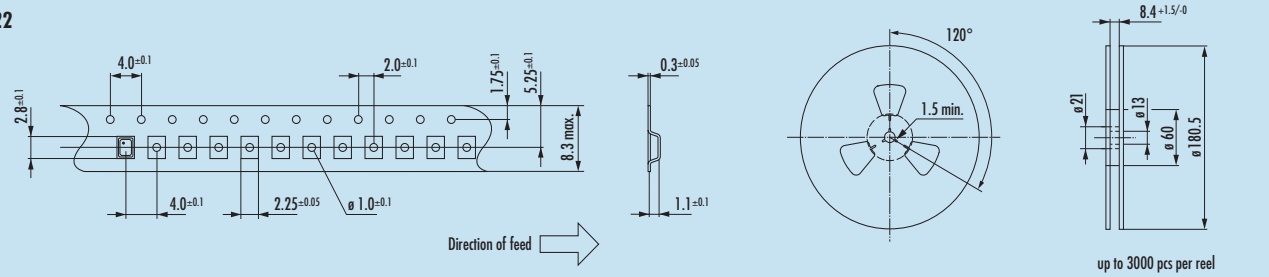
Taping Specification

2.0 x 1.6 x 0.75
JSO21



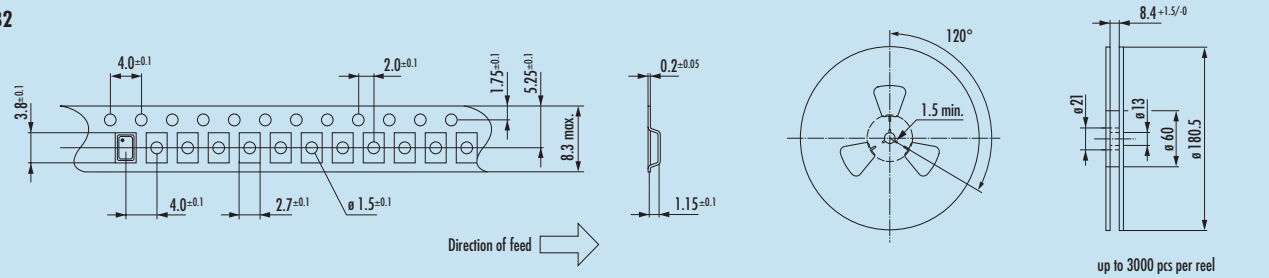
up to 3000 pcs per reel

2.5 x 2.0 x 0.75
JSO22



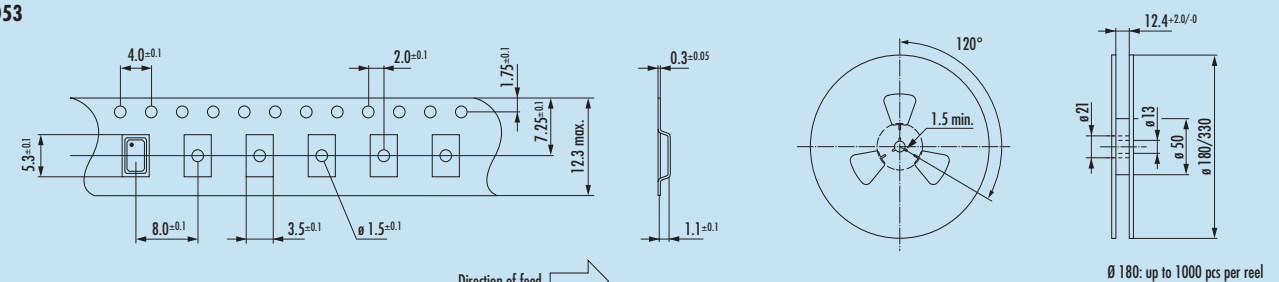
up to 3000 pcs per reel

3.2 x 2.5 x 0.75
JSO32



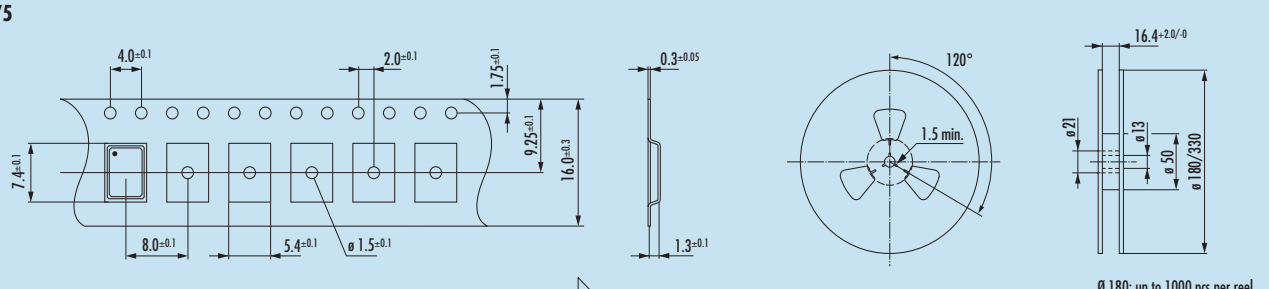
up to 3000 pcs per reel

5.0 x 3.2 x 0.75
JSO53



Ø 180: up to 1000 pcs per reel
Ø 330: up to 3000 pcs per reel

7.0 x 5.0 x 0.90
JSO75



Ø 180: up to 1000 pcs per reel
Ø 330: up to 3000 pcs per reel

in mm

actual size

MEMS-TCXO · JSO TR · 32.768kHz

- ultra-stable 32.768 kHz clock source
- ultra-small CSP package 1.5 x 0.8 mm
- very short start-up time
- can replace tuning fork crystals
- wide supply voltage range 1.5 V ~ 3.63 V
- very low supply current

General Data

type		JSO15B1TR
supply voltage V_{DC}		1.5 V ~ 3.63 V
current consumption typ.		1.2 µA (rail-to-rail mode, no load, V_{DC} = 1.8 V)
output frequency		32.768 kHz
frequency stability vs. temp.		±10 ppm ~ ±22 ppm (see table 1)
frequency stability vs. voltage		±0.75 ppm at 1.8 V ±0.18 V
		±1.5 ppm at 1.5 V ~ 3.63 V
aging	at +25°C	±1 ppm first year
temperature	operating	0°C ~ +70°C / -40°C ~ +85°C
	storage	-50°C ~ +125°C
output	low level max.	0.1 x V_{DC}
	high level min.	0.9 x V_{DC}
	load max.	15 pF
	current max.	1.0 µA
	rise & fall time	200 ns max. (15 pF, 10 <-> 90 %)
		50 ns max. (5 pF, 10 <-> 90 %)
start-up time max.		400 ms
power supply ramp max.		100 ms
period jitter RMS typ.		35 ns

More information about the features of the JSO TR 32.768 kHz TCXO can be found here.

Table 1: Frequency Stability Code

stability code / temp. code		D	K	F		
including frequency tolerance*		±22 ppm	±13 ppm	±10 ppm		
excluding frequency tolerance**		±20 ppm	±10 ppm	±5 ppm		
0°C ~ +70°C	T0	○	○	○		
-40°C ~ +85°C	T1	○	○	○		
○ available						

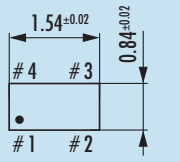
* includes tolerance at 25°C and frequency stability in operating temp. range.
** frequency stability in operating temp. range, frequency tolerance excluded.

Table 2: Current Consumption typ. (for max. add 40%)

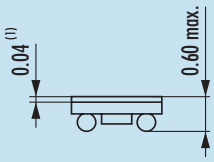
supply current at load	none	5 pF	10 pF	15 pF	unit
at startup (150 ms max.)	30.0				µA
during temp. compensation*	6.0				µA
V_{RR} = 1.80 V, compensation inactive	1.2	1.5	1.8	2.1	µA
V_{RR} = 2.50 V, compensation inactive	1.3	1.7	2.0	2.5	µA
V_{RR} = 3.30 V, compensation inactive	1.4	1.9	2.5	3.0	µA

* repetitive temp. compensation consuming 6 µA for 10 ms, repeating every 350 ms

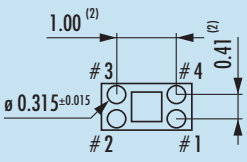
Dimensions



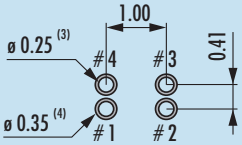
top view



side view



bottom view



pad layout

(1) polymer coating thickness
(2) basic spacing between centers
(3) non-solder mask defined pads
(4) soldermask opening diameter

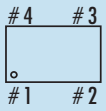
pin connection
#1: GND
#2: output
#3: V_{DC}
#4: GND

in mm

Packing Note / Marking

QTY < 1K pcs. → cut tape
QTY 1K/3K → tape and reel
Marking: identifier for pin 1

Pin Connection



#4: GND
#3: V_{DC}
#1: GND
#2: output

RoHS 2011/65/EC — RoHS compliant
Pb free
REACH compliant
Conflict mineral free

Jauch MEMS – Uses SiTime's MEMS First™ technology

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Jauch Quartz GmbH • e-mail: info@jauch.de
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

MEMS-TCXO · JSO TR · 32.768kHz

Order Information

Example: O 0.032768 – JSO 15 B1 T R – F – 1V3 – T0 – R R – D

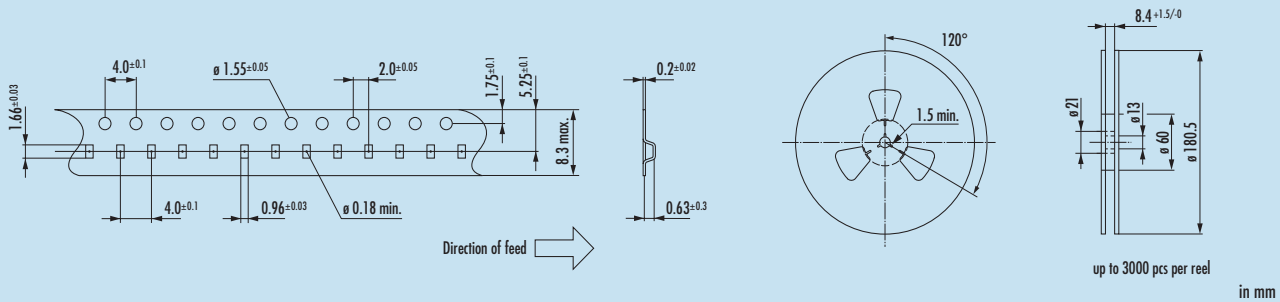
- O = Oscillator
- frequency
- JSO = Jauch Silicon Oscillator
- **package**
  15 = 1.5 x 0.8 mm CSP
- version/revision
- **function/feature**
  T = TCXO
- **usage**
  R = for RTC (real time clock)
- **DC coupling**
  D = DC
- **output**
  R R = rail-to-rail
- **temperature range**
  T0 = 0°C ~ +70°C
  T1 = -40°C ~ +85°C
  see table 1
- **supply voltage**
  1V3 = variable supply voltage 1.5 V ~ 3.63 V
- **frequency stability**
  F = ±5 ppm
  K = ±10 ppm
  D = ±20 ppm
  see table 1

Note

Standard type O 0.032768-JSO15B1TR-F-1V3-T1-RR-D typically available from stock

Frequency stability (table 1):	F = ±5 ppm
Operating temperature range:	T1 = -40°C ~ +85°C
Supply voltage:	1V3 = 1.5 V ~ 3.63 V variable

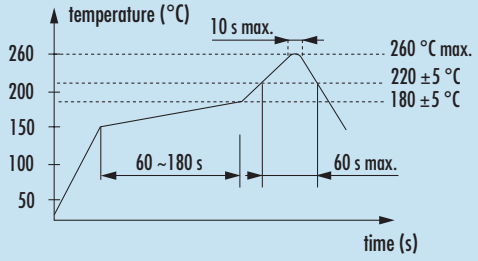
Taping Specification



up to 3000 pcs per reel

in mm

Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content.

actual size

Oscillator · JO21 · 3.3 V

SMD Oscillator with Stop Function · 2.0 x 1.6 mm

- ultra small package
- low current consumption
- reflow soldering temperature: 260 °C max.
- ultra flat ceramic / metal package

RoHS 2011/65/EC
RoHS compliant

Pb free: pins / pads

General Data

type		JO21 3.3 V
frequency range		1.6250 ~ 54.0 MHz
frequency stability over all*		± 25 ppm ~ ± 100 ppm
		see table 1
current consumption		see table 2
supply voltage V_{DC}		3.3 V ± 10%
temperature	operating**	-20 °C ~ +70 °C / -40 °C ~ +85 °C
	storage	-65 °C ~ +125 °C
output	rise & fall time	see table 3
	load max.	15 pF
	current max.	4 mA
	low level max.	0.1 x V_{DC}
	high level min.	0.9 x V_{DC}
output enable time max.		10 ms
output disable time max.		200 ns
start-up time max.		10 ms
standby function		stop
standby current max.		10 µA
symmetry at 0.5 x V_{DC}		45% ~ 55% max.

** ask if a 105 °C version is available

Table 1: Frequency Stability Code

stability code	A ± 100 ppm	B ± 50 ppm	G ± 30 ppm	C ± 25 ppm		
-20 °C ~ +70 °C		○	○	D		
-40 °C ~ +85 °C	○	○				

● standard ○ available D excludes aging

* includes stability at 25 °C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption max.

3.3 V: current at 15pF load:

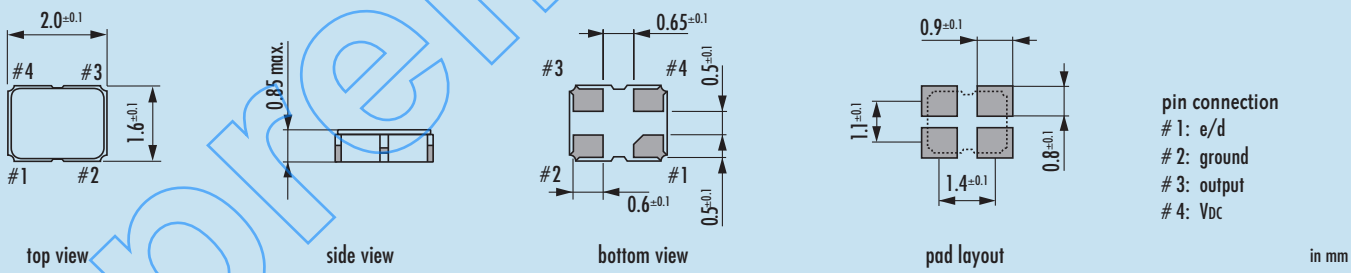
1.625 ~ 19.9 MHz	5.0 mA
20.000 ~ 39.9 MHz	7.0 mA
40.000 ~ 54.0 MHz	10.0 mA

Table 3: Rise & Fall Time max.

5 ns: 1.625 ~ 54.0 MHz

note:
- specific data on request
- rise time: 0.1 V_{DC} ~ 0.9 V_{DC}
- fall time: 0.9 V_{DC} ~ 0.1 V_{DC}

Dimensions



top view | side view | bottom view | pad layout | in mm

Order Information

0	frequency	type	frequency stability code	supply voltage code	output load code	option
Oscillator	1.625 ~ 54.0 MHz	JO21	see table 1	3.3 = 3.3 V	1 = 15 pF	blank = -20 °C ~ +70 °C T1 = -40 °C ~ +85 °C

Example: O 20.0-JO21-B-3.3-1-T1-LF (LF = RoHS compliant / Pb free pins or pads)

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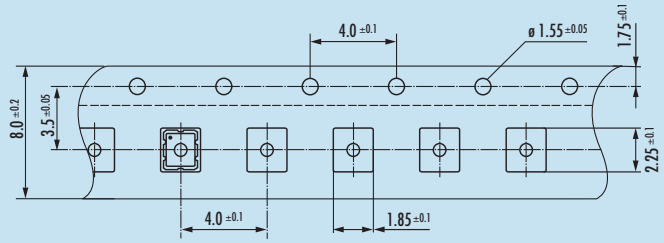
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Oscillator · JO21 · 3.3 V · Stop Function

Taping Specification



1000 pcs per reel

in mm

Enable / Disable Function

pin #1 (e/d control)	pin #3 (output)
open	active
high "1" (V_{IH} ≥ 0.7 V_{DC})	active
low "0" (V_{IL} ≤ 0.3 V_{DC})	high impedance

stop function:
- oscillator stops
- output high impedance

Marking

frequency

company code / frequency stability code / date code

date code:

A ~ M: Jan. - Dec.

0: 2010 3: 2013

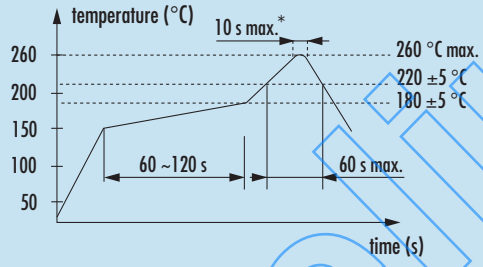
1: 2011 4: 2014

2: 2012 5: 2015

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

* hand soldering temperature should not exceed 280 °C

Packing Note

– standard packing units are 1000 pieces per reel

– non-multiple packing units are only supplied taped / bulk

actual size

Oscillator · JO21 · 2.5 V

SMD Oscillator with Stop Function · 2.0 x 1.6 mm

- ultra small package
- low current consumption
- reflow soldering temperature: 260 °C max.
- ultra flat ceramic / metal package

RoHS 2011/65/EC
RoHS compliant

Pb free: pins / pads

General Data

type		JO21 2.5 V
frequency range		1.6250 ~ 54.0 MHz
frequency stability over all*		± 25 ppm ~ ± 100 ppm
		see table 1
current consumption		see table 2
supply voltage V_{DC}		2.5 V ± 10%
temperature	operating**	-20 °C ~ +70 °C / -40 °C ~ +85 °C
	storage	-65 °C ~ +125 °C
output	rise & fall time	see table 3
	load max	15 pF
	current max.	4 mA
	low level max.	0.1 x V_{DC}
	high level min.	0.9 x V_{DC}
output enable time max.		10 ms
output disable time max.		200 ns
start-up time max.		10 ms
standby function		stop
standby current max.		10 µA
symmetry at 0.5 x V_{DC}		45% ~ 55% max.

** ask if a 105 °C version is available

Table 1: Frequency Stability Code

stability code	A ± 100 ppm	B ± 50 ppm	G ± 30 ppm	C ± 25 ppm		
-20 °C ~ +70 °C		○	○	D		
-40 °C ~ +85 °C	○	○				

● standard ○ available D excludes aging

* includes stability at 25 °C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption max.

2.5 V: current at 15pF load:

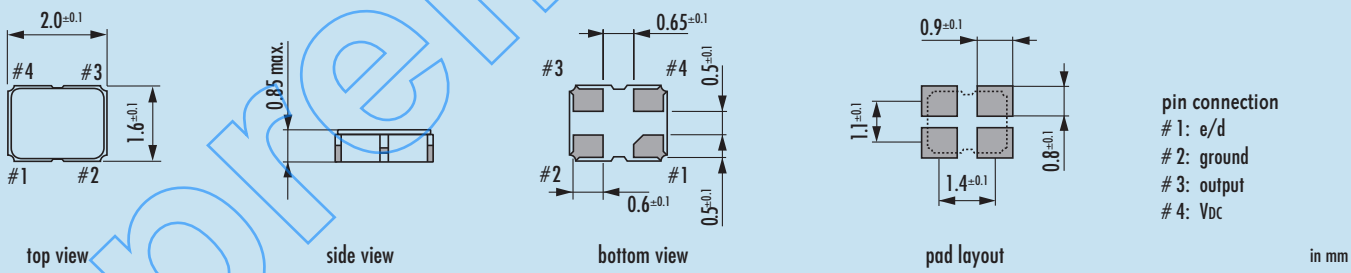
1.625 ~ 19.9 MHz	4.0 mA
20.000 ~ 39.9 MHz	5.5 mA
40.000 ~ 54.0 MHz	9.0 mA

Table 3: Rise & Fall Time max.

5 ns: 1.625 ~ 54.0 MHz

note:
- specific data on request
- rise time: 0.1 V_{DC} ~ 0.9 V_{DC}
- fall time: 0.9 V_{DC} ~ 0.1 V_{DC}

Dimensions



top view | side view | bottom view | pad layout | in mm

Order Information

0	frequency	–	type	–	frequency stability code	–	supply voltage code	–	output load code	–	option
Oscillator	1.625 ~ 54.0 MHz		JO21		see table 1		2.5 = 2.5 V		1 = 15 pF		blank = -20 °C ~ +70 °C T1 = -40 °C ~ +85 °C

Example: O 20.0-JO21-B-2.5-1-T1-LF (LF = RoHS compliant / Pb free pins or pads)

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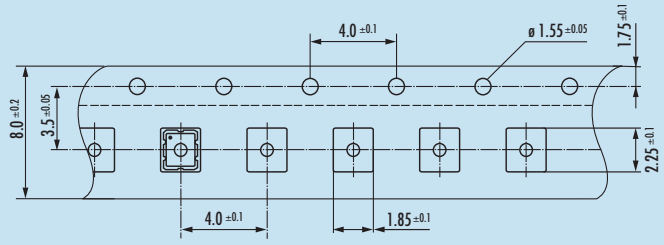
All specifications are subject to change without notice

300514-18

Oscillator · JO21 · 2.5 V · Stop Function

Taping Specification



1000 pcs per reel

in mm

Enable / Disable Function

pin #1 (e/d control)	pin #3 (output)
open	active
high "1" (V_{IH} ≥ 0.7 V_{DC})	active
low "0" (V_{IL} ≤ 0.3 V_{DC})	high impedance

stop function:
- oscillator stops
- output high impedance

Marking

frequency

company code / frequency stability code / date code

date code:

A ~ M: Jan. - Dec.

0: 2010 3: 2013

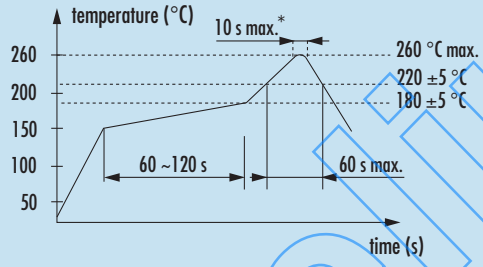
1: 2011 4: 2014

2: 2012 5: 2015

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

* hand soldering temperature should not exceed 280 °C

Packing Note

– standard packing units are 1000 pieces per reel

– non-multiple packing units are only supplied taped / bulk

actual size

Oscillator · JO21 · 1.8 V

SMD Oscillator with Stop Function · 2.0 x 1.6 mm

- ultra small package
- very low current consumption
- reflow soldering temperature: 260 °C max.
- ultra flat ceramic / metal package

RoHS 2011/65/EC
RoHS compliant

Pb free: pins / pads

General Data

type		JO21 1.8 V
frequency range		1.6250 ~ 54.0 MHz
frequency stability over all*		± 25 ppm ~ ± 100 ppm
		see table 1
current consumption		see table 2
supply voltage V_{DC}		1.8 V ± 10%
temperature	operating**	-20 °C ~ +70 °C / -40 °C ~ +85 °C
	storage	-65 °C ~ +125 °C
output	rise & fall time	see table 3
	load max	15 pF
	current max.	4 mA
	low level max.	0.1 x V_{DC}
	high level min.	0.9 x V_{DC}
output enable time max.		10 ms
output disable time max.		200 ns
start-up time max.		10 ms
standby function		stop
standby current max.		10 µA
symmetry at 0.5 x V_{DC}		45% ~ 55% max.

** ask if a 105 °C version is available

Table 1: Frequency Stability Code

stability code	A ± 100 ppm	B ± 50 ppm	G ± 30 ppm	C ± 25 ppm		
-20 °C ~ +70 °C		○	○	D		
-40 °C ~ +85 °C	○	○				

● standard ○ available D excludes aging

* includes stability at 25 °C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption max.

1.8 V: current at 15pF load:

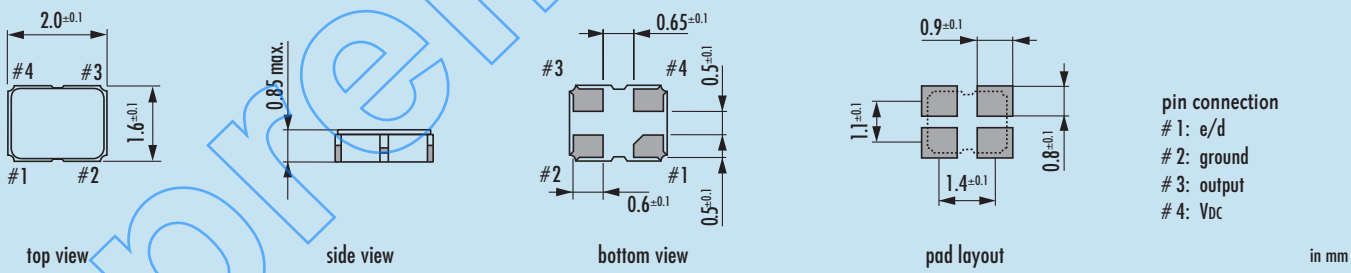
1.625 ~ 19.9 MHz	3.0 mA
20.000 ~ 39.9 MHz	4.5 mA
40.000 ~ 54.0 MHz	7.0 mA

Table 3: Rise & Fall Time max.

6 ns: 1.625 ~ 54.0 MHz

note:
- specific data on request
- rise time: 0.1 V_{DC} ~ 0.9 V_{DC}
- fall time: 0.9 V_{DC} ~ 0.1 V_{DC}

Dimensions



top view | side view | bottom view | pad layout | in mm

Order Information

0	frequency	–	type	–	frequency stability code	–	supply voltage code	–	output load code	–	option
Oscillator	1.625 ~ 54.0 MHz		JO21		see table 1		1.8 = 1.8V		1 = 15 pF		blank = -20 °C ~ +70 °C T1 = -40 °C ~ +85 °C

Example: O 20.0-JO21-B-1.8-1-T1-LF (LF = RoHS compliant / Pb free pins or pads)

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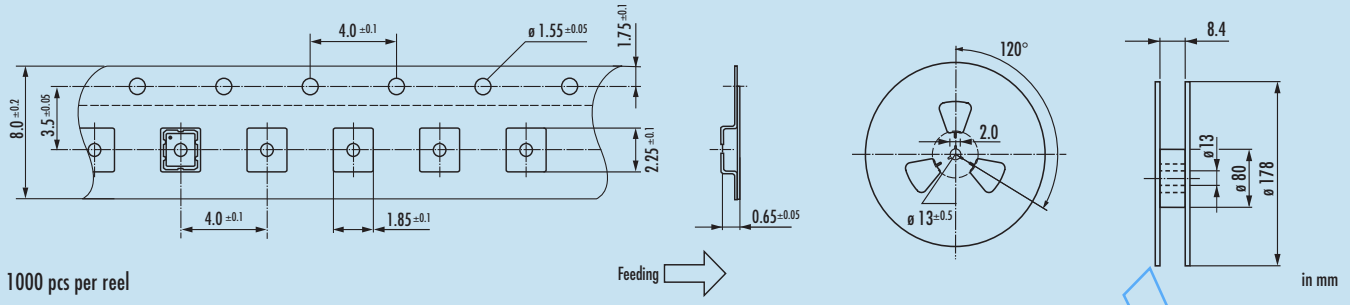
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Oscillator · JO21 · 1.8 V · Stop Function

Taping Specification



1000 pcs per reel

Enable / Disable Function

pin #1 (e/d control)	pin #3 (output)
open	active
high "1" (V_{IH} ≥ 0.7 V_{DC})	active
low "0" (V_{IL} ≤ 0.3 V_{DC})	high impedance

stop function:
- oscillator stops
- output high impedance

Marking

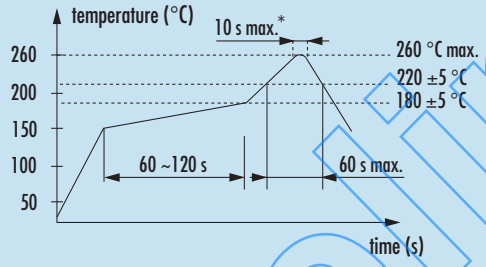
frequency
company code / frequency stability code / date code

date code:
A ~ M: Jan. - Dec.
0: 2010 3: 2013
1: 2011 4: 2014
2: 2012 5: 2015

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

* hand soldering temperature should not exceed 280 °C

Packing Note

– standard packing units are 1000 pieces per reel
– non-multiple packing units are only supplied taped / bulk

actual size

Oscillator · JO22 · 3.3 V

SMD Oscillator with Stop Function · 2.5 x 2.0 mm

- very low current consumption
- HCMOS/LVCMOS output
- reflow soldering temperature: 260 °C max.
- ultra flat ceramic / metal package

RoHS 2011/65/EC — RoHS compliant

Pb free

General Data

type		JO22 3.3 V
frequency range		0.75 ~ 50.0 MHz
frequency stability over all*		± 25 ppm ~ ± 100 ppm
		see table 1
current consumption		see table 2
supply voltage V_{DC}		3.3 V ± 5%
temperature	operating	-20 °C ~ +70 °C up to -40 °C ~ +105 °C
	storage	-55 °C ~ +105 °C
output	rise & fall time	see table 3
	load max	15 pF
	current max.	4 mA
	low level max.	0.4 V
	high level min.	V_{DC} - 0.4 V
output enable time max.		10 ms
output disable time max.		50 µs
start-up time max.		10 ms
standby function		stop
standby current max.		10 µA
phase jitter 12 kHz ~ 20.0 MHz		< 1.0 ps RMS
symmetry at 0.5 x V_{DC}		45 % ~ 55 % max.

Table 1: Frequency Stability Code

stability code	A ± 100 ppm	B ± 50 ppm	G ± 30 ppm	C ± 25 ppm		
-20 °C ~ +70 °C		○	○	Δ		
-40 °C ~ +85 °C	○	○	○			
-40 °C ~ +105 °C	○	○				

● standard ○ available Δ excludes aging

* includes stability at 25 °C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption max.

3.3 V: current at 15pF load:

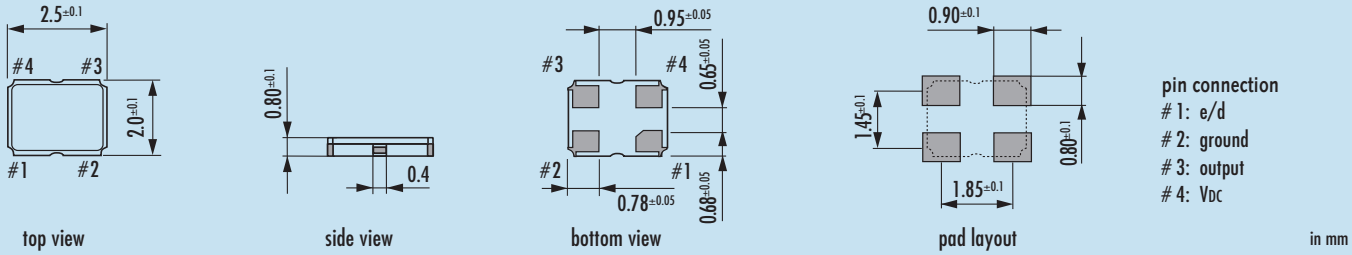
0.75 ~ 19.9 MHz	6 mA
20.00 ~ 39.9 MHz	7 mA
40.00 ~ 50.0 MHz	8 mA

Table 3: Rise & Fall Time max.

5 ns: 0.75 ~ 50.0 MHz

note:
- specific data on request
- rise time: 0.1 V_{DC} ~ 0.9 V_{DC}
- fall time: 0.9 V_{DC} ~ 0.1 V_{DC}

Dimensions



Order Information

0	frequency	type	frequency stability code	supply voltage code	output load code	option
Oscillator	0.75 ~ 50.0 MHz	JO22	see table 1	3.3 = 3.3 V	1 = 15 pF	blank = -20 °C ~ +70 °C T1 = -40 °C ~ +85 °C T2 = -40 °C ~ +105 °C

Example: O 20.0-JO22-B-3.3-1-T1-LF (LF = RoHS compliant / Pb free pins or pads)

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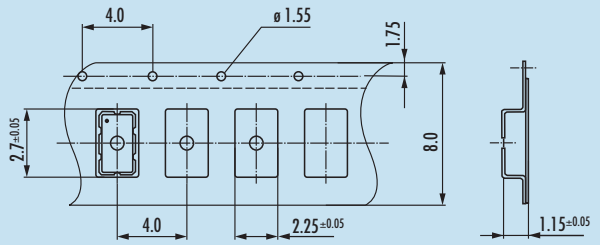
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Oscillator · JO22 · 3.3 V · Stop Function

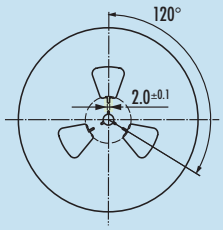
Taping Specification

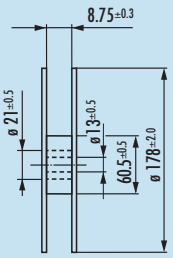


500 pcs per reel

Feeding

in mm





in mm

Enable / Disable Function

pin #1 (e/d control)	pin #3 (output)
open	active
high "1" ($V_{IH} \geq 0.8\ V_{DC}$)	active
low "0" ($V_{IL} \leq 0.2\ V_{DC}$)	high impedance

stop function:
- oscillator stops
- output high impedance

Marking

frequency

company code / frequency stability code / date code

date code:

A ~ M: Jan. - Dec.

3: 2013 6: 2016

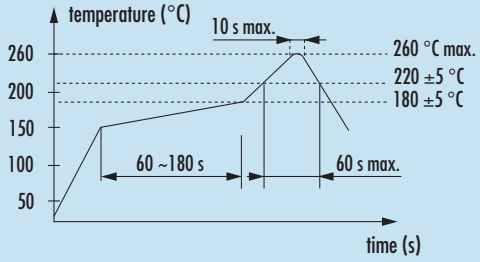
4: 2014 7: 2017

5: 2015 8: 2018

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

* hand soldering temperature should not exceed 280 °C

Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

actual size

Oscillator · JO22H · 3.3 V

High Stability Oscillator with Stop Function · 2.5 x 2.0 mm

- low cost high stability SMD oscillator
- stability meets spec for WiMax and WLAN
- RoHS compliant, ceramic/metal package
- reflow soldering temperature: 260 °C max.

RoHS 2002/95/EC — RoHS compliant

Pb free: pins / pads

General Data

type		JO22H 3.3V
frequency range		4.0 ~ 54.0 MHz (15pF max.)
frequency stability over all*		± 10ppm ~ ± 20ppm (table 1)
current consumption		7 mA max.
supply voltage V_{DC}		3.3 V ±5%
temperature	operating	-20°C ~ +70°C / -40°C ~ +85°C
	storage	-40°C ~ +85°C
output	rise & fall time	5 nsec max.
	load max	15pF
	current max.	4 mA
	low level max.	0.1 x V_{DC}
	high level min.	0.9 x V_{DC}
output enable time max.		10 ms
output disable time max.		250ns
start-up time max.		10 ms
standby function		stop
standby current max.		10 µA
jitter		< 3.0 ps RMS typ.
symmetry at 0.5 x VDC		45% ~ 55% max.

Table 1: Frequency Stability Code

stability code	D ± 20 ppm	E ± 15 ppm	F ± 10 ppm		
-20 °C ~ +70 °C	O	O	O		
-40 °C ~ +85 °C	O	O	O		

O available

* includes stability at 25°C, operating temp. range, supply voltage change, load change, vibration, aging 1st year

Table 2: Rise & Fall Time max.

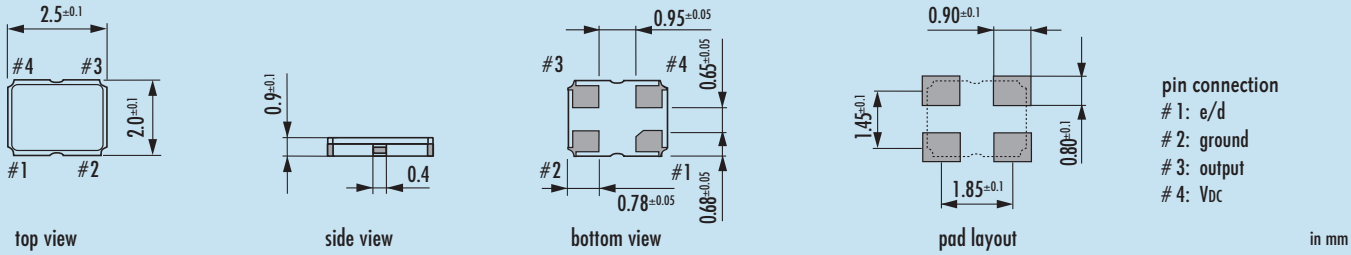
5 ns: 4.0 ~ 54.0 MHz	**note:** - specific data on request - rise time: 0.1 V_{DC} ~ 0.9 V_{DC} - fall time: 0.9 V_{DC} ~ 0.1 V_{DC}

Enable / Disable Function

pin #1 (e/d control)	pin #3 (output)
open	active
high "1" ($V_{IH} \geq 0.7\ V_{DC}$)	active
low "0" ($V_{IL} \leq 0.3\ V_{DC}$)	high impedance

stop function: • oscillator stops / • output high impedance

Dimensions



Order Information

0	frequency	type	frequency stability code	supply voltage code	output load code	option
Oscillator	4.0 ~ 54.0 MHz	JO22H	see table 1	3.3 = 3.3 V	1 = 15 pF	blank = -20°C ~ +70°C T1 = -40°C ~ +85°C

Example: O 20.0-JO22H-F-3.3-1-T1 (LF = RoHS compliant / Pb free pins or pads)

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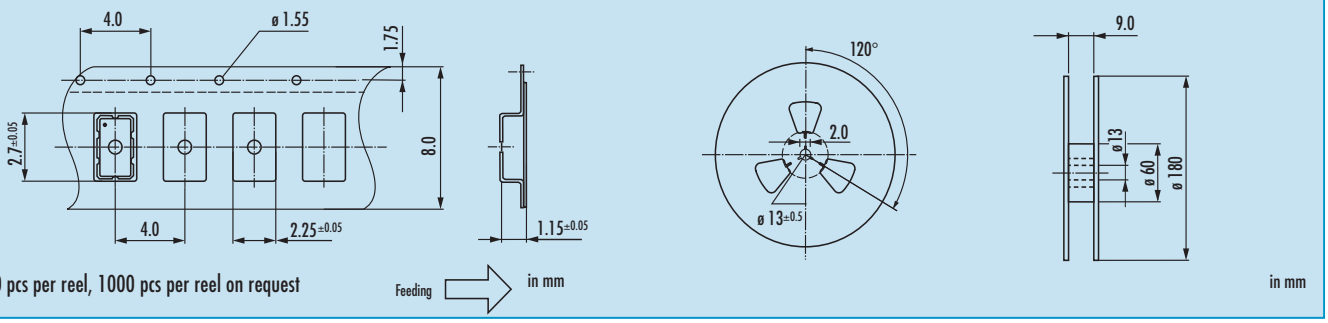
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

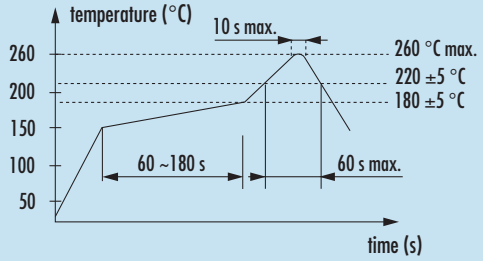
Oscillator · JO22H · 3.3 V · Low Power

Taping Specification



500 pcs per reel, 1000 pcs per reel on request

Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

Marking

frequency

company code / stability code / date code

date code:

A ~ M: Jan. - Dec.

0: 2010 3: 2013

1: 2011 4: 2014

2: 2012 5: 2015

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

actual size

Oscillator · JO22 · 3.0 V

SMD Oscillator with Stop Function · 2.5 x 2.0 mm

- very low current consumption
- HCMOS/LVCMOS output
- reflow soldering temperature: 260 °C max.
- ultra flat ceramic / metal package

RoHS 2011/65/EC
RoHS compliant

Pb free

General Data

type		JO22 3.0 V
frequency range		0.75 ~ 50.0 MHz
frequency stability over all*		± 25 ppm ~ ± 100 ppm
		see table 1
current consumption		see table 2
supply voltage V_{DC}		3.0 V ± 5%
temperature	operating	-20 °C ~ +70 °C up to -40 °C ~ +105 °C
	storage	-55 °C ~ +105 °C
output	rise & fall time	see table 3
	load max	15 pF
	current max.	4 mA
	low level max.	0.4 V
	high level min.	V_{DC} - 0.4 V
output enable time max.		10 ms
output disable time max.		50 µs
start-up time max.		10 ms
standby function		stop
standby current max.		10 µA
phase jitter 12 kHz ~ 20.0 MHz		< 1.0 ps RMS
symmetry at 0.5 x V_{DC}		45 % ~ 55 % max.

Table 1: Frequency Stability Code

stability code	A ± 100 ppm	B ± 50 ppm	G ± 30 ppm	C ± 25 ppm		
-20 °C ~ +70 °C		○	○	Δ		
-40 °C ~ +85 °C	○	○	○			
-40 °C ~ +105 °C	○	○				

● standard ○ available Δ excludes aging

* includes stability at 25 °C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption max.

3.0 V: current at 15pF load:

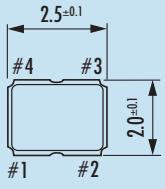
0.75 ~ 19.9 MHz	5.5 mA
20.00 ~ 39.9 MHz	6.5 mA
40.00 ~ 50.0 MHz	7.5 mA

Table 3: Rise & Fall Time max.

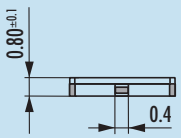
5 ns: 0.75 ~ 50.0 MHz

note:
- specific data on request
- rise time: 0.1 V_{DC} ~ 0.9 V_{DC}
- fall time: 0.9 V_{DC} ~ 0.1 V_{DC}

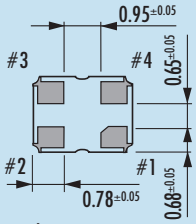
Dimensions



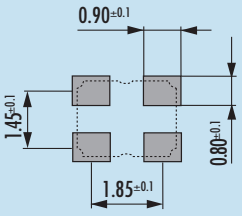
top view



side view



bottom view



pad layout

pin connection
1: e/d
2: ground
3: output
4: V_{DC}

in mm

Order Information

0	frequency	– type	– frequency stability code	– supply voltage code	– output load code	– option
Oscillator	0.75 ~ 50.0 MHz	JO22	see table 1	3.0 = 3.0 V	1 = 15 pF	blank = -20 °C ~ +70 °C T1 = -40 °C ~ +85 °C T2 = -40 °C ~ +105 °C

Example: O 20.0-JO22-B-3.0-1-T1-LF (LF = RoHS compliant / Pb free pins or pads)

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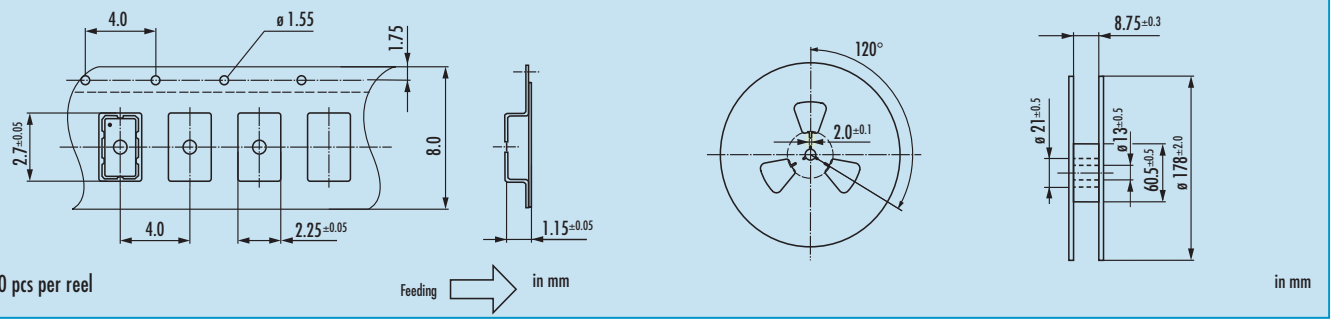
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Oscillator · JO22 · 3.0 V · Stop Function

Taping Specification



Enable / Disable Function

pin #1 (e/d control)	pin #3 (output)
open	active
high "1" ($V_{IH} \geq 0.8\ V_{DC}$)	active
low "0" ($V_{IL} \leq 0.2\ V_{DC}$)	high impedance

stop function:
- oscillator stops
- output high impedance

Marking

frequency

company code / frequency stability code / date code

date code:

A ~ M: Jan. - Dec.

3: 2013 6: 2016

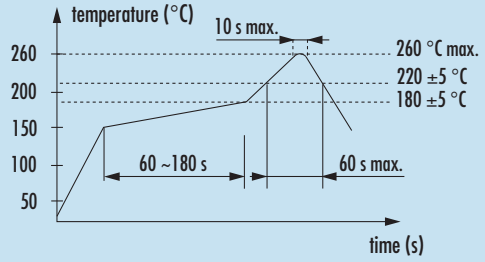
4: 2014 7: 2017

5: 2015 8: 2018

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

* hand soldering temperature should not exceed 280 °C

Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

actual size

Oscillator · JO22 · 2.8 V

SMD Oscillator with Stop Function · 2.5 x 2.0 mm

- very low current consumption
- HCMOS/LVCMOS output
- reflow soldering temperature: 260 °C max.
- ultra flat ceramic / metal package

RoHS 2011/65/EC — RoHS compliant

Pb free

General Data

type		JO22 2.8 V
frequency range		0.75 ~ 50.0 MHz
frequency stability over all*		± 25 ppm ~ ± 100 ppm
		see table 1
current consumption		see table 2
supply voltage V_{DC}		2.8 V ± 5%
temperature	operating	-20 °C ~ +70 °C up to -40 °C ~ +105 °C
	storage	-55 °C ~ +105 °C
output	rise & fall time	see table 3
	load max	15 pF
	current max.	4 mA
	low level max.	0.4 V
	high level min.	V_{DC} - 0.4 V
output enable time max.		10 ms
output disable time max.		50 µs
start-up time max.		10 ms
standby function		stop
standby current max.		10 µA
phase jitter 12 kHz ~ 20.0 MHz		< 1.0 ps RMS
symmetry at 0.5 x V_{DC}		45 % ~ 55 % max.

Table 1: Frequency Stability Code

stability code	A ± 100 ppm	B ± 50 ppm	G ± 30 ppm	C ± 25 ppm		
-20 °C ~ +70 °C		○	○	Δ		
-40 °C ~ +85 °C	○	○	○			
-40 °C ~ +105 °C	○	○				

● standard ○ available Δ excludes aging

* includes stability at 25 °C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption max.

2.8 V: current at 15pF load:

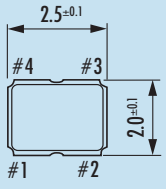
0.75 ~ 19.9 MHz	5 mA
20.00 ~ 39.9 MHz	6 mA
40.00 ~ 50.0 MHz	7 mA

Table 3: Rise & Fall Time max.

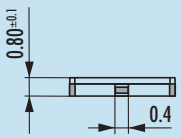
5 ns: 0.75 ~ 50.0 MHz

note:
- specific data on request
- rise time: 0.1 V_{DC} ~ 0.9 V_{DC}
- fall time: 0.9 V_{DC} ~ 0.1 V_{DC}

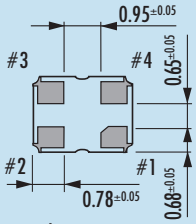
Dimensions



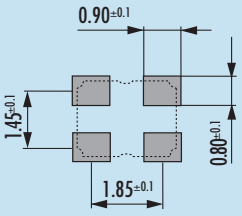
top view



side view



bottom view



pad layout

pin connection
1: e/d
2: ground
3: output
4: V_{DC}

in mm

Order Information

0	frequency	type	frequency stability code	supply voltage code	output load code	option
Oscillator	0.75 ~ 50.0 MHz	JO22	see table 1	2.8 = 2.8 V	1 = 15 pF	blank = -20 °C ~ +70 °C T1 = -40 °C ~ +85 °C T2 = -40 °C ~ +105 °C

Example: O 20.0-JO22-B-2.8-1-T1-LF (LF = RoHS compliant / Pb free pins or pads)

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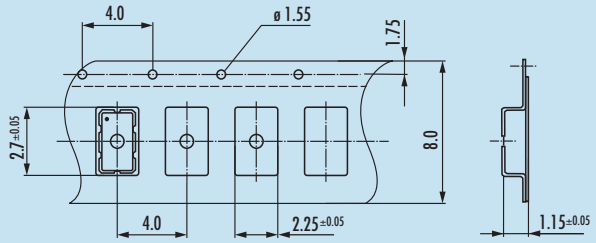
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Oscillator · JO22 · 2.8 V · Stop Function

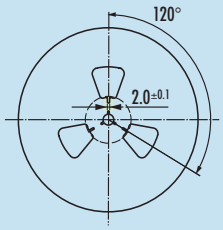
Taping Specification

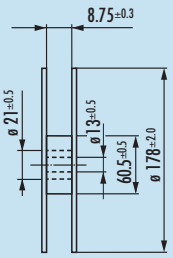


500 pcs per reel

Feeding

in mm





in mm

Enable / Disable Function

pin #1 (e/d control)	pin #3 (output)
open	active
high "1" ($V_{IH} \geq 0.8\ V_{DC}$)	active
low "0" ($V_{IL} \leq 0.2\ V_{DC}$)	high impedance

stop function:
- oscillator stops
- output high impedance

Marking

frequency

company code / frequency stability code / date code

date code:

A ~ M: Jan. - Dec.

3: 2013 6: 2016

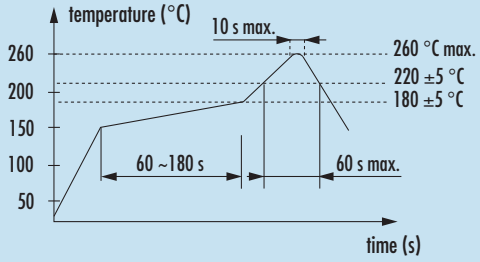
4: 2014 7: 2017

5: 2015 8: 2018

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

* hand soldering temperature should not exceed 280 °C

Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

actual size

Oscillator · JO22 · 2.5 V

SMD Oscillator with Stop Function · 2.5 x 2.0 mm

- very low current consumption
- HCMOS/LVCMOS output
- reflow soldering temperature: 260 °C max.
- ultra flat ceramic / metal package

RoHS 2011/65/EC RoHS compliant

Pb free

General Data

type		JO22 2.5 V
frequency range		0.75 ~ 50.0 MHz
frequency stability over all*		± 25 ppm ~ ± 100 ppm
		see table 1
current consumption		see table 2
supply voltage V_{DC}		2.5 V ± 5%
temperature	operating	-20 °C ~ +70 °C up to -40 °C ~ +105 °C
	storage	-55 °C ~ +105 °C
output	rise & fall time	see table 3
	load max	15 pF
	current max.	4 mA
	low level max.	0.4 V
	high level min.	V_{DC} - 0.4 V
output enable time max.		10 ms
output disable time max.		50 µs
start-up time max.		10 ms
standby function		stop
standby current max.		10 µA
phase jitter 12 kHz ~ 20.0 MHz		< 1.0 ps RMS
symmetry at 0.5 x V_{DC}		45 % ~ 55 % max.

Table 1: Frequency Stability Code

stability code	A ± 100 ppm	B ± 50 ppm	G ± 30 ppm	C ± 25 ppm		
-20 °C ~ +70 °C		○	○	Δ		
-40 °C ~ +85 °C	○	○	○			
-40 °C ~ +105 °C	○	○				

● standard ○ available Δ excludes aging

* includes stability at 25 °C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption max.

2.5 V: current at 15pF load:

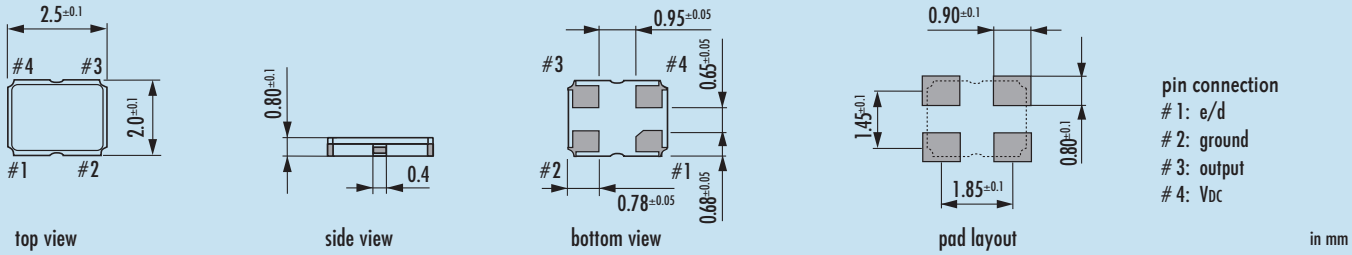
0.75 ~ 19.9 MHz	5 mA
20.00 ~ 39.9 MHz	6 mA
40.00 ~ 50.0 MHz	7 mA

Table 3: Rise & Fall Time max.

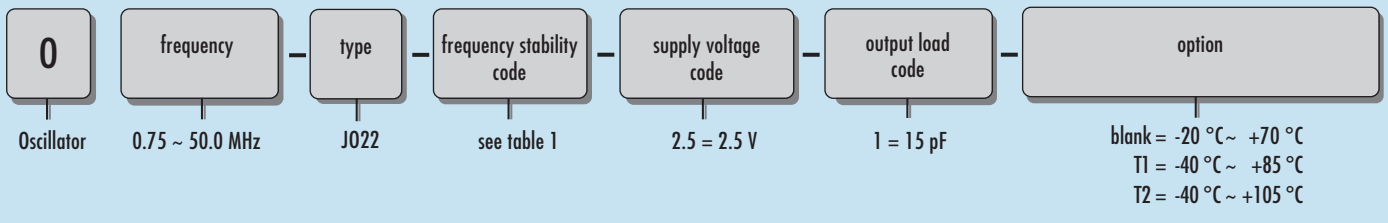
5 ns: 0.75 ~ 50.0 MHz

note:
- specific data on request
- rise time: 0.1 V_{DC} ~ 0.9 V_{DC}
- fall time: 0.9 V_{DC} ~ 0.1 V_{DC}

Dimensions



Order Information



Example: O 20.0-JO22-B-2.5-1-T1-LF (LF = RoHS compliant / Pb free pins or pads)

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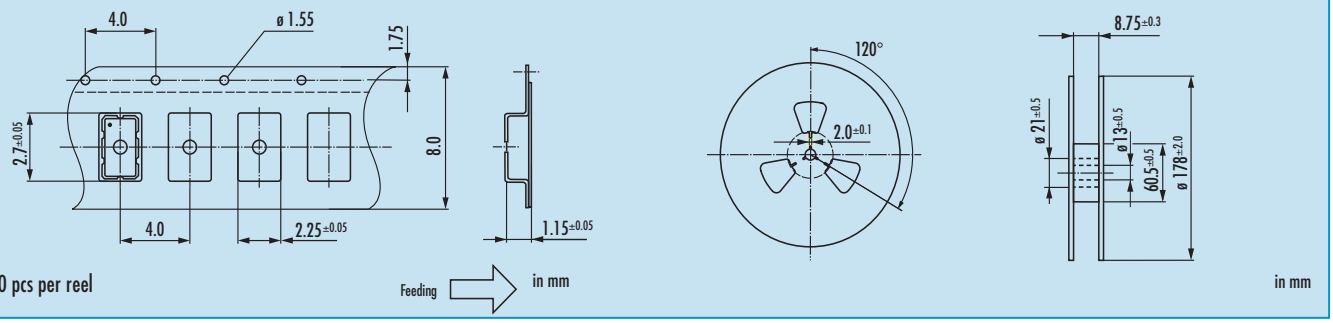
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Oscillator · JO22 · 2.5 V · Stop Function

Taping Specification



Enable / Disable Function

pin #1 (e/d control)	pin #3 (output)
open	active
high "1" ($V_{IH} \geq 0.8\ V_{DC}$)	active
low "0" ($V_{IL} \leq 0.2\ V_{DC}$)	high impedance

stop function:
- oscillator stops
- output high impedance

Marking

frequency

company code / frequency stability code / date code

date code:

A ~ M: Jan. - Dec.

3: 2013 6: 2016

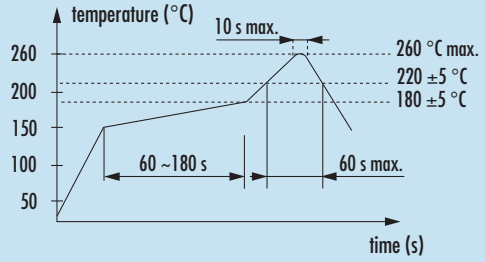
4: 2014 7: 2017

5: 2015 8: 2018

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

* hand soldering temperature should not exceed 280 °C

Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

actual size

Oscillator · JO22H · 2.5 V

High Stability Oscillator with Stop Function · 2.5 x 2.0 mm

- low cost high stability SMD oscillator
- stability meets spec for WiMax and WLAN
- RoHS compliant, ceramic/metal package
- reflow soldering temperature: 260 °C max.

RoHS 2002/95/EC — RoHS compliant

Pb free: pins / pads

General Data

type		JO22H 2.5V
frequency range		4.0 ~ 54.0 MHz (15pF max.)
frequency stability over all*		± 10ppm ~ ± 20ppm (table 1)
current consumption		6 mA max.
supply voltage V_{DC}		2.5 V ±5%
temperature	operating	-20°C ~ +70°C / -40°C ~ +85°C
	storage	-40°C ~ +85°C
output	rise & fall time	5 nsec max.
	load max	15pF
	current max.	4 mA
	low level max.	0.1 x V_{DC}
	high level min.	0.9 x V_{DC}
output enable time max.		10 ms
output disable time max.		250ns
start-up time max.		10 ms
standby function		stop
standby current max.		10 µA
jitter		< 3.0 ps RMS typ.
symmetry at 0.5 x VDC		45% ~ 55% max.

Table 1: Frequency Stability Code

stability code	D ± 20 ppm	E ± 15 ppm	F ± 10 ppm		
-20 °C ~ +70 °C	O	O	O		
-40 °C ~ +85 °C	O	O	O		

O available

* includes stability at 25°C, operating temp. range, supply voltage change, load change, vibration, aging 1st year

Table 2: Rise & Fall Time max.

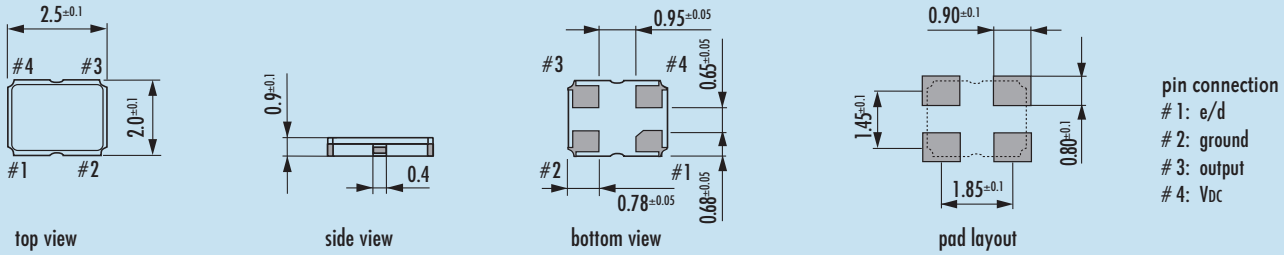
5 ns: 4.0 ~ 54.0 MHz	**note:** - specific data on request - rise time: 0.1 V_{DC} ~ 0.9 V_{DC} - fall time: 0.9 V_{DC} ~ 0.1 V_{DC}

Enable / Disable Function

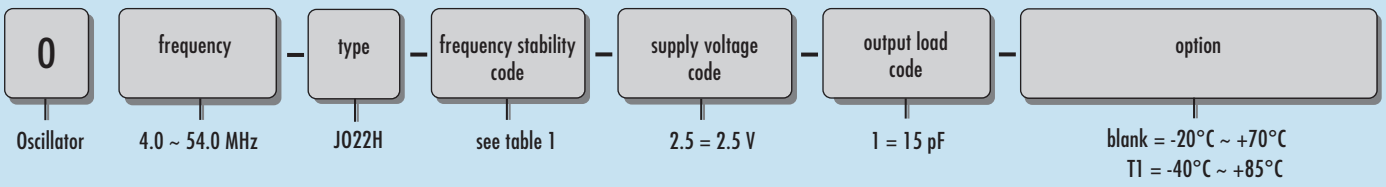
pin #1 (e/d control)	pin #3 (output)
open	active
high "1" ($V_{IH} \geq 0.7\ V_{DC}$)	active
low "0" ($V_{IL} \leq 0.3\ V_{DC}$)	high impedance

stop function: • oscillator stops / • output high impedance

Dimensions



Order Information



Example: O 20.0-JO22H-F-2.5-1-T1 (LF = RoHS compliant / Pb free pins or pads)

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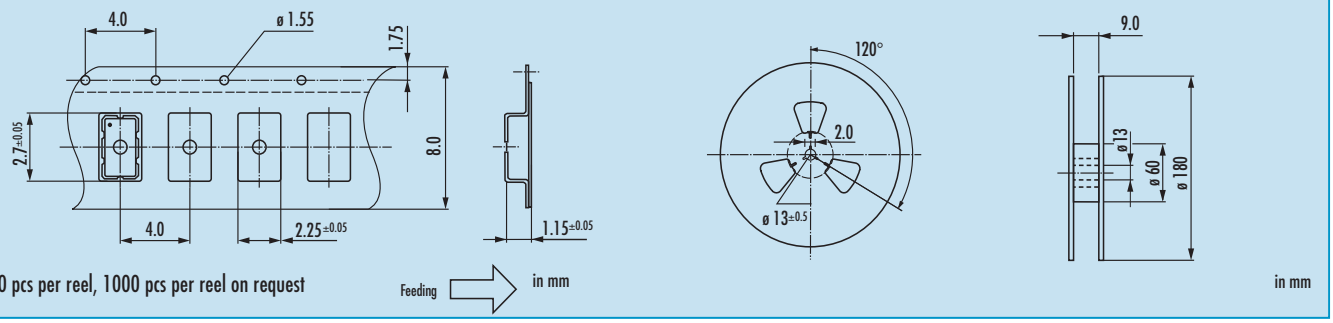
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Oscillator · JO22H · 2.5 V · Low Power

Taping Specification



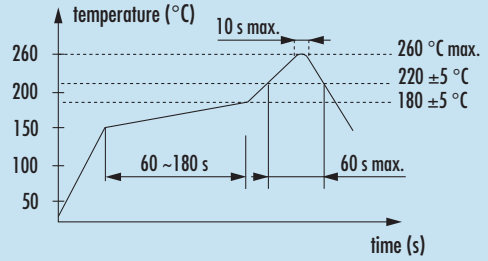
500 pcs per reel, 1000 pcs per reel on request

Feeding

in mm

in mm

Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

Marking

frequency

company code / stability code / date code

date code:

A ~ M: Jan. - Dec.

0: 2010 3: 2013

1: 2011 4: 2014

2: 2012 5: 2015

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

actual size

Oscillator · JO22 · 1.8 V

SMD Oscillator with Stop Function · 2.5 x 2.0 mm

- very low current consumption
- HCMOS/LVCMOS output
- reflow soldering temperature: 260 °C max.
- ultra flat ceramic / metal package

RoHS 2011/65/EC compliant

Pb free

General Data

type		JO22 1.8 V
frequency range		0.75 ~ 50.0 MHz
frequency stability over all*		± 25 ppm ~ ± 100 ppm
		see table 1
current consumption		see table 2
supply voltage V_{DC}		1.8 V ± 5%
temperature	operating	-20 °C ~ +70 °C up to -40 °C ~ +105 °C
	storage	-55 °C ~ +105 °C
output	rise & fall time	see table 3
	load max	15 pF
	current max.	4 mA
	low level max.	0.4 V
	high level min.	V_{DC} - 0.4 V
output enable time max.		10 ms
output disable time max.		50 µs
start-up time max.		10 ms
standby function		stop
standby current max.		10 µA
phase jitter 12 kHz ~ 20.0 MHz		< 1.0 ps RMS
symmetry at 0.5 x V_{DC}		45% ~ 55% typ. (40% ~ 60% max.)

Table 1: Frequency Stability Code

stability code	A ± 100 ppm	B ± 50 ppm	G ± 30 ppm	C ± 25 ppm		
-20 °C ~ +70 °C		○	○	Δ		
-40 °C ~ +85 °C	○	○	○			
-40 °C ~ +105 °C	○	○				

● standard ○ available Δ excludes aging

* includes stability at 25 °C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption max.

1.8 V: current at 15pF load:

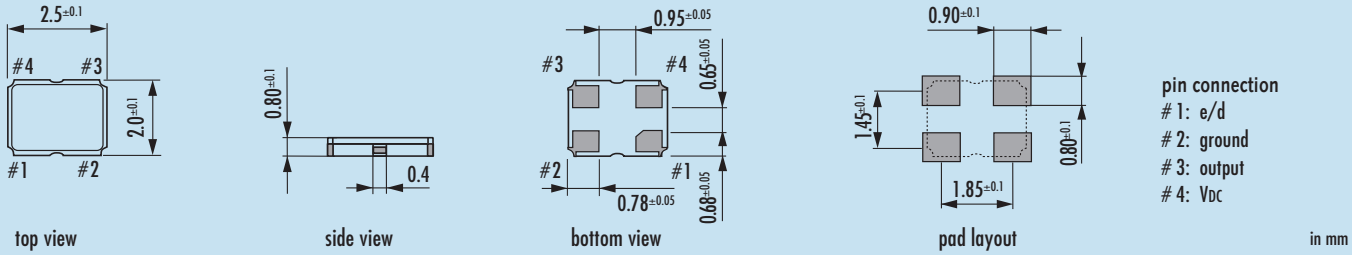
0.75 ~ 19.9 MHz	2 mA
20.00 ~ 39.9 MHz	3 mA
40.00 ~ 50.0 MHz	4 mA

Table 3: Rise & Fall Time max.

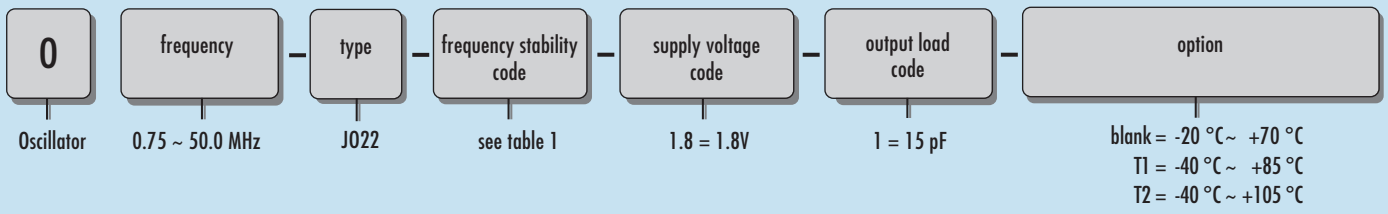
6 ns: 0.75 ~ 50.0 MHz

note:
- specific data on request
- rise time: 0.1 V_{DC} ~ 0.9 V_{DC}
- fall time: 0.9 V_{DC} ~ 0.1 V_{DC}

Dimensions



Order Information



Example: O 20.0-JO22-B-1.8-1-T1-LF (LF = RoHS compliant / Pb free pins or pads)

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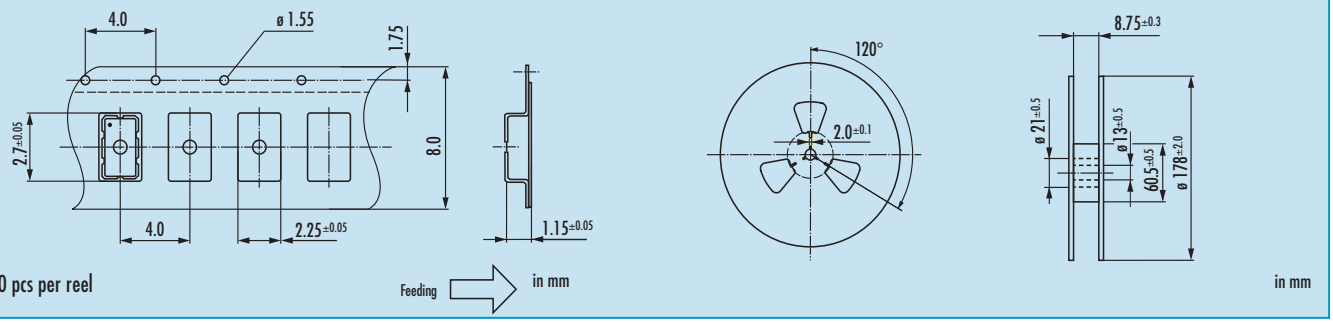
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Oscillator · JO22 · 1.8 V · Stop Function

Taping Specification



Enable / Disable Function

pin #1 (e/d control)	pin #3 (output)
open	active
high "1" ($V_{IH} \geq 0.8\ V_{DC}$)	active
low "0" ($V_{IL} \leq 0.2\ V_{DC}$)	high impedance

stop function:
- oscillator stops
- output high impedance

Marking

frequency

company code / frequency stability code / date code

date code:

A ~ M: Jan. - Dec.

3: 2013 6: 2016

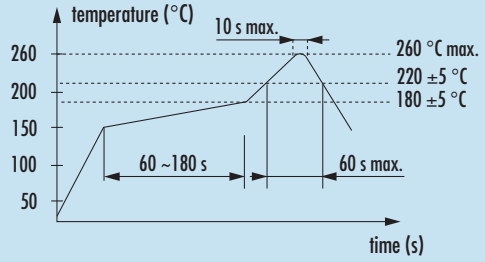
4: 2014 7: 2017

5: 2015 8: 2018

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

* hand soldering temperature should not exceed 280 °C

Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

actual size

Oscillator · JO22H · 1.8 V

High Stability Oscillator with Stop Function · 2.5 x 2.0 mm

- low cost high stability SMD oscillator
- stability meets spec for WiMax and WLAN
- RoHS compliant, ceramic/metal package
- reflow soldering temperature: 260 °C max.

RoHS 2011/65/EC — RoHS compliant

Pb free

General Data

type		JO22H 1.8V
frequency range		9.5 ~ 54.0 MHz (15pF max.)
frequency stability over all*		± 10ppm ~ ± 20ppm (table 1)
current consumption		3 mA max.
supply voltage V_{DC}		1.8 V ±5%
temperature	operating	-20°C ~ +70°C / -40°C ~ +85°C
	storage	-40°C ~ +85°C
output	rise & fall time	5 nsec max.
	load max	15pF
	current max.	4 mA
	low level max.	0.4 V
	high level min.	V_{DC} - 0.4 V
output enable time max.		10 ms
output disable time max.		250ns
start-up time max.		10 ms
standby function		stop
standby current max.		5 µA
jitter		< 3.0 ps RMS typ.
symmetry at 0.5 x VDC		45% ~ 55% max.

Table 1: Frequency Stability Code

stability code	D ± 20 ppm	E ± 15 ppm	F ± 10 ppm		
-20 °C ~ +70 °C	○	○	○		
-40 °C ~ +85 °C	○	○	▲		

○ available ▲ ask, if available

* includes stability at 25°C, operating temp. range, supply voltage change, load change, vibration, aging 1st year

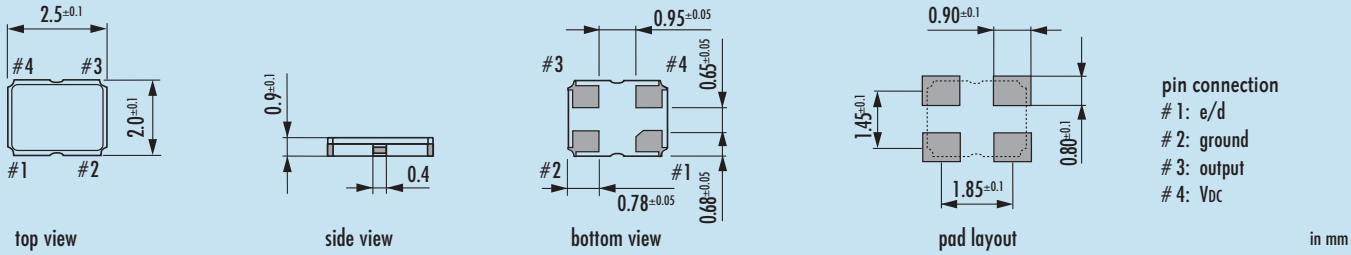
Table 2: Rise & Fall Time max.

5 ns: 9.5 ~ 54.0 MHz	**note:** - specific data on request - rise time: 0.2 V_{DC} ~ 0.8 V_{DC} - fall time: 0.8 V_{DC} ~ 0.2 V_{DC}

Enable / Disable Function

pin #1 (e/d control)	pin #3 (output)
open	active
high "1" ($V_{IH} \geq 0.7\ V_{DC}$)	active
low "0" ($V_{IL} \leq 0.3\ V_{DC}$)	high impedance
stop function: • oscillator stops / • output high impedance	

Dimensions



Order Information

0	frequency	–	type	–	frequency stability code	–	supply voltage code	–	output load code	–	option
Oscillator	9.5 ~ 54.0 MHz		JO22H		see table 1		1.8 = 1.8 V		1 = 15 pF		blank = -20°C ~ +70°C T1 = -40°C ~ +85°C

Example: O 20.0-JO22H-E-1.8-1-T1-LF (LF = RoHS compliant / Pb free)

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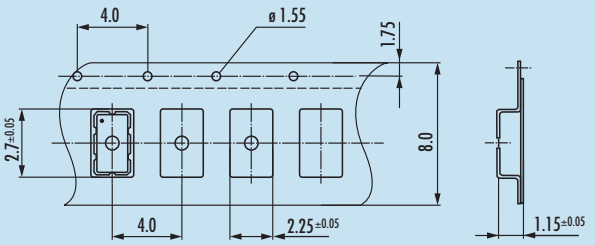
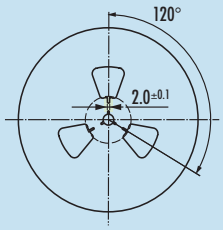
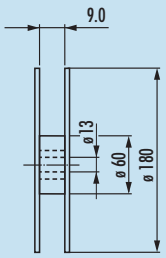
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Oscillator · JO22H · 1.8 V · Low Power

Taping Specification







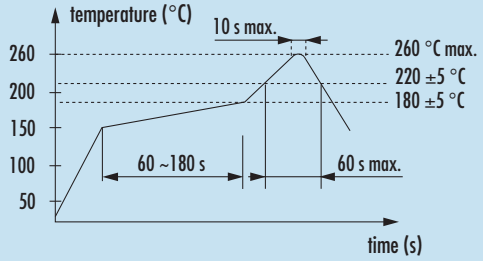
500 pcs per reel, 1000 pcs per reel on request

Feeding

in mm

in mm

Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

Marking

frequency

company code / stability code / date code

date code:

A ~ M: Jan. - Dec.

5: 2015 8: 2018

6: 2016 9: 2019

7: 2017 0: 2020

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

actual size

Oscillator · JO32 · 3.3 V

SMD Oscillator with Stop Function · 3.2 x 2.5 mm

- reflow soldering temperature: 260 °C max.
- compact & flat ceramic/metal package

RoHS 2011/65/EC compliant

Pb free

General Data

type		JO32 3.3 V
frequency range		0.75 ~ 80.0 MHz (15 pF max.)
		0.75 ~ 50.0 MHz (30 pF max.)
higher frequencies		80.0 ~ 135.0 MHz (15 pF max.)*
frequency stability over all**		± 20 ppm ~ ± 100 ppm (table 1)
current consumption		see table 2
supply voltage V_{DC}		3.3 V ± 5%
temperature	operating	-20 °C ~ +70 °C / -40 °C ~ +85 °C / -40 °C ~ +105 °C
	storage	-55 °C ~ +125 °C
output	rise & fall time	see table 3
	load max.	15 pF / 30 pF (≤ +85 °C and ≤ 50.0 MHz)
	current max.	4 mA / 5 mA
	low level max.	0.4 V
	high level min.	V_{DC} - 0.4 V
output enable time max.		10 ms
output disable time max.		50 µs
start-up time max.		10 ms
standby function		stop
standby current max.		5 µA
phase jitter 12 kHz ~ 20.0 MHz		< 1.0 ps RMS
symmetry at 0.5 x V_{DC}		45% ~ 55% (40% ~ 60% max.)

* ask if available

Table 1: Frequency Stability Code

stability code / temp. code**		A ± 100 ppm	B ± 50 ppm	G ± 30 ppm	C ± 25 ppm	D ± 20 ppm
-20 °C ~ +70 °C			O	O	O	Δ
-40 °C ~ +85 °C	T1	O	O	O		
-40 °C ~ +105 °C	T2	O	O			

O available Δ excludes aging

** includes stability at 25 °C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption max.

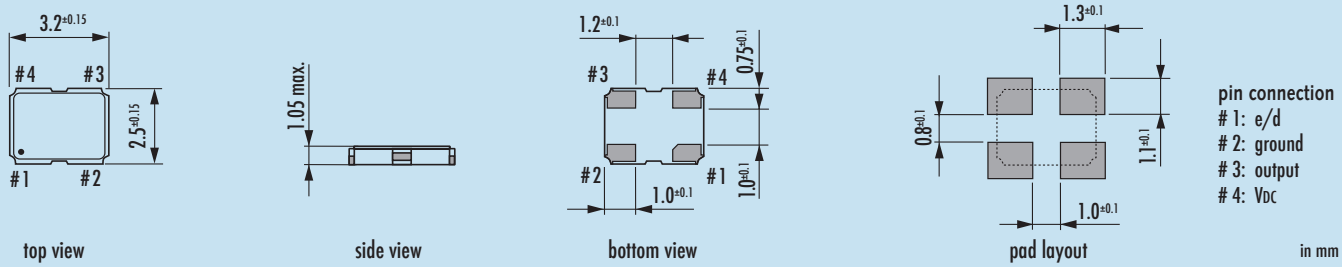
Current at 15 pF load		Current at 30 pF load	
0.75 ~ 19.9 MHz	4 mA	0.75 ~ 19.9 MHz	6 mA
20.00 ~ 39.9 MHz	7 mA	20.00 ~ 39.9 MHz	13 mA
40.00 ~ 59.9 MHz	19 mA	40.00 ~ 50.0 MHz	24 mA
60.00 ~ 79.9 MHz	24 mA		
80.00 ~ 135.0 MHz*	45 mA		

Table 3: Rise & Fall Time max.

at 15 pF	at 30 pF
5 ns: 0.75 ~ 49.99 MHz	8 ns: 0.75 ~ 49.99 MHz
4 ns: 50.00 ~ 79.99 MHz	
3 ns: 80.00 ~ 135.00 MHz*	

note: rise time: 0.1 V_{DC} ~ 0.9 V_{DC} / fall time: 0.9 V_{DC} ~ 0.1 V_{DC}
specific data on request

Dimensions



Order Information

0	frequency	type	frequency stability code	supply voltage code	output load code	option
Oscillator	0.75 ~ 80.0 MHz	JO32	see table 1	3.3 = 3.3 V	1 = 15 pF 2 = 30 pF	blank = -20 °C ~ +70 °C T1 = -40 °C ~ +85 °C T2 = -40 °C ~ +105 °C

Example: O 20.0-JO32-B-3.3-1-T1-LF (LF = RoHS compliant / Pb free pins or pads)

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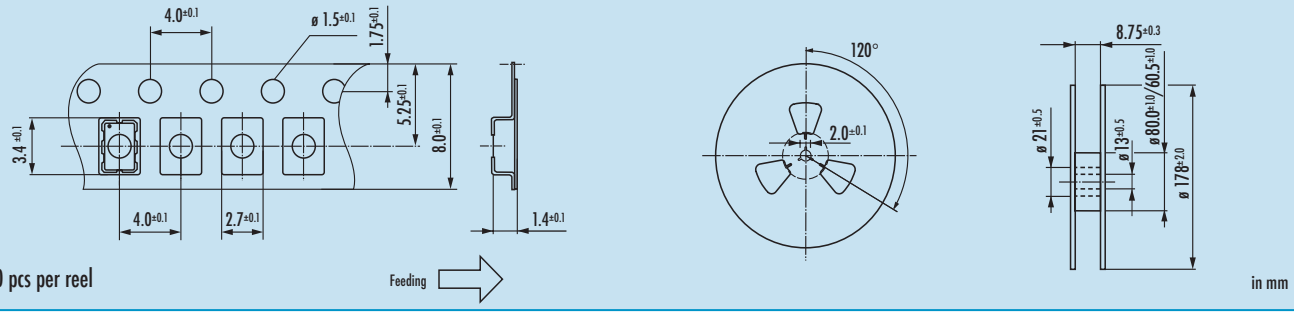
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Oscillator · JO32 · 3.3 V · Stop Function

Taping Specification



Enable / Disable Function

pin #1 (e/d control)	pin #3 (output)
open	active
high "1" ($V_{IH} \geq 0.8\ V_{DC}$)	active
low "0" ($V_{IL} \leq 0.2\ V_{DC}$)	high impedance

stop function:
- oscillator stops
- output high impedance

Marking

frequency

company code / frequency stability code / date code

date code:

A ~ M: Jan. - Dec.

1: 2011 4: 2014

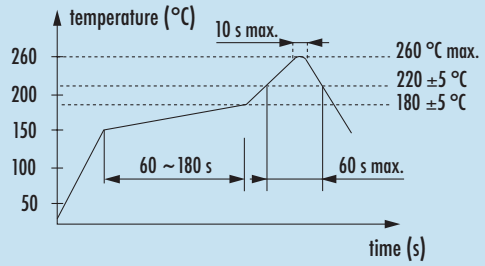
2: 2012 5: 2015

3: 2013 6: 2016

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

actual size

Oscillator · JO32H · 3.3 V

High Stability Oscillator with Stop Function · 3.2 x 2.5 mm

- low cost high stability SMD oscillator
- stability meets spec for WiMax and WLAN
- RoHS compliant, ceramic/metal package
- reflow soldering temperature: 260 °C max.

RoHS 2002/95/EC — RoHS compliant

Pb free: pins / pads

General Data

type		JO32H 3.3V
frequency range		2.50 ~ 60.0 MHz (15 pF max.)
frequency stability over all*		± 8 ppm ~ ± 20 ppm (table 1)
aging 1st year		+/-2 ppm max.
current consumption		8 mA max.
supply voltage V_{DC}		3.3 V ± 10%
temperature	operating	-20 °C ~ +70 °C up to -40 °C ~ +105 °C
	storage	-40 °C ~ +85 °C
output	rise & fall time	5 nsec max.
	load max	15 pF
	current max.	4 mA
	low level max.	0.1 x V_{DC}
	high level min.	0.9 x V_{DC}
output enable time max.		1 ms
output disable time max.		250 ns
start-up time max.		2 ms
standby function		stop
standby current max.		5 µA
jitter		< 3.0 ps RMS typ.
symmetry at 0.5 x VDC		45% ~ 55% max.

Table 1: Frequency Stability Code

stability code	D ± 20 ppm	E ± 15 ppm	F ± 10 ppm	H ± 8 ppm	
-20 °C ~ +70 °C	O	O	O	O	
-40 °C ~ +85 °C	O	O	O		
-40 °C ~ +105 °C	O				
O available					

* includes stability at 25°C, operating temp. range, supply voltage change, load change, vibration, aging 1st year

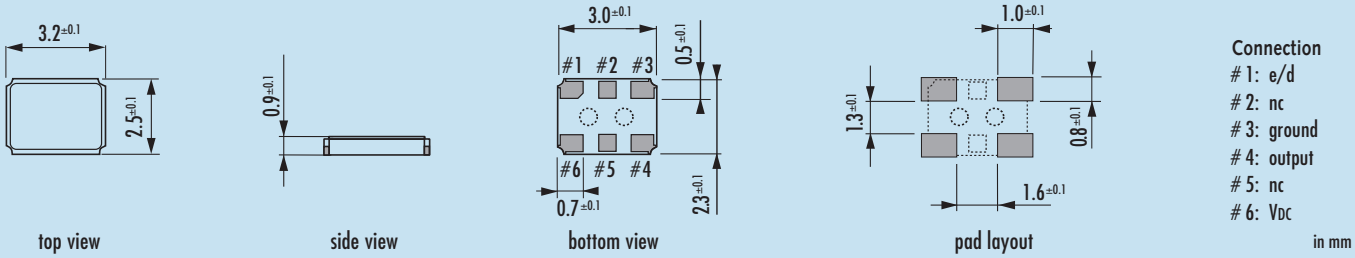
Table 2: Rise & Fall Time max.

5 ns: 2.5 ~ 60.0 MHz	**note:** - specific data on request - rise time: 0.1 V_{DC} ~ 0.9 V_{DC} - fall time: 0.9 V_{DC} ~ 0.1 V_{DC}

Enable / Disable Function

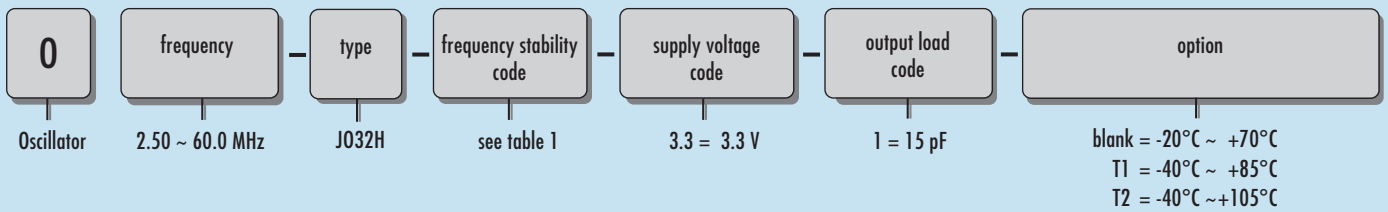
pin #1 (e/d control)	pin #4 (output)
open	active
high "1" ($V_{IH} \geq 0.7\ V_{DC}$)	active
low "0" ($V_{IL} \leq 0.3\ V_{DC}$)	high impedance
stop function: • oscillator stops / • output high impedance	

Dimensions



Note: please leave pins # 2, # 5 and the area underneath the package unconnected

Order Information



Example: O 20.0-JO32H-F-3.3-1-T1-LF (LF = RoHS compliant / Pb free pins or pads)

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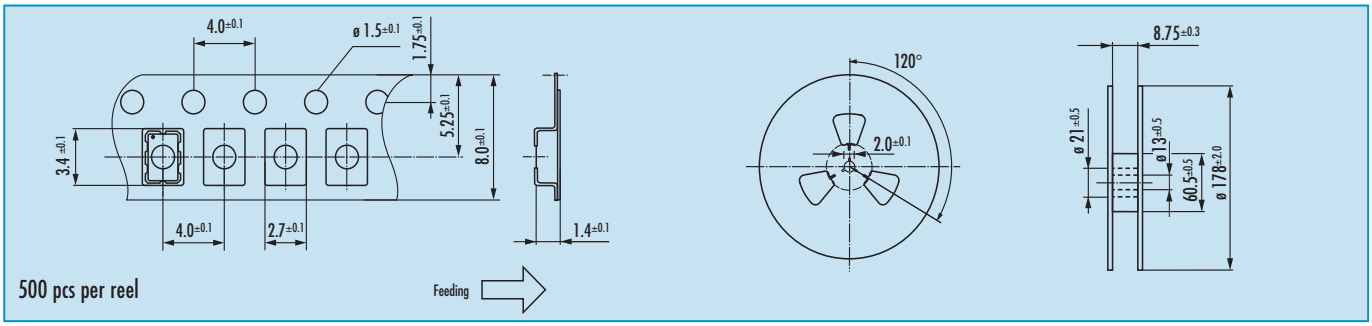
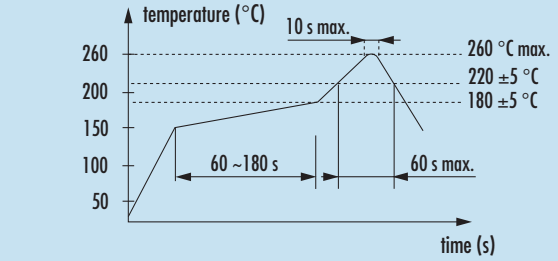
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Taping Specification



Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

Marking

frequency

company code / frequ. stability code / date code

date code:

A ~ M: Jan. - Dec.

0: 2010 3: 2013

1: 2011 4: 2014

2: 2012 5: 2015

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

actual size

Oscillator · JO32 · 3.0 V

SMD Oscillator with Stop Function · 3.2 x 2.5 mm

- reflow soldering temperature: 260 °C max.
- compact & flat ceramic/metal package

RoHS 2011/65/EC compliant

Pb free

General Data

type		JO32 3.0 V
frequency range		0.75 ~ 80.0 MHz (15 pF max.)
		0.75 ~ 50.0 MHz (30 pF max.)
higher frequencies		80.0 ~ 135.0 MHz (15 pF max.)*
frequency stability over all**		± 20 ppm ~ ± 100 ppm (table 1)
current consumption		see table 2
supply voltage V_{DC}		3.0 V ± 5%
temperature	operating	-20 °C ~ +70 °C / -40 °C ~ +85 °C / -40 °C ~ +105 °C
	storage	-55 °C ~ +125 °C
output	rise & fall time	see table 3
	load max.	15 pF / 30 pF (≤ +85 °C and ≤ 50.0 MHz)
	current max.	4 mA / 5 mA
	low level max.	0.4 V
	high level min.	V_{DC} - 0.4 V
output enable time max.		10 ms
output disable time max.		50 µs
start-up time max.		10 ms
standby function		stop
standby current max.		5 µA
phase jitter 12 kHz ~ 20.0 MHz		< 1.0 ps RMS
symmetry at 0.5 x V_{DC}		45% ~ 55% (40% ~ 60% max.)

* ask if available

Table 1: Frequency Stability Code

stability code / temp. code**		A ± 100 ppm	B ± 50 ppm	G ± 30 ppm	C ± 25 ppm	D ± 20 ppm
-20 °C ~ +70 °C			O	O	O	Δ
-40 °C ~ +85 °C	T1	O	O	O		
-40 °C ~ +105 °C	T2	O	O			

O available Δ excludes aging

** includes stability at 25 °C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption max.

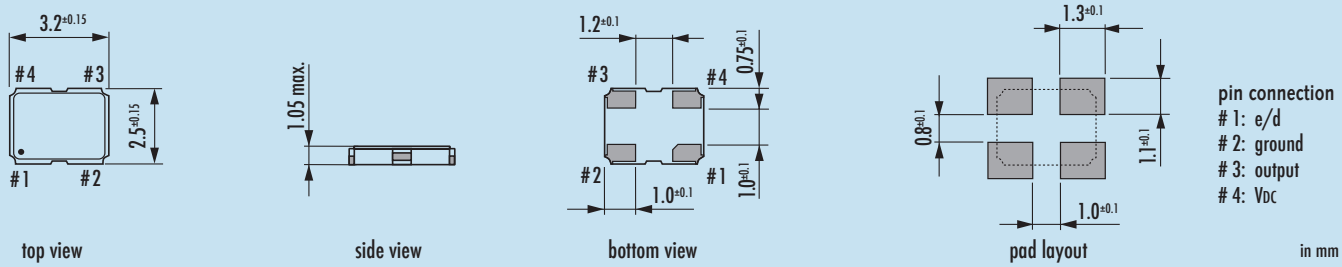
Current at 15 pF load		Current at 30 pF load	
0.75 ~ 19.9 MHz	4 mA	0.75 ~ 19.9 MHz	6 mA
20.00 ~ 39.9 MHz	7 mA	20.00 ~ 39.9 MHz	13 mA
40.00 ~ 59.9 MHz	19 mA	40.00 ~ 50.0 MHz	24 mA
60.00 ~ 79.9 MHz	24 mA		
80.00 ~ 135.0 MHz*	42 mA		

Table 3: Rise & Fall Time max.

at 15 pF	at 30 pF
5 ns: 0.75 ~ 49.99 MHz	8 ns: 0.75 ~ 49.99 MHz
4 ns: 50.00 ~ 79.99 MHz	
3 ns: 80.00 ~ 135.00 MHz*	

note: rise time: 0.1 V_{DC} ~ 0.9 V_{DC} / fall time: 0.9 V_{DC} ~ 0.1 V_{DC}
specific data on request

Dimensions



Order Information

0	frequency	type	frequency stability code	supply voltage code	output load code	option
Oscillator	0.75 ~ 80.0 MHz	JO32	see table 1	3.0 = 3.0 V	1 = 15 pF 2 = 30 pF	blank = -20 °C ~ +70 °C T1 = -40 °C ~ +85 °C T2 = -40 °C ~ +105 °C

Example: O 20.0-JO32-B-3.0-1-T1-LF (LF = RoHS compliant / Pb free pins or pads)

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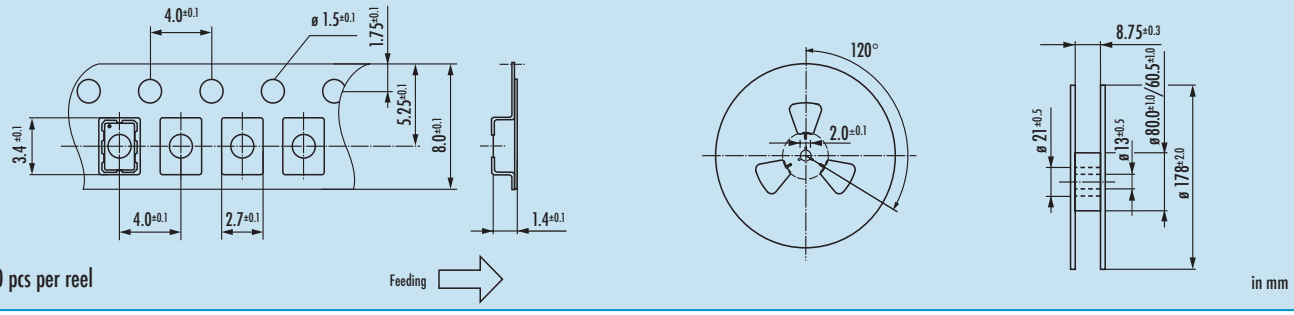
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Oscillator · JO32 · 3.0 V · Stop Function

Taping Specification



Enable / Disable Function

pin #1 (e/d control)	pin #3 (output)
open	active
high "1" ($V_{IH} \geq 0.8\ V_{DC}$)	active
low "0" ($V_{IL} \leq 0.2\ V_{DC}$)	high impedance

stop function:
- oscillator stops
- output high impedance

Marking

frequency

company code / frequency stability code / date code

date code:

A ~ M: Jan. - Dec.

1: 2011 4: 2014

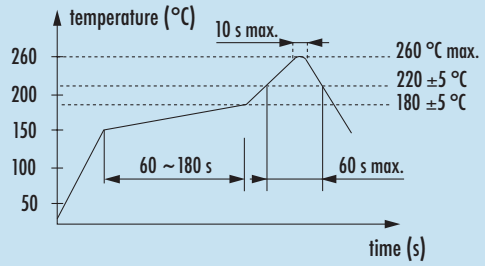
2: 2012 5: 2015

3: 2013 6: 2016

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

actual size

Oscillator · JO32 · 2.8 V

SMD Oscillator with Stop Function · 3.2 x 2.5 mm

- reflow soldering temperature: 260 °C max.
- compact & flat ceramic/metal package

RoHS 2011/65/EC — RoHS compliant

Pb free

General Data

type		JO32 2.8 V
frequency range		0.75 ~ 80.0 MHz (15 pF max.)
		0.75 ~ 50.0 MHz (30 pF max.)
higher frequencies		80.0 ~ 135.0 MHz (15 pF max.)*
frequency stability over all**		± 20 ppm ~ ± 100 ppm (table 1)
current consumption		see table 2
supply voltage V_{DC}		2.8 V ± 5%
temperature	operating	-20 °C ~ +70 °C / -40 °C ~ +85 °C / -40 °C ~ +105 °C
	storage	-55 °C ~ +125 °C
output	rise & fall time	see table 3
	load max.	15 pF / 30 pF (≤ +85 °C and ≤ 50.0 MHz)
	current max.	4 mA / 5 mA
	low level max.	0.4 V
	high level min.	V_{DC} - 0.4 V
output enable time max.		10 ms
output disable time max.		50 µs
start-up time max.		10 ms
standby function		stop
standby current max.		5 µA
phase jitter 12 kHz ~ 20.0 MHz		< 1.0 ps RMS
symmetry at 0.5 x V_{DC}		45% ~ 55% (40% ~ 60% max.)

* ask if available

Table 1: Frequency Stability Code

stability code / temp. code**		A ± 100 ppm	B ± 50 ppm	G ± 30 ppm	C ± 25 ppm	D ± 20 ppm
-20 °C ~ +70 °C			O	O	O	Δ
-40 °C ~ +85 °C	T1	O	O	O		
-40 °C ~ +105 °C	T2	O	O			

O available Δ excludes aging

** includes stability at 25 °C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption max.

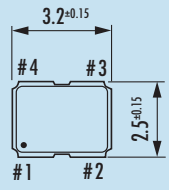
Current at 15 pF load		Current at 30 pF load	
0.75 ~ 19.9 MHz	4 mA	0.75 ~ 19.9 MHz	6 mA
20.00 ~ 39.9 MHz	7 mA	20.00 ~ 39.9 MHz	13 mA
40.00 ~ 59.9 MHz	16 mA	40.00 ~ 50.0 MHz	18 mA
60.00 ~ 79.9 MHz	18 mA		
80.00 ~ 135.0 MHz*	40 mA		

Table 3: Rise & Fall Time max.

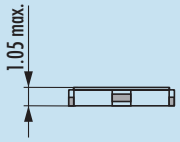
at 15 pF	at 30 pF
5 ns: 0.75 ~ 49.99 MHz	8 ns: 0.75 ~ 49.99 MHz
5 ns: 50.00 ~ 79.99 MHz	
4 ns: 80.00 ~ 135.00 MHz*	

note: rise time: 0.1 V_{DC} ~ 0.9 V_{DC} / fall time: 0.9 V_{DC} ~ 0.1 V_{DC}
specific data on request

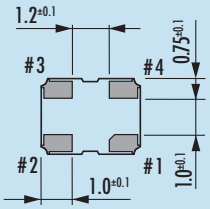
Dimensions



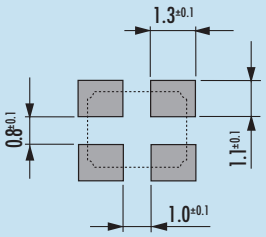
top view



side view



bottom view



pad layout

pin connection
1: e/d
2: ground
3: output
4: V_{DC}

in mm

Order Information

0	frequency	type	frequency stability code	supply voltage code	output load code	option
Oscillator	0.75 ~ 80.0 MHz	JO32	see table 1	2.8 = 2.8 V	1 = 15 pF 2 = 30 pF	blank = -20 °C ~ +70 °C T1 = -40 °C ~ +85 °C T2 = -40 °C ~ +105 °C

Example: O 20.0-JO32-B-2.8-1-T1-LF (LF = RoHS compliant / Pb free pins or pads)

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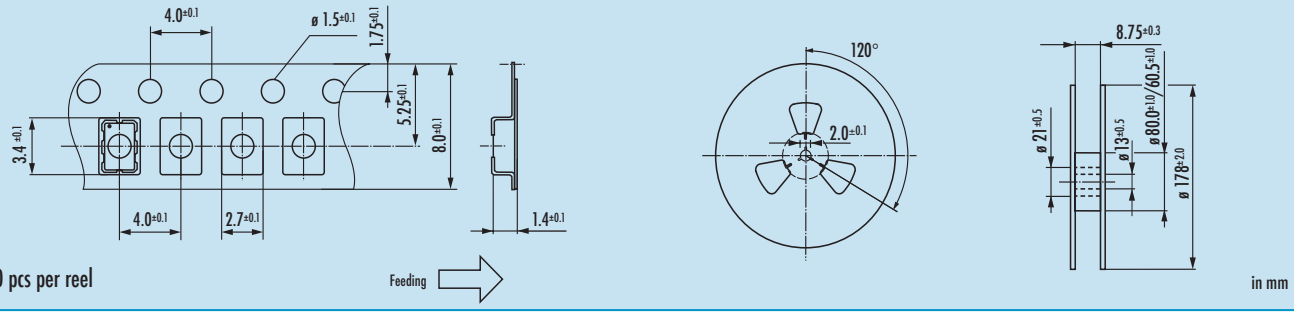
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Oscillator · JO32 · 2.8 V · Stop Function

Taping Specification



Enable / Disable Function

pin #1 (e/d control)	pin #3 (output)
open	active
high "1" ($V_{IH} \geq 0.8\ V_{DC}$)	active
low "0" ($V_{IL} \leq 0.2\ V_{DC}$)	high impedance

stop function:
- oscillator stops
- output high impedance

Marking

frequency

company code / frequency stability code / date code

date code:

A ~ M: Jan. - Dec.

1: 2011 4: 2014

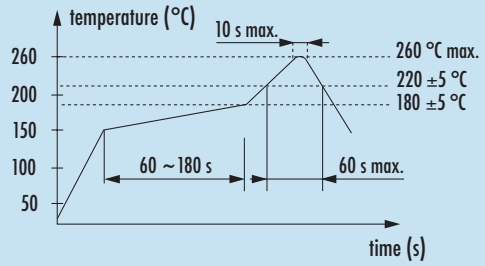
2: 2012 5: 2015

3: 2013 6: 2016

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

actual size

Oscillator · JO32 · 2.5 V

SMD Oscillator with Stop Function · 3.2 x 2.5 mm

- reflow soldering temperature: 260 °C max.
- compact & flat ceramic/metal package

RoHS 2011/65/EC — RoHS compliant

Pb free

General Data

type		JO32 2.5 V
frequency range		0.75 ~ 80.0 MHz (15 pF max.)
		0.75 ~ 50.0 MHz (30 pF max.)
higher frequencies		80.0 ~ 135.0 MHz (15 pF max.)*
frequency stability over all**		± 20 ppm ~ ± 100 ppm (table 1)
current consumption		see table 2
supply voltage V_{DC}		2.5 V ± 5%
temperature	operating	-20 °C ~ +70 °C / -40 °C ~ +85 °C / -40 °C ~ +105 °C
	storage	-55 °C ~ +125 °C
output	rise & fall time	see table 3
	load max.	15 pF / 30 pF (≤ +85 °C and ≤ 50.0 MHz)
	current max.	4 mA / 5 mA
	low level max.	0.4 V
	high level min.	V_{DC} - 0.4 V
output enable time max.		10 ms
output disable time max.		50 µs
start-up time max.		10 ms
standby function		stop
standby current max.		5 µA
phase jitter 12 kHz ~ 20.0 MHz		< 1.0 ps RMS
symmetry at 0.5 x V_{DC}		45% ~ 55% (40% ~ 60% max.)

* ask if available

Table 1: Frequency Stability Code

stability code / temp. code**		A ± 100 ppm	B ± 50 ppm	G ± 30 ppm	C ± 25 ppm	D ± 20 ppm
-20 °C ~ +70 °C			O	O	O	Δ
-40 °C ~ +85 °C	T1	O	O	O		
-40 °C ~ +105 °C	T2	O	O			

O available Δ excludes aging

** includes stability at 25 °C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption max.

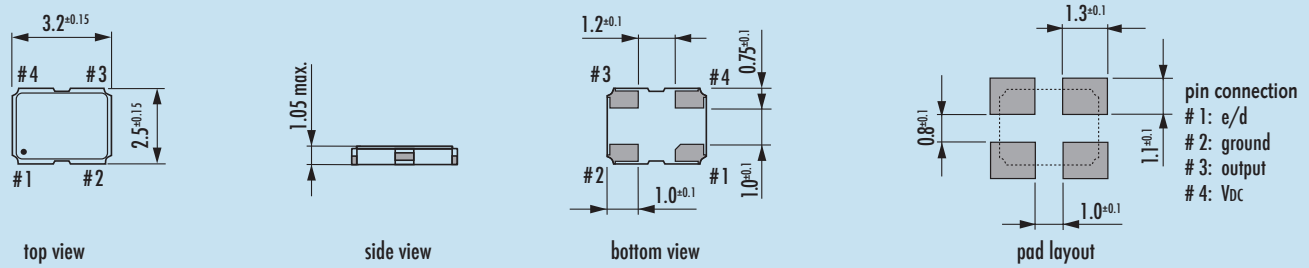
Current at 15 pF load		Current at 30 pF load	
0.75 ~ 19.9 MHz	4 mA	0.75 ~ 19.9 MHz	6 mA
20.00 ~ 39.9 MHz	7 mA	20.00 ~ 39.9 MHz	11 mA
40.00 ~ 59.9 MHz	11 mA	40.00 ~ 50.0 MHz	14 mA
60.00 ~ 79.9 MHz	14 mA		
80.00 ~ 135.0 MHz*	35 mA		

Table 3: Rise & Fall Time max.

at 15 pF	at 30 pF
5 ns: 0.75 ~ 49.99 MHz	8 ns: 0.75 ~ 49.99 MHz
5 ns: 50.00 ~ 79.99 MHz	
4 ns: 80.00 ~ 135.00 MHz*	

note: rise time: 0.1 V_{DC} ~ 0.9 V_{DC} / fall time: 0.9 V_{DC} ~ 0.1 V_{DC}
specific data on request

Dimensions



Order Information

0	frequency	–	type	–	frequency stability code	–	supply voltage code	–	output load code	–	option
Oscillator	0.75 ~ 80.0 MHz		JO32		see table 1		2.5 = 2.5 V		1 = 15 pF 2 = 30 pF		blank = -20 °C ~ +70 °C T1 = -40 °C ~ +85 °C T2 = -40 °C ~ +105 °C

Example: O 20.0-JO32-B-2.5-1-T1-LF (LF = RoHS compliant / Pb free pins or pads)

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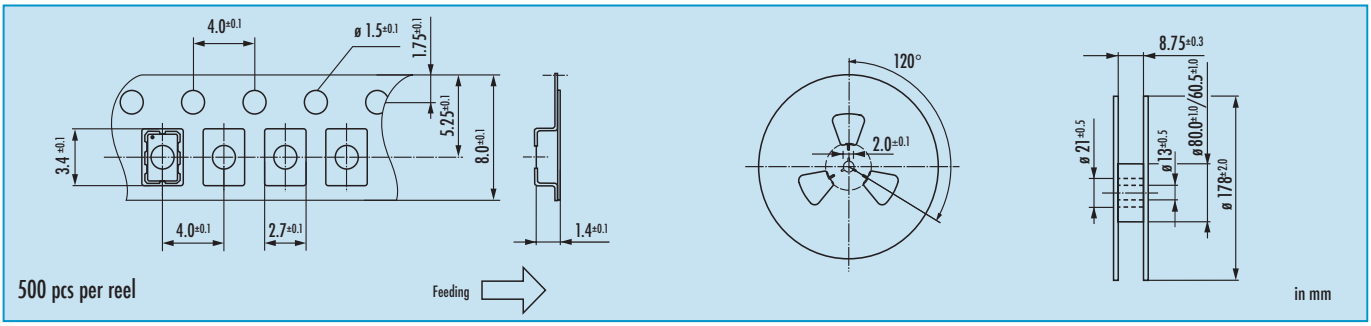
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Oscillator · JO32 · 2.5 V · Stop Function

Taping Specification



Enable / Disable Function

pin #1 (e/d control)	pin #3 (output)
open	active
high "1" ($V_{IH} \geq 0.8\ V_{DC}$)	active
low "0" ($V_{IL} \leq 0.2\ V_{DC}$)	high impedance

stop function:
- oscillator stops
- output high impedance

Marking

frequency

company code / frequency stability code / date code

date code:

A ~ M: Jan. - Dec.

1: 2011 4: 2014

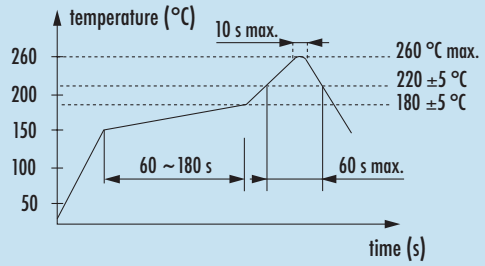
2: 2012 5: 2015

3: 2013 6: 2016

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

actual size

Oscillator · JO32H · 2.5 V

High Stability Oscillator with Stop Function · 3.2 x 2.5 mm

- low cost high stability SMD oscillator
- stability meets spec for WiMax and WLAN
- RoHS compliant, ceramic/metal package
- reflow soldering temperature: 260 °C max.

RoHS 2002/95/EC — RoHS compliant

Pb free: pins / pads

General Data

type		JO32H 2.5V
frequency range		2.50 ~ 60.0 MHz (15 pF max.)
frequency stability over all*		± 8 ppm ~ ± 20 ppm (table 1)
aging 1st year		+/-2 ppm max.
current consumption		7 mA max.
supply voltage V_{DC}		2.5 V ± 10%
temperature	operating	-20 °C ~ +70 °C up to -40 °C ~ +105 °C
	storage	-40 °C ~ +85 °C
output	rise & fall time	5 nsec max.
	load max	15 pF
	current max.	4 mA
	low level max.	0.1 x V_{DC}
	high level min.	0.9 x V_{DC}
output enable time max.		1 ms
output disable time max.		250 ns
start-up time max.		2 ms
standby function		stop
standby current max.		5 µA
jitter		< 3.0 ps RMS typ.
symmetry at 0.5 x VDC		45% ~ 55% max.

Table 1: Frequency Stability Code

stability code	D ± 20 ppm	E ± 15 ppm	F ± 10 ppm	H ± 8 ppm	
-20 °C ~ +70 °C	O	O	O	O	
-40 °C ~ +85 °C	O	O	O		
-40 °C ~ +105 °C	O				
O available					

* includes stability at 25°C, operating temp. range, supply voltage change, load change, vibration, aging 1st year

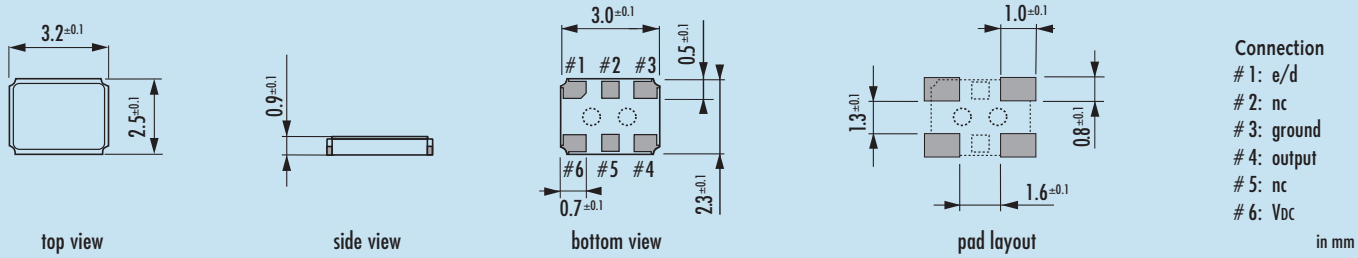
Table 2: Rise & Fall Time max.

5 ns: 2.5 ~ 60.0 MHz	**note:** - specific data on request - rise time: 0.1 V_{DC} ~ 0.9 V_{DC} - fall time: 0.9 V_{DC} ~ 0.1 V_{DC}

Enable / Disable Function

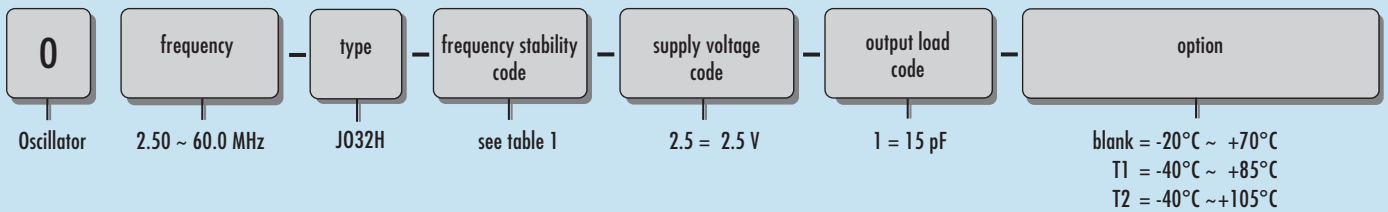
pin #1 (e/d control)	pin #4 (output)
open	active
high "1" ($V_{IH} \geq 0.7\ V_{DC}$)	active
low "0" ($V_{IL} \leq 0.3\ V_{DC}$)	high impedance
stop function: • oscillator stops / • output high impedance	

Dimensions



Note: please leave pins # 2, # 5 and the area underneath the package unconnected

Order Information



Example: O 20.0-JO32H-F-2.5-1-T1-LF (LF = RoHS compliant / Pb free pins or pads)

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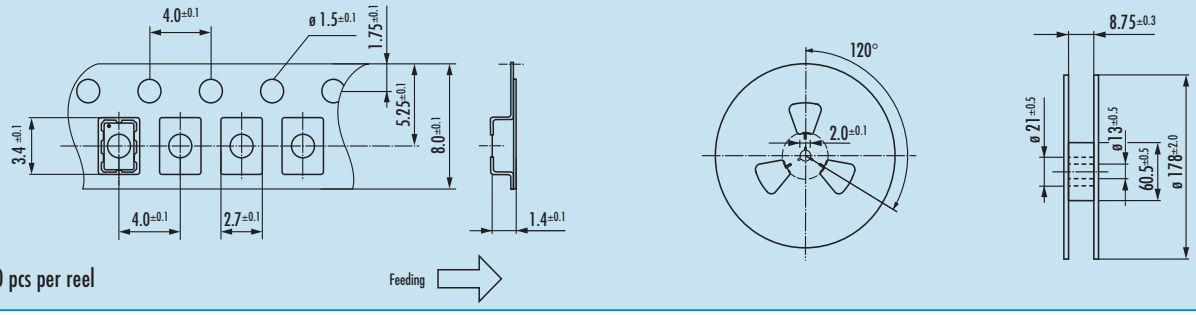
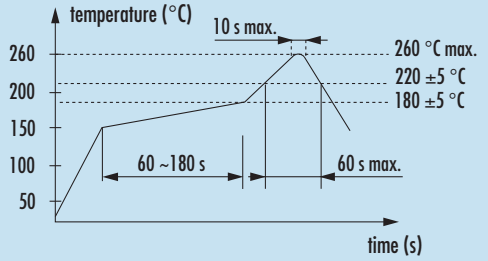
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Taping Specification



500 pcs per reel

Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

Marking

frequency

company code / frequ. stability code / date code

date code:

A ~ M: Jan. - Dec.

0: 2010 3: 2013

1: 2011 4: 2014

2: 2012 5: 2015

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

actual size

Oscillator · JO32 · 1.8 V

SMD Oscillator with Stop Function · 3.2 x 2.5 mm

- reflow soldering temperature: 260 °C max.
- compact & flat ceramic/metal package

RoHS 2011/65/EC compliant

Pb free

General Data

type		JO32 1.8 V
frequency range		0.75 ~ 40.0 MHz (15 pF max.)
		0.75 ~ 40.0 MHz (30 pF max.)
higher frequencies		40.0 ~ 80.0 MHz (15 pF max.)*
frequency stability over all**		± 20 ppm ~ ± 100 ppm (table 1)
current consumption		see table 2
supply voltage V_{DC}		1.8 V ± 5%
temperature	operating	-20 °C ~ +70 °C / -40 °C ~ +85 °C / -40 °C ~ +105 °C
	storage	-55 °C ~ +125 °C
output	rise & fall time	see table 3
	load max.	15 pF / 30 pF (≤ +85 °C and ≤ 50.0 MHz)
	current max.	4 mA
	low level max.	0.4 V
	high level min.	V_{DC} - 0.4 V
output enable time max.		10 ms
output disable time max.		50 µs
start-up time max.		10 ms
standby function		stop
standby current max.		5 µA
phase jitter 12 kHz ~ 20.0 MHz		< 1.0 ps RMS
symmetry at 0.5 x V_{DC}		45% ~ 55% (40% ~ 60% max.)

* ask if available

Table 1: Frequency Stability Code

stability code / temp. code**		A ± 100 ppm	B ± 50 ppm	G ± 30 ppm	C ± 25 ppm	D ± 20 ppm
-20 °C ~ +70 °C			O	O	O	Δ
-40 °C ~ +85 °C	T1	O	O	O		
-40 °C ~ +105 °C	T2	O	O			

O available Δ excludes aging

** includes stability at 25 °C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption max.

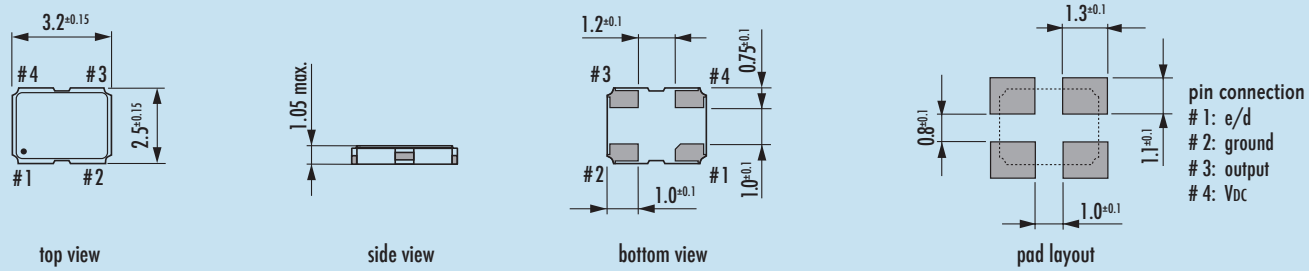
Current at 15 pF load		Current at 30 pF load	
0.75 ~ 29.9 MHz	2 mA	0.75 ~ 29.9 MHz	6 mA
30.00 ~ 39.9 MHz	3 mA	30.00 ~ 40.0 MHz	11 mA
40.00 ~ 80.0 MHz*	11 mA		

Table 3: Rise & Fall Time max.

at 15 pF	at 30 pF
7 ns: 0.75 ~ 39.99 MHz	10 ns: 0.75 ~ 40.00 MHz
5 ns: 40.00 ~ 80.00 MHz*	

note: rise time: 0.1 V_{DC} ~ 0.9 V_{DC} / fall time: 0.9 V_{DC} ~ 0.1 V_{DC}
specific data on request

Dimensions



Order Information

0	frequency	type	frequency stability code	supply voltage code	output load code	option
Oscillator	0.75 ~ 40.0 MHz	JO32	see table 1	1.8 = 1.8 V	1 = 15 pF 2 = 30 pF	blank = -20 °C ~ +70 °C T1 = -40 °C ~ +85 °C T2 = -40 °C ~ +105 °C

Example: O 20.0-JO32-B-1.8-1-T1-LF (LF = RoHS compliant / Pb free pins or pads)

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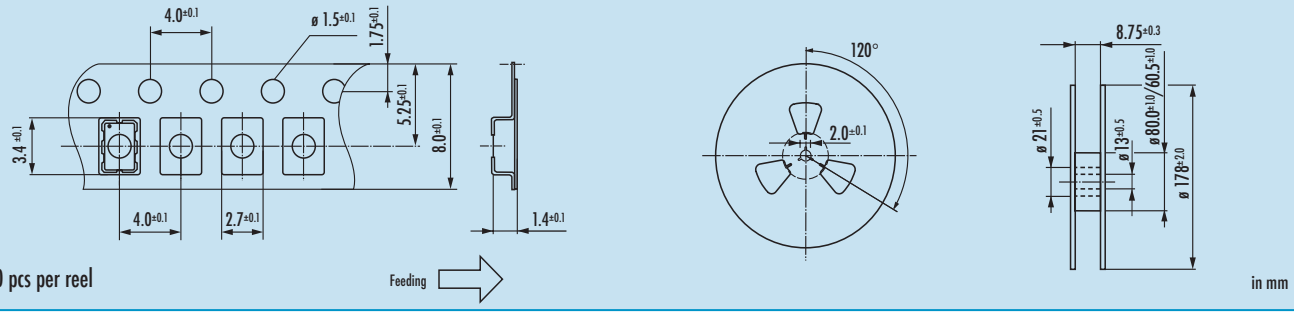
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Oscillator · JO32 · 1.8 V · Stop Function

Taping Specification



Enable / Disable Function

pin #1 (e/d control)	pin #3 (output)
open	active
high "1" ($V_{IH} \geq 0.8\ V_{DC}$)	active
low "0" ($V_{IL} \leq 0.2\ V_{DC}$)	high impedance

stop function:
- oscillator stops
- output high impedance

Marking

frequency

company code / frequency stability code / date code

date code:

A ~ M: Jan. - Dec.

1: 2011 4: 2014

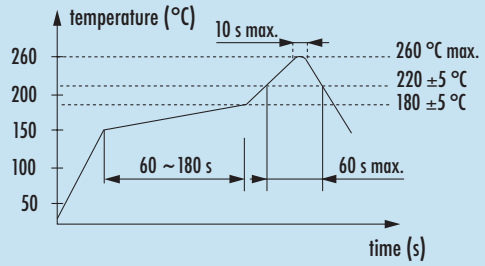
2: 2012 5: 2015

3: 2013 6: 2016

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

actual size

Oscillator · JO32H · 1.8 V

High Stability Oscillator with Stop Function · 3.2 x 2.5 mm

- low cost high stability SMD oscillator
- stability meets spec for WiMax and WLAN
- RoHS compliant, ceramic/metal package
- reflow soldering temperature: 260 °C max.

RoHS 2002/95/EC — RoHS compliant

Pb free: pins / pads

General Data

type		JO32H 1.8V
frequency range		2.50 ~ 60.0 MHz (15 pF max.)
frequency stability over all*		± 8 ppm ~ ± 20 ppm (table 1)
aging 1st year		+/-2 ppm max.
current consumption		5 mA max.
supply voltage V_{DC}		1.8 V ± 10%
temperature	operating	-20 °C ~ +70 °C up to -40 °C ~ +105 °C
	storage	-40 °C ~ +85 °C
output	rise & fall time	5 nsec max.
	load max	15 pF
	current max.	4 mA
	low level max.	0.1 x V_{DC}
	high level min.	0.9 x V_{DC}
output enable time max.		1 ms
output disable time max.		250 ns
start-up time max.		2 ms
standby function		stop
standby current max.		5 µA
jitter		< 3.0 ps RMS typ.
symmetry at 0.5 x VDC		45% ~ 55% max.

Table 1: Frequency Stability Code

stability code	D ± 20 ppm	E ± 15 ppm	F ± 10 ppm	H ± 8 ppm	
-20 °C ~ +70 °C	O	O	O	O	
-40 °C ~ +85 °C	O	O	O		
-40 °C ~ +105 °C	O				
O available					

* includes stability at 25°C, operating temp. range, supply voltage change, load change, vibration, aging 1st year

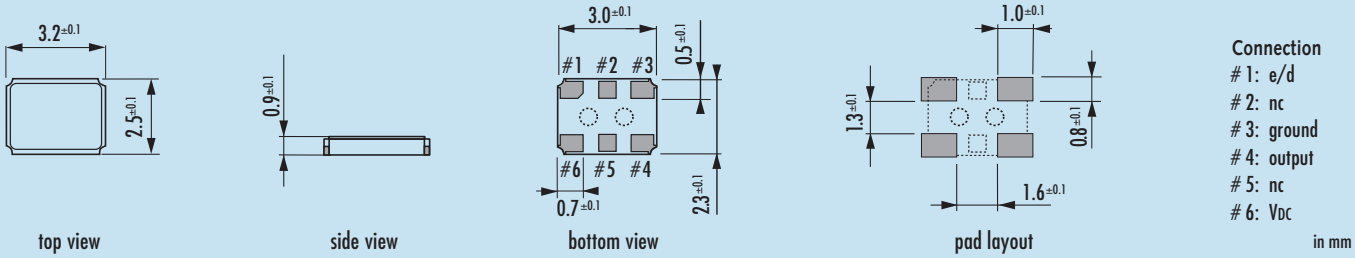
Table 2: Rise & Fall Time max.

5 ns: 2.5 ~ 60.0 MHz	**note:** - specific data on request - rise time: 0.1 V_{DC} ~ 0.9 V_{DC} - fall time: 0.9 V_{DC} ~ 0.1 V_{DC}

Enable / Disable Function

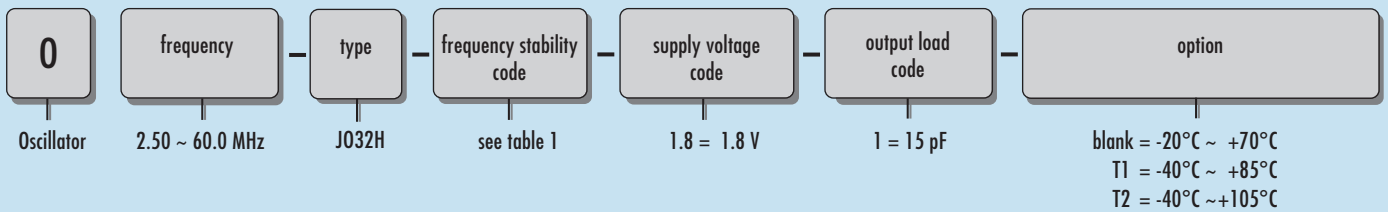
pin #1 (e/d control)	pin #4 (output)
open	active
high "1" ($V_{IH} \geq 0.7\ V_{DC}$)	active
low "0" ($V_{IL} \leq 0.3\ V_{DC}$)	high impedance
stop function: • oscillator stops / • output high impedance	

Dimensions



Note: please leave pins # 2, # 5 and the area underneath the package unconnected

Order Information



Example: O 20.0-JO32H-F-1.8-1-T1-LF (LF = RoHS compliant / Pb free pins or pads)

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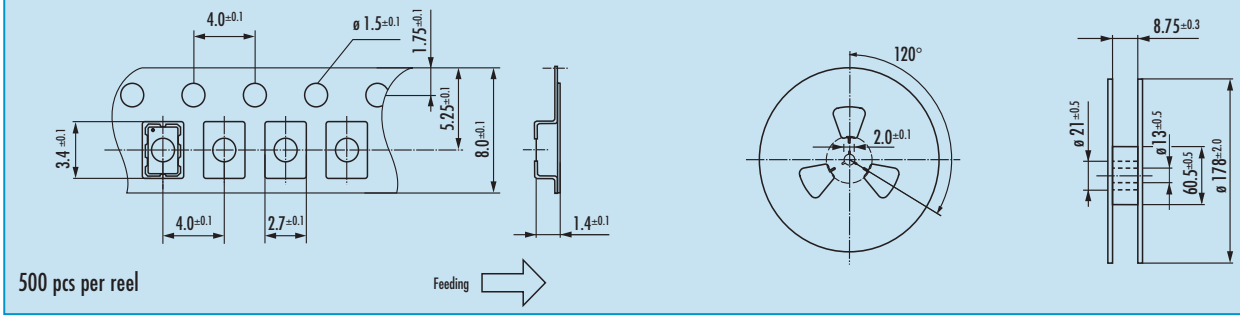
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

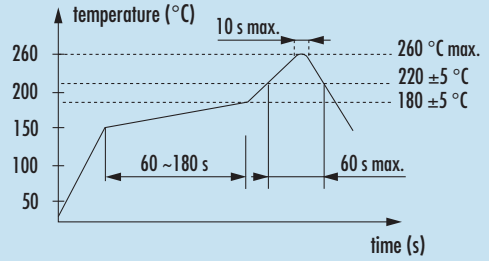
Oscillator · JO32H · 1.8 V · Low Power

Taping Specification



500 pcs per reel

Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

Marking

frequency

company code / frequ. stability code / date code

date code:

A ~ M: Jan. - Dec.

0: 2010 3: 2013

1: 2011 4: 2014

2: 2012 5: 2015

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

actual size

Oscillator · JO53 · 5.0 V

SMD Oscillator with Stop Function · 5.0 x 3.2 mm

- reflow soldering temperature: 260 °C max.
- ceramic/metal package

RoHS 2011/65/EC — RoHS compliant

Pb free: pins / pads

General Data

type		JO53 5.0 V
frequency range		0.50 ~ 110.0 MHz (15 pF max.)
		0.50 ~ 50.00 MHz (30 pF max.)
frequency stability over all*		± 20 ppm ~ ± 100 ppm (table 1)
current consumption		see table 2
supply voltage V_{DC}		5.0 V ± 5%
temperature	operating	-10 °C ~ +70 °C / -40 °C ~ +85 °C
	storage	-55 °C ~ +125 °C
output	rise & fall time	see table 3
	load max	15 pF / 30 pF
	current max.	8 mA
	low level max.	0.1 x V_{DC}
	high level min.	0.9 x V_{DC}
output enable time max.		10 ms
output disable time max.		100 ns
start-up time max.		10 ms
standby function		stop
standby current max.		10 µA
phase jitter 12 kHz ~ 20.0 MHz		< 1.0ps RMS
symmetry at 0.5 x V_{DC}		45% ~ 55% typ. (40% ~ 60% max.)

Table 1: Frequency Stability Code

stability code	A ± 100 ppm	B ± 50 ppm	G ± 30 ppm	C ± 25 ppm	D ± 20 ppm	
-10 °C ~ +70 °C		●	○	○	Δ	
-40 °C ~ +85 °C	●	●	○	○		

● standard ○ available Δ excludes aging

* includes stability at 25 °C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

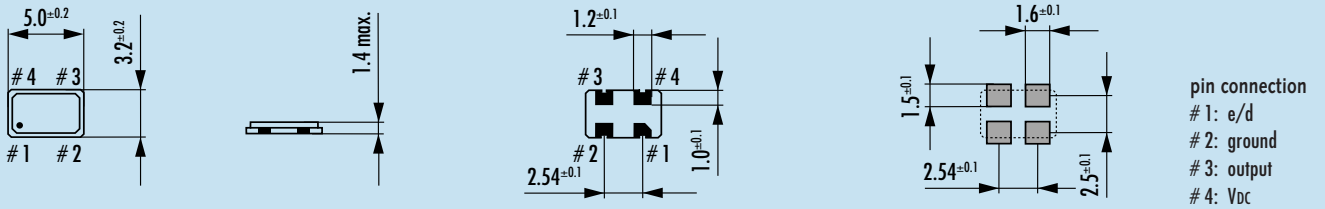
Table 2: Current Consumption max.

Current at 15pF load		Current at 30pF load	
0.5 ~ 14.9 MHz	10 mA	0.5 ~ 14.9 MHz	15 mA
15.0 ~ 29.9 MHz	15 mA	15.0 ~ 29.9 MHz	20 mA
30.0 ~ 39.9 MHz	25 mA	30.0 ~ 50.0 MHz	40 mA
40.0 ~ 49.9 MHz	35 mA		
50.0 ~ 59.9 MHz	40 mA		
60.0 ~ 79.9 MHz	45 mA		
80.0 ~ 110.0 MHz	50 mA		

Table 3: Rise & Fall Time max.

6 ns: 0.5 ~ 1.79 MHz 5 ns: 1.80 ~ 49.99 MHz 4 ns: 50.0 ~ 110.00 MHz	**note:** - specific data on request - rise time: 0.1 V_{DC} ~ 0.9 V_{DC} - fall time: 0.9 V_{DC} ~ 0.1 V_{DC}

Dimensions



top view — side view — bottom view — pad layout

in mm

Order Information

0	frequency	–	type	–	frequency stability code	–	supply voltage code	–	output load code	–	option
Oscillator	0.5 ~ 110.0 MHz		JO53		see table 1		5.0 = 5.0 V		1 = 15 pF 2 = 30 pF		blank = -10 °C ~ +70 °C T1 = -40 °C ~ +85 °C

Example: O 20.0-JO53-B-5.0-1 (LF = RoHS compliant / Pb free pins or pads)

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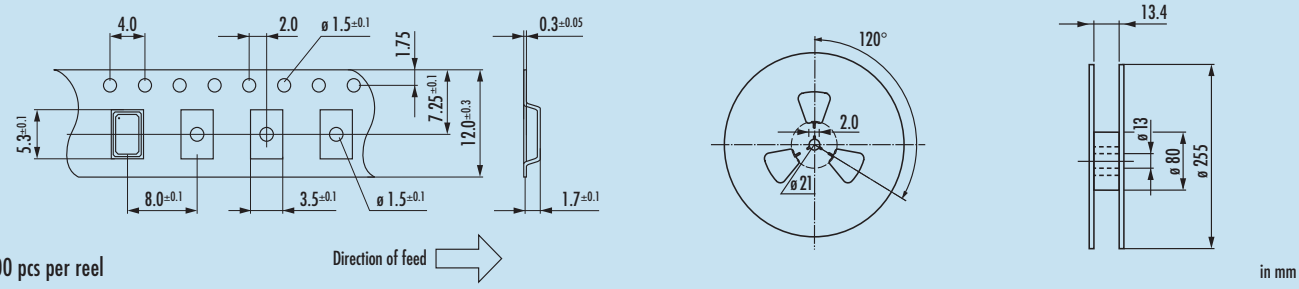
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Oscillator · JO53 · 5.0 V · Stop Function

Taping Specification



Enable / Disable Function

pin #1 (e/d control)	pin #3 (output)
open	active
high "1" ($V_{IH} \geq 0.8\ V_{DC}$)	active
low "0" ($V_{IL} \leq 0.2\ V_{DC}$)	high impedance

stop function:
- oscillator stops
- output high impedance

Marking

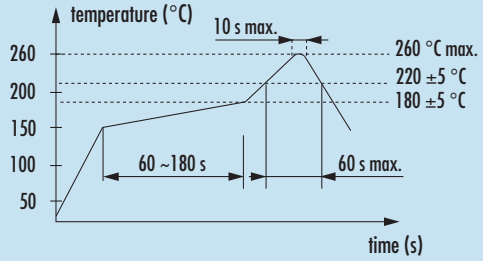
frequency
type / date code

date code:
A ~ M: Jan. - Dec.
2: 2012 5: 2015
3: 2013 6: 2016
4: 2014 7: 2017

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

actual size

Oscillator · JO53 · 3.3 V

SMD Oscillator with Stop Function · 5.0 x 3.2 mm

- high temperature version available
- reflow soldering temperature: 260 °C max.
- ceramic/metal package

RoHS 2011/65/EC — RoHS compliant

Pb free

General Data

type		JO53 3.3 V
frequency range		0.50 ~ 125.0 MHz (15 pF max.)
		0.50 ~ 50.0 MHz (30 pF max.)
		2.00 ~ 50.0 MHz (15 pF max. for T2 & T3*)
frequency stability over all**		± 20 ppm ~ ± 100 ppm (table 1)
current consumption		see table 2
supply voltage V_{DC}		3.3 V ± 5%
temperature	operating	-10 °C ~ +70 °C
		-40 °C ~ +85 °C
		-40 °C ~ +105 °C
		-40 °C ~ +125 °C ask if available
	storage	-55 °C ~ +125 °C
output	rise & fall time	see table 3
	load max.	15 pF / 30 pF (≤ +85 °C and ≤ 50.0 MHz)
	current max.	5 mA / 4 mA (T2 & T3*)
	low level max.	0.1 x V_{DC} / 0.4 V (T2 & T3*)
	high level min.	0.9 x V_{DC} / V_{DC} - 0.4 V (T2 & T3*)
output enable time max.		10 ms
output disable time max.		150 ns / 200 ns (T2 & T3*)
start-up time max.		10 ms
standby function		stop
standby current max.		10 µA / 20 µA (T2 & T3*)
phase jitter 12 kHz ~ 20.0 MHz		< 1.0 ps RMS
symmetry at 0.5 x V_{DC}		45% ~ 55% (40% ~ 60% max.)

* ask if available

Table 1: Frequency Stability Code

stability code		A ± 100 ppm	B ± 50 ppm	G ± 30 ppm	C ± 25 ppm	D ± 20 ppm
-10 °C ~ +70 °C	STD.		●	○	○	Δ
-40 °C ~ +85 °C	T1	●	●	○	○	
-40 °C ~ +105 °C	T2	○	○			
-40 °C ~ +125 °C	T3*	■				

● standard ○ available ■ ask if available Δ excludes aging

** includes stability at 25 °C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption max.

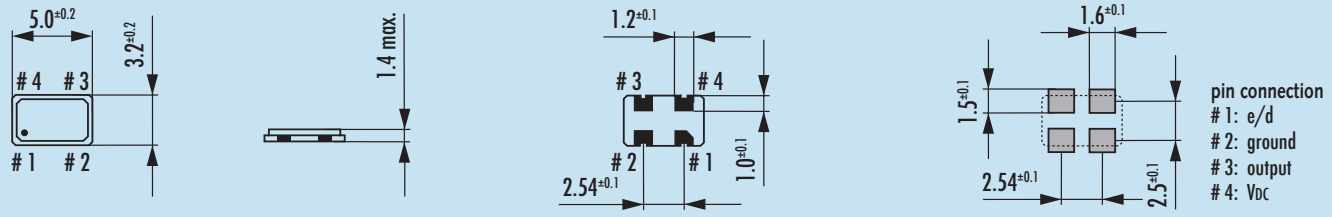
Current at 15 pF load		Current at 30 pF load	
0.5 ~ 29.9 MHz	10 mA	0.5 ~ 29.9 MHz	10 mA
30.0 ~ 49.9 MHz	20 mA	30.0 ~ 50.0 MHz	25 mA
50.0 ~ 79.9 MHz	30 mA		
80.0 ~ 125.0 MHz	45 mA		

Table 3: Rise & Fall Time max.

at 15 pF		at 30 pF	
6 ns:	0.50 ~ 1.79 MHz	7 ns:	0.50 ~ 50.00 MHz
5 ns:	1.80 ~ 49.99 MHz		
4 ns:	50.00 ~ 125.00 MHz		

note: rise time: 0.1 V_{DC} ~ 0.9 V_{DC} / fall time: 0.9 V_{DC} ~ 0.1 V_{DC}
specific data on request

Dimensions



Order Information

0	frequency	type	frequency stability code	supply voltage code	output load code	option
Oscillator	0.5 ~ 125.0 MHz	JO53	see table 1	3.3 = 3.3 V	1 = 15 pF 2 = 30 pF	blank = -10 °C ~ +70 °C T1 = -40 °C ~ +85 °C T2 = -40 °C ~ +105 °C T3 = -40 °C ~ +125 °C

Example: O 20.0-JO53-B-3.3-1-T1-LF (LF = RoHS compliant / Pb free pins or pads)

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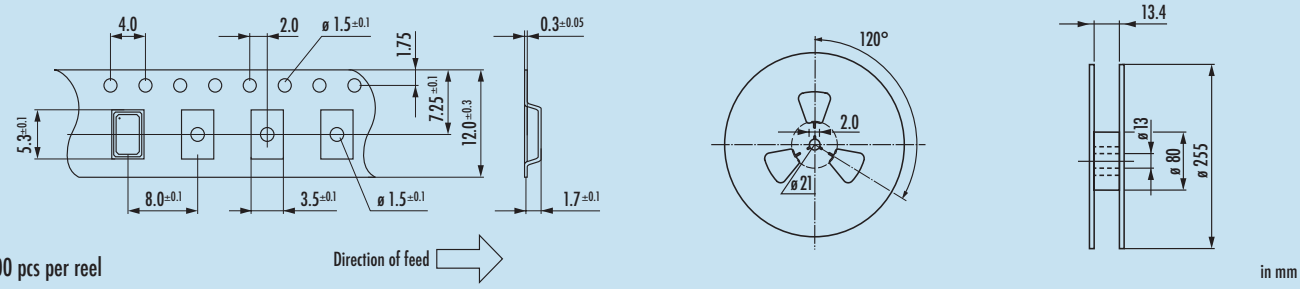
Oscillator · JO53 · 3.3 V · Stop Function

Taping Specification



500 pcs per reel

in mm

Enable / Disable Function

pin #1 (e/d control)	pin #3 (output)
open	active
high "1" ($V_{IH} \geq 0.8\ V_{DC}$)	active
low "0" ($V_{IL} \leq 0.2\ V_{DC}$)	high impedance

stop function:
- oscillator stops
- output high impedance

Marking

frequency

type / date code

date code:

A ~ M: Jan. - Dec.

2: 2012 5: 2015

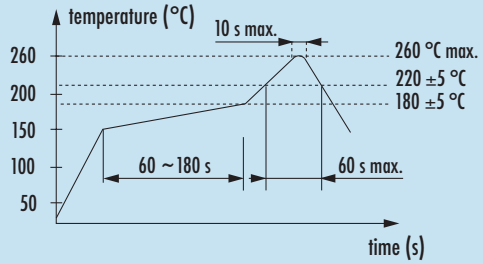
3: 2013 6: 2016

4: 2014 7: 2017

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

actual size

Oscillator · JO53H · 3.3 V

High Stability Oscillator with Stop Function · 5.0 x 3.2 mm

- high stability temp. compensated oscillator with CMOS output
- stability meets spec for WiMax and WLAN
- RoHS compliant, ceramic/metal package
- reflow soldering temperature: 260°C max.

RoHS 2002/95/EC — RoHS compliant

Pb free: pins / pads

General Data

type		JO53H 3.3V
frequency range		4.0 ~ 54.0 MHz
frequency stability over all*		± 8ppm ~ ± 13ppm (table 1)
aging 1st year		± 2ppm max.
current consumption		7mA max.
supply voltage VDC		3.3V ±10%
temperature	operating	-20°C ~ +70°C / -40°C ~ +85°C
	storage	-40°C ~ +85°C
output	rise & fall time	see table 2
	load max.	15pF
	current max.	4mA
	low level max.	0.1 x VDC
	high level min.	0.9 x VDC
output enable time max.		1ms
output disable time max.		250ns
start-up time max.		2ms
standby function		stop
standby current max.		5µA
phase jitter 12kHz~20MHz		< 0.1ps RMS typ.
symmetry at 0.5 x VDC		45% ~ 55% max.

Table 1: Frequency Stability Code

stability code	K ± 13 ppm	F ± 10 ppm	H ± 8 ppm			
-20 °C ~ +70 °C	O	O	O			
-40 °C ~ +85 °C	O	O	O			
O available						

* includes stability at 25°C, operating temp. range, supply voltage change, load change, vibration, aging 1st year

Table 2: Rise & Fall Time max.

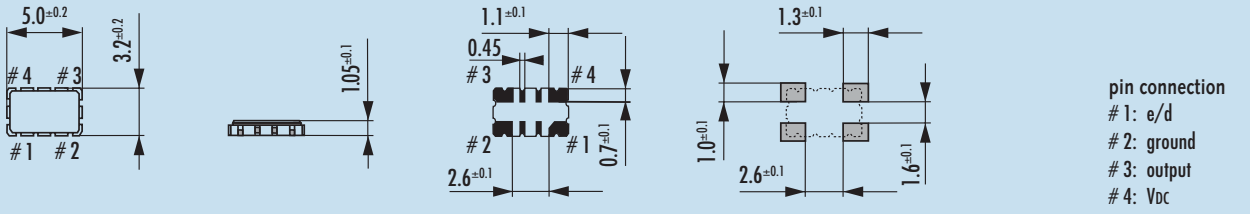
5.0 ns: 4.0 ~ 54.0 MHz	**note:** - specific data on request - rise time: 0.1 V_{DC} ~ 0.9 V_{DC} - fall time: 0.9 V_{DC} ~ 0.1 V_{DC}

Enable / Disable Function

pin #1 (e/d control)	pin #3 (output)
open	active
high "1" ($V_{IH} \geq 0.7\ V_{DC}$)	active
low "0" ($V_{IL} \leq 0.3\ V_{DC}$)	high impedance

stop function:
- oscillator stops
- output high impedance

Dimensions



top view — side view — bottom view — pad layout

in mm

Order Information

0	frequency	type	frequency stability code	supply voltage code	output load code	option
Oscillator	4.0 ~ 54.0 MHz	JO53H	see table 1	3.3 = 3.3 V	1 = 15 pF	blank = -20 °C ~ +70 °C T1 = -40 °C ~ +85 °C

Example: O 26.0-JO53H-F-3.3-1 (LF = RoHS compliant / Pb free pads)

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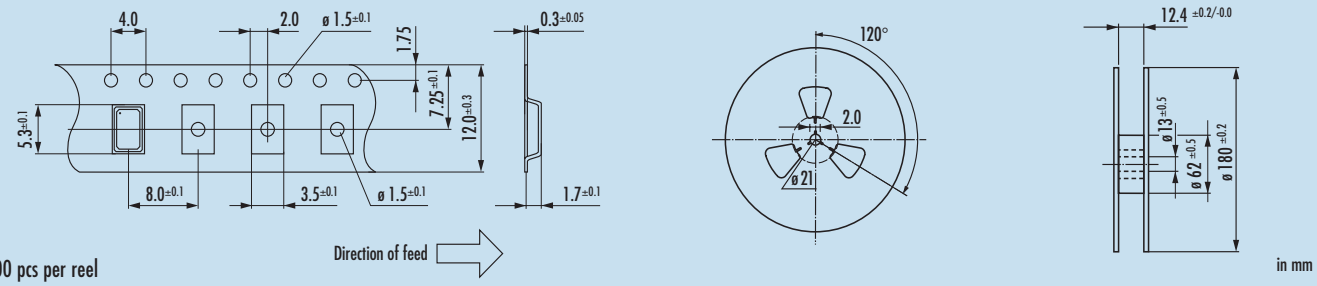
Oscillator · JO53H · 3.3 V · High Stability

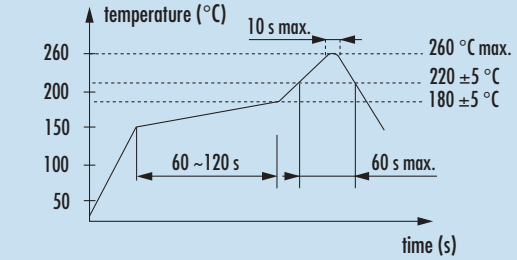
Taping Specification



500 pcs per reel

in mm

Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

Marking

frequency / company code / frequency stability code / date code

date code:
A ~ M: Jan.- Dec.
7: 2007
8: 2008
9: 2009

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

actual size

Oscillator · JO53 · 3.0 V

SMD Oscillator with Stop Function · 5.0 x 3.2 mm

- high temperature version available
- reflow soldering temperature: 260 °C max.
- ceramic/metal package

RoHS 2011/65/EC — RoHS compliant

Pb free

General Data

type		JO53 3.0 V
frequency range		0.50 ~ 125.0 MHz (15 pF max.)
		0.50 ~ 50.0 MHz (30 pF max.)
		2.00 ~ 50.0 MHz (15 pF max. for T2 & T3*)
frequency stability over all**		± 20 ppm ~ ± 100 ppm (table 1)
current consumption		see table 2
supply voltage V_{DC}		3.0 V ± 5%
temperature	operating	-10 °C ~ +70 °C
		-40 °C ~ +85 °C
		-40 °C ~ +105 °C
		-40 °C ~ +125 °C ask if available
	storage	-55 °C ~ +125 °C
output	rise & fall time	see table 3
	load max.	15 pF / 30 pF (≤ +85 °C and ≤ 50.0 MHz)
	current max.	5 mA / 4 mA (T2 & T3*)
	low level max.	0.1 x V_{DC} / 0.4 V (T2 & T3*)
	high level min.	0.9 x V_{DC} / V_{DC} - 0.4 V (T2 & T3*)
output enable time max.		10 ms
output disable time max.		150 ns / 200 ns (T2 & T3*)
start-up time max.		10 ms
standby function		stop
standby current max.		10 µA / 20 µA (T2 & T3*)
phase jitter 12 kHz ~ 20.0 MHz		< 1.0 ps RMS
symmetry at 0.5 x V_{DC}		45% ~ 55% (40% ~ 60% max.)

* ask if available

Table 1: Frequency Stability Code

stability code		A ± 100 ppm	B ± 50 ppm	G ± 30 ppm	C ± 25 ppm	D ± 20 ppm
-10 °C ~ +70 °C	STD.		●	○	○	Δ
-40 °C ~ +85 °C	T1	●	●	○	○	
-40 °C ~ +105 °C	T2	○	○			
-40 °C ~ +125 °C	T3*	■				

● standard ○ available ■ ask if available Δ excludes aging

** includes stability at 25 °C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption max.

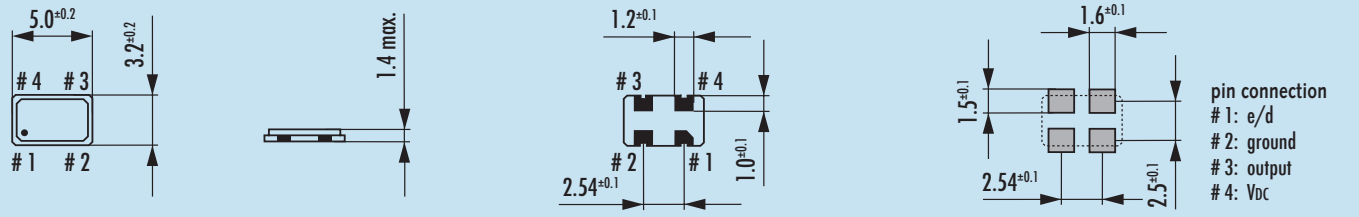
Current at 15 pF load		Current at 30 pF load	
0.5 ~ 29.9 MHz	10 mA	0.5 ~ 29.9 MHz	10 mA
30.0 ~ 49.9 MHz	20 mA	30.0 ~ 50.0 MHz	25 mA
50.0 ~ 79.9 MHz	30 mA		
80.0 ~ 125.0 MHz	40 mA		

Table 3: Rise & Fall Time max.

at 15 pF		at 30 pF	
6 ns:	0.50 ~ 1.79 MHz	7 ns:	0.50 ~ 50.00 MHz
5 ns:	1.80 ~ 49.99 MHz		
4 ns:	50.00 ~ 125.00 MHz		

note: rise time: 0.1 V_{DC} ~ 0.9 V_{DC} / fall time: 0.9 V_{DC} ~ 0.1 V_{DC}
specific data on request

Dimensions



Order Information

0	frequency	type	frequency stability code	supply voltage code	output load code	option
Oscillator	0.5 ~ 125.0 MHz	JO53	see table 1	3.0 = 3.0 V	1 = 15 pF 2 = 30 pF	blank = -10 °C ~ +70 °C T1 = -40 °C ~ +85 °C T2 = -40 °C ~ +105 °C T3 = -40 °C ~ +125 °C

Example: O 20.0-JO53-B-3.0-1-T1-LF (LF = RoHS compliant / Pb free pins or pads)

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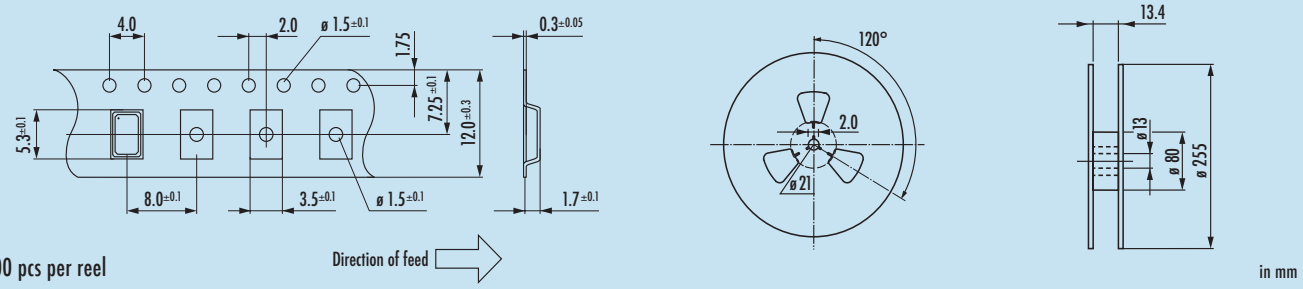
Oscillator · JO53 · 3.0 V · Stop Function

Taping Specification



Enable / Disable Function

pin #1 (e/d control)	pin #3 (output)
open	active
high "1" ($V_{IH} \geq 0.8\ V_{DC}$)	active
low "0" ($V_{IL} \leq 0.2\ V_{DC}$)	high impedance

stop function:
- oscillator stops
- output high impedance

Marking

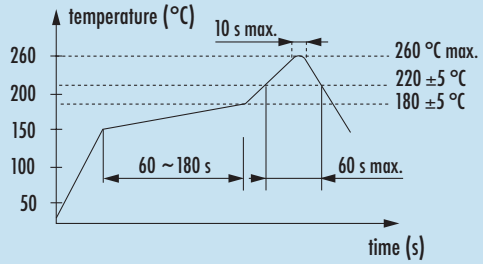
frequency
type / date code

date code:
A ~ M: Jan. - Dec.
2: 2012 5: 2015
3: 2013 6: 2016
4: 2014 7: 2017

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

actual size

Oscillator · JO53 · 2.8 V

SMD Oscillator with Stop Function · 5.0 x 3.2 mm

- high temperature version available
- reflow soldering temperature: 260 °C max.
- ceramic/metal package

RoHS 2011/65/EC — RoHS compliant

Pb free

General Data

type		JO53 2.8 V
frequency range		0.50 ~ 80.0 MHz (15 pF max.)
		0.50 ~ 50.0 MHz (30 pF max.)
		2.00 ~ 50.0 MHz (15 pF max. for T2 & T3*)
frequency stability over all**		± 20 ppm ~ ± 100 ppm (table 1)
current consumption		see table 2
supply voltage V_{DC}		2.8 V ± 5%
temperature	operating	-10 °C ~ +70 °C
		-40 °C ~ +85 °C
		-40 °C ~ +105 °C
		-40 °C ~ +125 °C ask if available
	storage	-55 °C ~ +125 °C
output	rise & fall time	see table 3
	load max.	15 pF / 30 pF (≤ +85 °C and ≤ 50.0 MHz)
	current max.	5 mA / 4 mA (T2 & T3*)
	low level max.	0.1 x V_{DC} / 0.4 V (T2 & T3*)
	high level min.	0.9 x V_{DC} / V_{DC} - 0.4 V (T2 & T3*)
output enable time max.		10 ms
output disable time max.		200 ns
start-up time max.		10 ms
standby function		stop
standby current max.		10 µA / 20 µA (T2 & T3*)
phase jitter 12 kHz ~ 20.0 MHz		< 1.0 ps RMS
symmetry at 0.5 x V_{DC}		45% ~ 55% (40% ~ 60% max.)

* ask if available

Table 1: Frequency Stability Code

stability code		A ± 100 ppm	B ± 50 ppm	G ± 30 ppm	C ± 25 ppm	D ± 20 ppm
-10 °C ~ +70 °C	STD.		●	○	○	Δ
-40 °C ~ +85 °C	T1	●	●	○	○	
-40 °C ~ +105 °C	T2	○	○			
-40 °C ~ +125 °C	T3*	■				

● standard ○ available ■ ask if available Δ excludes aging

** includes stability at 25 °C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption max.

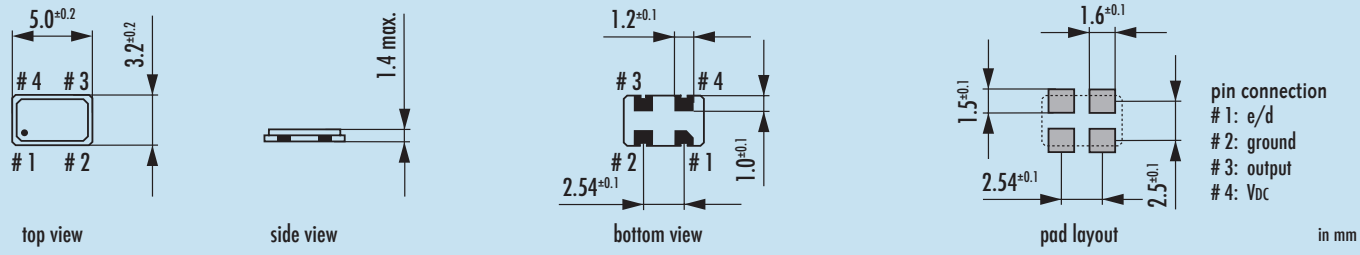
Current at 15 pF load		Current at 30 pF load	
0.5 ~ 14.9 MHz	6 mA	0.5 ~ 14.9 MHz	10 mA
15.0 ~ 29.9 MHz	8 mA	15.0 ~ 29.9 MHz	12 mA
30.0 ~ 39.9 MHz	12 mA	30.0 ~ 39.9 MHz	15 mA
40.0 ~ 49.9 MHz	15 mA	40.0 ~ 50.0 MHz	20 mA
50.0 ~ 59.9 MHz	20 mA		
60.0 ~ 80.0 MHz	30 mA		

Table 3: Rise & Fall Time max.

at 15 pF		at 30 pF	
6 ns:	0.50 ~ 1.79 MHz	8 ns:	0.50 ~ 50.00 MHz
5 ns:	1.80 ~ 49.99 MHz		
4 ns:	50.00 ~ 80.00 MHz		

note: rise time: 0.1 V_{DC} ~ 0.9 V_{DC} / fall time: 0.9 V_{DC} ~ 0.1 V_{DC}
specific data on request

Dimensions



Order Information

0	frequency	type	frequency stability code	supply voltage code	output load code	option
Oscillator	0.5 ~ 80.0 MHz	JO53	see table 1	2.8 = 2.8 V	1 = 15 pF 2 = 30 pF	blank = -10 °C ~ +70 °C T1 = -40 °C ~ +85 °C T2 = -40 °C ~ +105 °C T3 = -40 °C ~ +125 °C

Example: O 20.0-JO53-B-2.8-1-T1-LF (LF = RoHS compliant / Pb free pins or pads)

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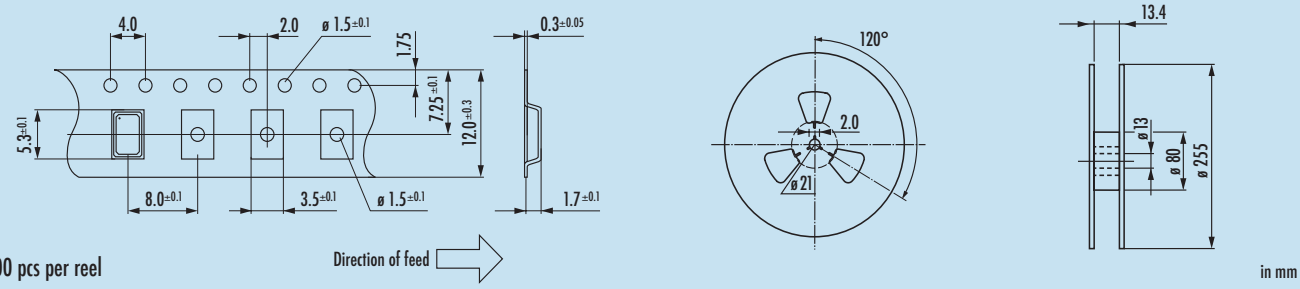
Oscillator · JO53 · 2.8 V · Stop Function

Taping Specification



Enable / Disable Function

pin #1 (e/d control)	pin #3 (output)
open	active
high "1" ($V_{IH} \geq 0.8\ V_{DC}$)	active
low "0" ($V_{IL} \leq 0.2\ V_{DC}$)	high impedance

stop function:
- oscillator stops
- output high impedance

Marking

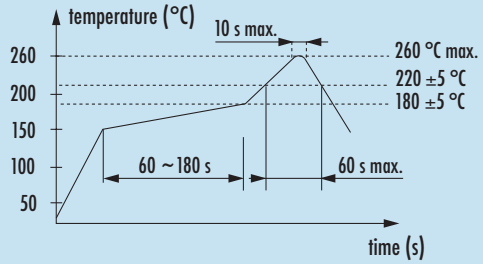
frequency
type / date code

date code:
A ~ M: Jan. - Dec.
2: 2012 5: 2015
3: 2013 6: 2016
4: 2014 7: 2017

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

actual size

Oscillator · JO53 · 2.5 V

SMD Oscillator with Stop Function · 5.0 x 3.2 mm

- high temperature version available
- reflow soldering temperature: 260 °C max.
- ceramic/metal package

RoHS 2011/65/EC compliant

Pb free

General Data

type		JO53 2.5 V
frequency range		0.50 ~ 80.0 MHz (15 pF max.)
		0.50 ~ 50.0 MHz (30 pF max.)
		2.00 ~ 50.0 MHz (15 pF max. for T2 & T3*)
frequency stability over all**		± 20 ppm ~ ± 100 ppm (table 1)
current consumption		see table 2
supply voltage V_{DC}		2.5 V ± 5%
temperature	operating	-10 °C ~ +70 °C
		-40 °C ~ +85 °C
		-40 °C ~ +105 °C
		-40 °C ~ +125 °C ask if available
	storage	-55 °C ~ +125 °C
output	rise & fall time	see table 3
	load max.	15 pF / 30 pF (≤ +85 °C and ≤ 50.0 MHz)
	current max.	4 mA
	low level max.	0.1 x V_{DC} / 0.4 V (T2 & T3*)
	high level min.	0.9 x V_{DC} / V_{DC} - 0.4 V (T2 & T3*)
output enable time max.		10 ms
output disable time max.		200 ns
start-up time max.		10 ms
standby function		stop
standby current max.		10 µA / 20 µA (T2 & T3*)
phase jitter 12 kHz ~ 20.0 MHz		< 1.0 ps RMS
symmetry at 0.5 x V_{DC}		45% ~ 55% (40% ~ 60% max.)

* ask if available

Table 1: Frequency Stability Code

stability code		A ± 100 ppm	B ± 50 ppm	G ± 30 ppm	C ± 25 ppm	D ± 20 ppm
-10 °C ~ +70 °C	STD.		●	○	○	Δ
-40 °C ~ +85 °C	T1	●	●	○	○	
-40 °C ~ +105 °C	T2	○	○			
-40 °C ~ +125 °C	T3*	■				

● standard ○ available ■ ask if available Δ excludes aging

** includes stability at 25 °C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption max.

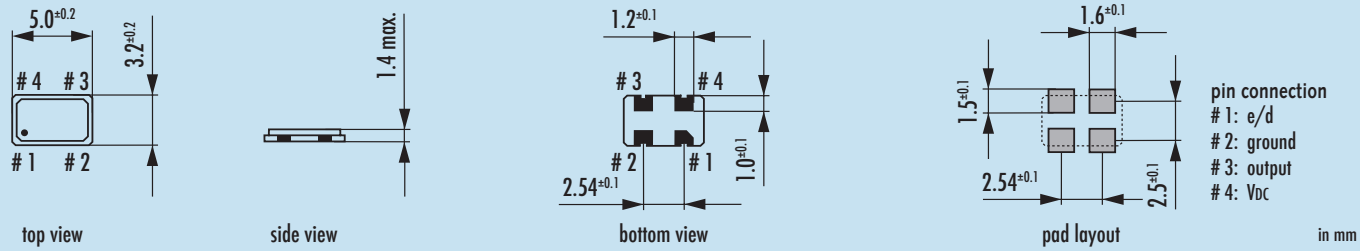
Current at 15 pF load		Current at 30 pF load	
0.5 ~ 14.9 MHz	6 mA	0.5 ~ 14.9 MHz	8 mA
15.0 ~ 29.9 MHz	8 mA	15.0 ~ 29.9 MHz	10 mA
30.0 ~ 39.9 MHz	10 mA	30.0 ~ 39.9 MHz	13 mA
40.0 ~ 49.9 MHz	13 mA	40.0 ~ 50.0 MHz	15 mA
50.0 ~ 59.9 MHz	16 mA		
60.0 ~ 80.0 MHz	20 mA		

Table 3: Rise & Fall Time max.

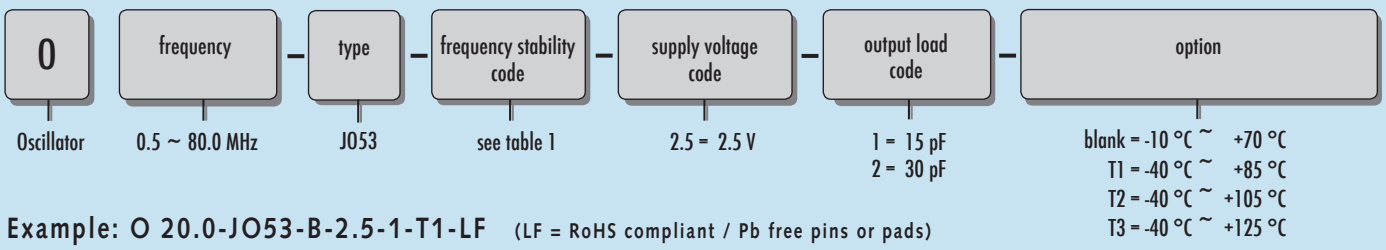
at 15 pF		at 30 pF	
6 ns:	0.50 ~ 1.79 MHz	8 ns:	0.50 ~ 50.00 MHz
5 ns:	1.80 ~ 49.99 MHz		
4 ns:	50.00 ~ 80.00 MHz		

note: rise time: 0.1 V_{DC} ~ 0.9 V_{DC} / fall time: 0.9 V_{DC} ~ 0.1 V_{DC}
specific data on request

Dimensions



Order Information



Example: O 20.0-JO53-B-2.5-1-T1-LF (LF = RoHS compliant / Pb free pins or pads)

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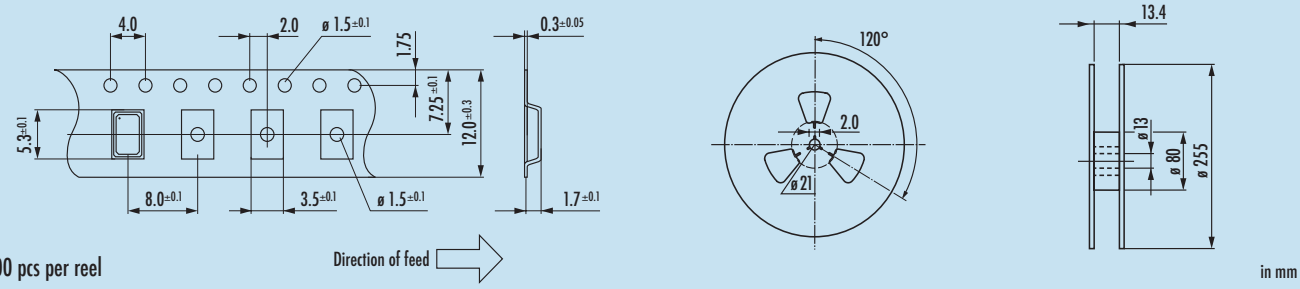
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Oscillator · JO53 ·2.5 V · Stop Function

Taping Specification



Enable / Disable Function

pin #1 (e/d control)	pin #3 (output)
open	active
high "1" ($V_{IH} \geq 0.8\ V_{DC}$)	active
low "0" ($V_{IL} \leq 0.2\ V_{DC}$)	high impedance

stop function:
- oscillator stops
- output high impedance

Marking

frequency
type / date code

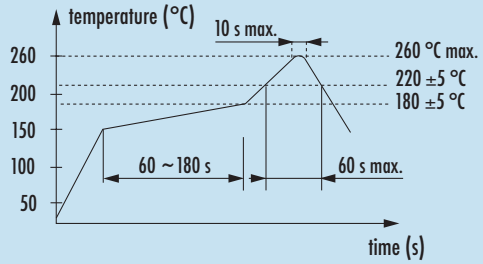
date code:
A ~ M: Jan. - Dec.

2: 2012 5: 2015
3: 2013 6: 2016
4: 2014 7: 2017

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

actual size

Oscillator · JO53H · 2.5 V

High Stability Oscillator with Stop Function · 5.0 x 3.2 mm

- high stability temp. compensated oscillator CMOS output
- stability meets spec for WiMax and WLAN
- RoHS compliant, ceramic/metal package
- reflow soldering temperature: 260°C max.

RoHS 2002/95/EC — RoHS compliant

Pb free: pins / pads

General Data

type		JO53H 2.5V
frequency range		4.0 ~ 54.0 MHz
frequency stability over all*		± 8ppm ~ ± 13ppm (table 1)
aging 1st year		± 2ppm max.
current consumption		7mA max.
supply voltage VDC		2.5V ± 10%
temperature	operating	-20°C ~ +70°C / -40°C ~ +85°C
	storage	-40°C ~ +85°C
output	rise & fall time	see table 2
	load max.	15pF
	current max.	4mA
	low level max.	0.1 x VDC
	high level min.	0.9 x VDC
output enable time max.		1ms
output disable time max.		250ns
start-up time max.		2ms
standby function		stop
standby current max.		5µA
phase jitter 12kHz~20MHz		< 0.1ps RMS typ.
symmetry at 0.5 x VDC		45% ~ 55% max.

Table 1: Frequency Stability Code

stability code	K ± 13 ppm	F ± 10 ppm	H ± 8 ppm			
-20 °C ~ +70 °C	O	O	O			
-40 °C ~ +85 °C	O	O	O			
O available						

* includes stability at 25°C, operating temp. range, supply voltage change, load change, vibration, aging 1st year

Table 2: Rise & Fall Time max.

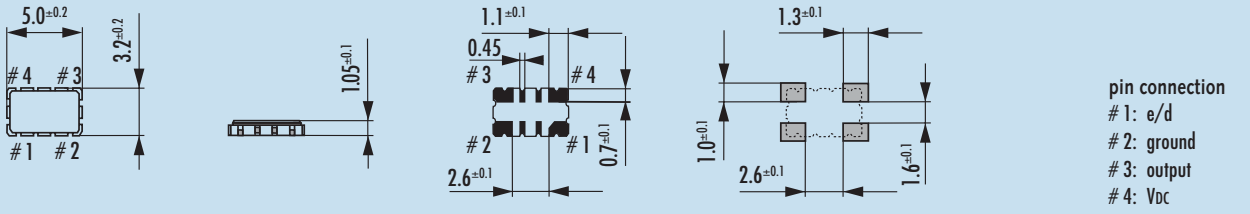
5.0 ns: 4.0 ~ 54.0 MHz	**note:** - specific data on request - rise time: 0.1 V_{DC} ~ 0.9 V_{DC} - fall time: 0.9 V_{DC} ~ 0.1 V_{DC}

Enable / Disable Function

pin #1 (e/d control)	pin #3 (output)
open	active
high "1" ($V_{IH} \geq 0.7\ V_{DC}$)	active
low "0" ($V_{IL} \leq 0.3\ V_{DC}$)	high impedance

stop function:
- oscillator stops
- output high impedance

Dimensions



top view — side view — bottom view — pad layout

in mm

Order Information

0	frequency	type	frequency stability code	supply voltage code	output load code	option
Oscillator	4.0 ~ 54.0 MHz	JO53H	see table 1	2.5 = 2.5 V	1 = 15 pF	blank = -20 °C ~ +70 °C T1 = -40 °C ~ +85 °C

Example: O 26.0-JO53H-F-2.5-1 (LF = RoHS compliant / Pb free pads)

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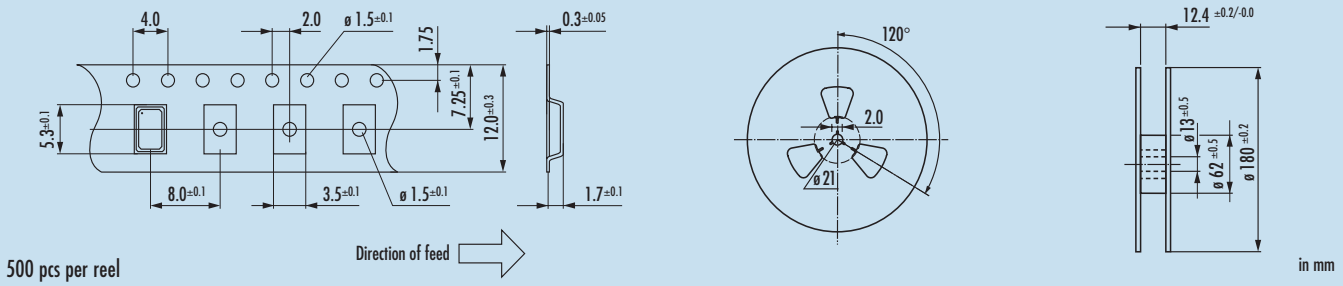
full data can be found under: www.jauch.de / www.jauch.fr / www.jauchusa.com

Oscillator · JO53H · 2.5 V · High Stability

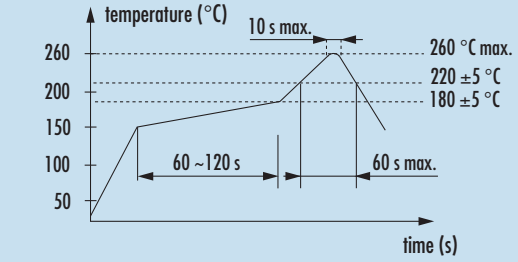
Taping Specification



500 pcs per reel

in mm

Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

Marking

frequency / company code / frequency stability code / date code

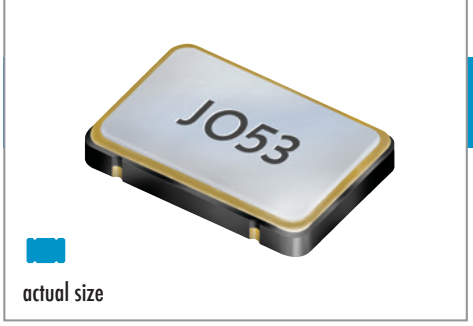
date code:
A ~ M: Jan.- Dec.
7: 2007
8: 2008
9: 2009

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk



actual size

Oscillator · JO53 · 1.8 V

SMD Oscillator with Stop Function · 5.0 x 3.2 mm

- high temperature version available
- reflow soldering temperature: 260 °C max.
- ceramic/metal package

RoHS 2011/65/EC — RoHS compliant

Pb free

General Data

type		JO53 1.8 V
frequency range		0.50 ~ 125.0 MHz (15 pF max.)
		0.50 ~ 40.0 MHz (30 pF max.)
		2.00 ~ 50.0 MHz (15 pF max. for T2 & T3*)
frequency stability over all**		± 20 ppm ~ ± 100 ppm (table 1)
current consumption		see table 2
supply voltage V_{DC}		1.8 V ± 5%
temperature	operating	-10 °C ~ +70 °C
		-40 °C ~ +85 °C
		-40 °C ~ +105 °C
		-40 °C ~ +125 °C ask if available
	storage	-55 °C ~ +125 °C
output	rise & fall time	see table 3
	load max.	15 pF / 30 pF (≤ +85 °C and ≤ 40.0 MHz)
	current max.	4 mA
	low level max.	0.4 V
	high level min.	V_{DC} - 0.4 V
output enable time max.		10 ms
output disable time max.		50 ns / 200 ns (T2 & T3*)
start-up time max.		10 ms
standby function		stop
standby current max.		10 µA
phase jitter 12 kHz ~ 20.0 MHz		< 1.0 ps RMS
symmetry at 0.5 x V_{DC}		45% ~ 55% (40% ~ 60% max.)

* ask if available

Table 1: Frequency Stability Code

stability code		A ± 100 ppm	B ± 50 ppm	G ± 30 ppm	C ± 25 ppm	D ± 20 ppm
-10 °C ~ +70 °C	STD.		●	○	○	Δ
-40 °C ~ +85 °C	T1	●	●	○	○	
-40 °C ~ +105 °C	T2	○	○			
-40 °C ~ +125 °C	T3*	■				

● standard ○ available ■ ask if available Δ excludes aging

** includes stability at 25 °C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption max.

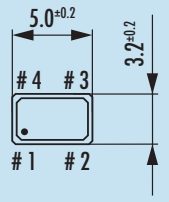
Current at 15 pF load		Current at 30 pF load	
0.5 ~ 29.9 MHz	7 mA	0.5 ~ 29.9 MHz	10 mA
30.0 ~ 39.9 MHz	7 mA	30.0 ~ 40.0 MHz	10 mA
40.0 ~ 89.9 MHz	20 mA		
90.0 ~ 125.0 MHz	25 mA		

Table 3: Rise & Fall Time max.

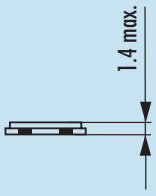
at 15 pF		at 30 pF	
6 ns:	0.50 ~ 29.99 MHz	8 ns:	0.50 ~ 40.00 MHz
5 ns:	30.00 ~ 39.99 MHz		
5 ns:	40.00 ~ 49.99 MHz		
4 ns:	50.00 ~ 69.99 MHz		
3 ns:	70.00 ~ 125.00 MHz		

note: rise time: 0.1 V_{DC} ~ 0.9 V_{DC} / fall time: 0.9 V_{DC} ~ 0.1 V_{DC}
specific data on request

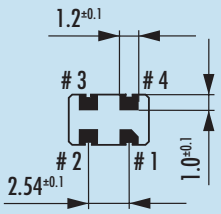
Dimensions



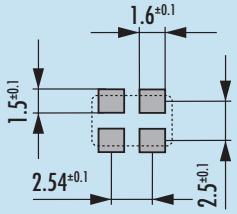
top view



side view



bottom view



pad layout

pin connection
1: e/d
2: ground
3: output
4: V_{DC}

in mm

Order Information

0	frequency	type	frequency stability code	supply voltage code	output load code	option
Oscillator	0.5 ~ 125.0 MHz	JO53	see table 1	1.8 = 1.8 V	1 = 15 pF 2 = 30 pF	blank = -10 °C ~ +70 °C T1 = -40 °C ~ +85 °C T2 = -40 °C ~ +105 °C T3 = -40 °C ~ +125 °C

Example: O 20.0-JO53-B-1.8-1-T1-LF (LF = RoHS compliant / Pb free pins or pads)

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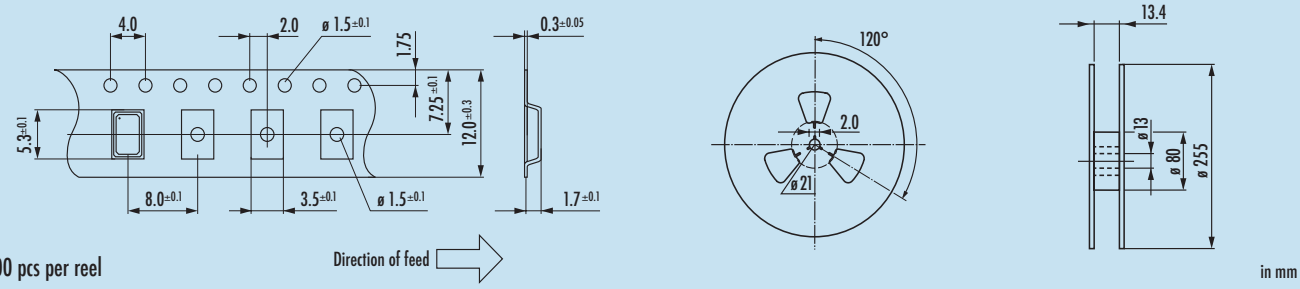
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Oscillator · JO53 · 1.8 V · Stop Function

Taping Specification



Enable / Disable Function

pin #1 (e/d control)	pin #3 (output)
open	active
high "1" ($V_{IH} \geq 0.8\ V_{DC}$)	active
low "0" ($V_{IL} \leq 0.2\ V_{DC}$)	high impedance

stop function:
- oscillator stops
- output high impedance

Marking

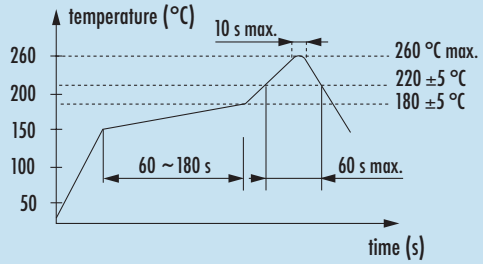
frequency
type / date code

date code:
A ~ M: Jan. - Dec.
2: 2012 5: 2015
3: 2013 6: 2016
4: 2014 7: 2017

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

actual size

Oscillator · JO75 · 5.0 V

SMD Oscillator with Tristate Function · 7.5 x 5.0 mm

- reflow soldering temperature: 260 °C max.
- ceramic/metal package

RoHS 2002/95/EC — RoHS compliant

Pb free: pins / pads

General Data

type		JO75 5.0 V
frequency range		1.8 ~ 80.0 MHz (15pF/30pF/50pF opt.)
		80.0 ~ 107.0 MHz (15pF) on request
frequency stability over all*		± 20ppm ~ ± 100ppm (table 1)
current consumption		see table 2
supply voltage V_{DC}		5.0 V ± 10%
temperature	operating	-10 °C ~ +70 °C / -40 °C ~ +85 °C
	storage	-55 °C ~ +125 °C
output	rise & fall time	see table 3
	load max.	15pF / 30pF / 50pF
	current max.	16mA
	low level max.	0.1 x V_{DC}
	high level min.	0.9 x V_{DC}
output enable time max.		100ns
output disable time max.		100ns
start-up time max.		10ms
standby function		tristate
phase jitter 12 kHz ~ 20.0 MHz		< 1.0ps RMS
symmetry at 0.5 x V_{DC}		45% ~ 55% typ. (40% ~ 60% max.)

note: Suffix ``X'' includes 10 years aging, for A, B, G available.

Table 1: Frequency Stability Code

stability code	A	B	G	C	D	
	± 100 ppm	± 50 ppm	± 30 ppm	± 25 ppm	± 20 ppm	
-10 °C ~ +70 °C		●	○	○	Δ	
-40 °C ~ +85 °C	○	●	○	Δ		

● standard ○ available Δ excludes shock and vibration

* includes stability at 25 °C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

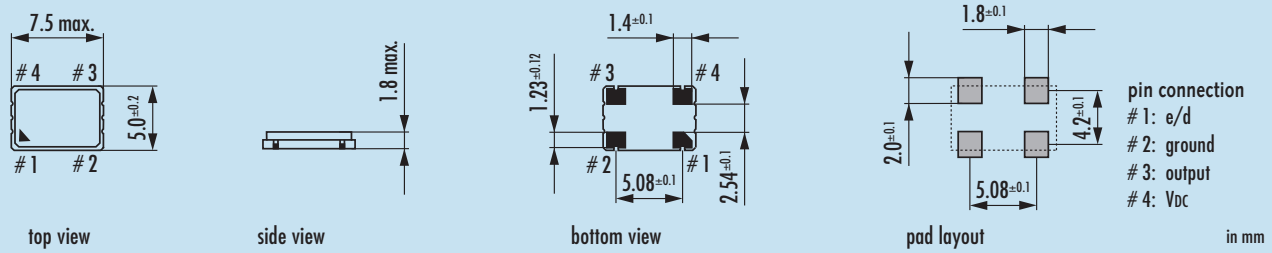
Table 2: Current Consumption max.

Current at 15pF load		Current at 30pF load		Current at 50pF load	
1.8 ~ 19.9 MHz	12 mA	1.8 ~ 19.9 MHz	15 mA	1.8 ~ 19.9 MHz	20 mA
20.0 ~ 39.9 MHz	20 mA	20.0 ~ 39.9 MHz	28 mA	20.0 ~ 39.9 MHz	35 mA
40.0 ~ 59.9 MHz	30 mA	40.0 ~ 59.9 MHz	35 mA	40.0 ~ 59.9 MHz	40 mA
60.0 ~ 79.9 MHz	45 mA	60.0 ~ 80.0 MHz	52 mA	60.0 ~ 80.0 MHz	60 mA
80.0 ~ 107.0 MHz	60 mA				

Table 3: Rise & Fall Time max.

6.0 ns: 1.8 ~ 9.9 MHz 5.0 ns: 10.0 ~ 39.9 MHz 4.0 ns: 40.0 ~ 69.9 MHz 3.0 ns: 70.0 ~ 107.0 MHz	**note:** - specific data on request - rise time: 0.1 V_{DC} ~ 0.9 V_{DC} - fall time: 0.9 V_{DC} ~ 0.1 V_{DC}

Dimensions



Order Information

0	frequency	–	type	–	frequency stability code	–	supply voltage code	–	output load code	–	option
Oscillator	1.8 ~ 80.0 MHz 80.0 ~ 107.0 MHz on req.		JO75		see table 1		5.0 = 5.0 V		1 = 15 pF std. > 80 MHz 2 = 30 pF std. < 80 MHz 3 = 50 pF opt. < 80 MHz		blank = -10 °C ~ +70 °C T1 = -40 °C ~ +85 °C

Example: O 20.0-JO75-B-5.0-1 (LF = RoHS compliant / Pb free pads)

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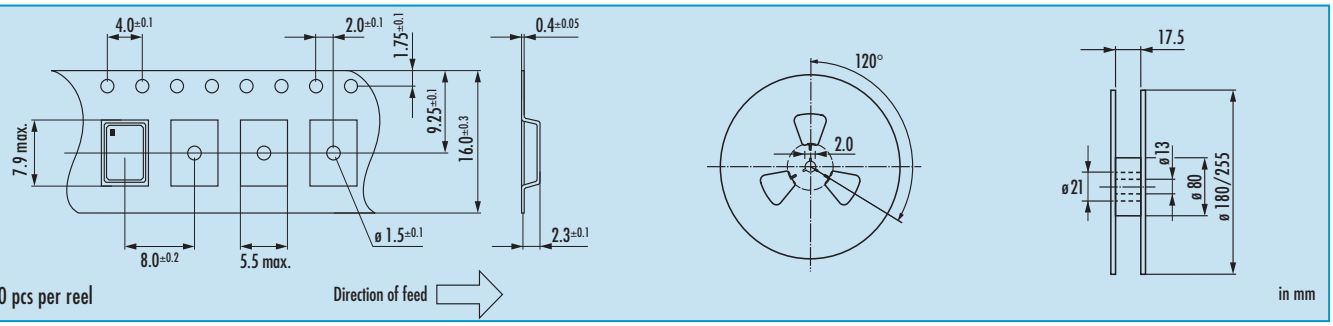
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Oscillator · JO75 · 5.0 V · Tristate Function

Taping Specification



Enable / Disable Function

pin #1 (e/d control)	pin #3 (output)
open	active
high "1" ($V_{IH} \geq 0.8\ V_{DC}$)	active
low "0" ($V_{IL} \leq 0.2\ V_{DC}$)	high impedance

disabled conditions:
- oscillator active
- output high impedance

Marking

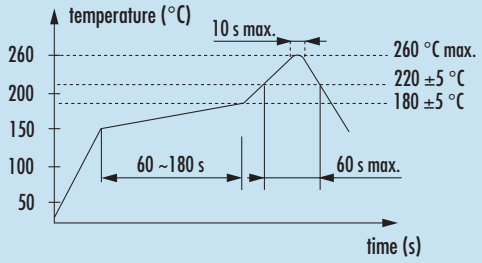
frequency type / date code

date code:
A ~ M: Jan.- Dec.
9: 2009
0: 2010
1: 2011

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

actual size

Oscillator · JO75H · 5.0 V

High Stability Oscillator with Stop Function · 7.5 x 5.0 mm

- tight tolerance down to ±10 ppm
- reflow soldering temperature: 260 °C max.
- ceramic/metal package

RoHS 2002/95/EC — RoHS compliant

Pb free: pins / pads

General Data

type		JO75H 5.0 V high stability
frequency range		1.80 ~ 50.0 MHz
frequency stability over all*		± 10ppm ~ ± 20ppm
		see table 1
current consumption		see table 2
supply voltage V_{DC}		5.0 V ± 5%
temperature	operating	-10 °C ~ +70 °C / -40 °C ~ +85 °C
	storage	-55 °C ~ +125 °C
output	rise & fall time	see table 3
	load max	15pF / 30 pF
	current max.	4mA
	low level max.	0.1 x V_{DC}
	high level min.	0.9 x V_{DC}
output enable time max.		5ms
output disable time max.		150ns
start-up time max.		5ms
standby function		stop
standby current max.		50µA
phase jitter 12 kHz ~ 20.0 MHz		< 1.0ps RMS
symmetry at 0.5 x V_{DC}		45% ~ 55% max.

Table 1: Frequency Stability Code

stability code	D ± 20 ppm	E ± 15 ppm	F ± 10 ppm			
-10 °C ~ +70 °C	O	Δ	Δ			
-40 °C ~ +85 °C	O	Δ				

O available Δ excludes shock and vibration

* includes stability at 25 °C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

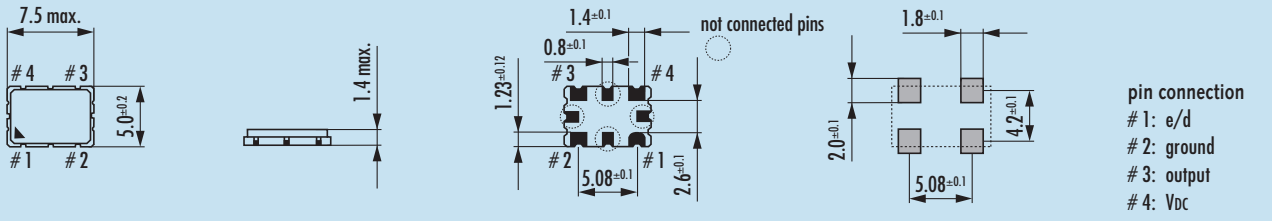
Table 2: Current Consumption max.

Current at 15pF load		Current at 30pF load	
1.8 ~ 19.9 MHz	10 mA	1.8 ~ 19.9 MHz	18 mA
20.0 ~ 50.0 MHz	22 mA	20.0 ~ 50.0 MHz	35 mA

Table 3: Rise & Fall Time max.

5.0 ns: 1.80 ~ 50.0 MHz	**note:** - specific data on request - rise time: 0.1 V_{DC} ~ 0.9 V_{DC} - fall time: 0.9 V_{DC} ~ 0.1 V_{DC}

Dimensions



Order Information

0	frequency	type	frequency stability code	supply voltage code	output load code	option
Oscillator	1.80 ~ 50.0 MHz	JO75H	see table 1	5.0 = 5.0 V	1 = 15 pF 2 = 30 pF	blank = -10 °C ~ +70 °C T1 = -40 °C ~ +85 °C

Example: O 20.0-JO75H-D-5.0-1 (LF = RoHS compliant / Pb free pads)

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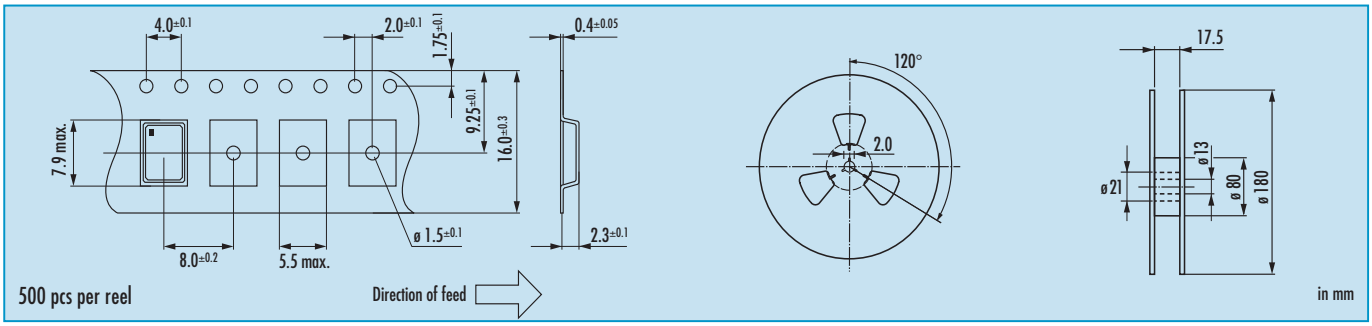
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Oscillator · JO75H · 5.0 V · High Stability

Taping Specification



Enable / Disable Function

pin #1 (e/d control)	pin #3 (output)
open	active
high "1" ($V_{IH} \geq 0.8\ V_{DC}$)	active
low "0" ($V_{IL} \leq 0.2\ V_{DC}$)	high impedance

stop function:
- oscillator stops
- output high impedance

Marking

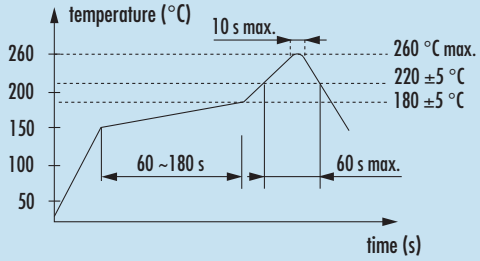
frequency type / date code

date code:
A ~ M: Jan.- Dec.
9: 2009
0: 2010
1: 2011

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

actual size

Oscillator · JO75 · 3.3 V

SMD Oscillator with Stop Function · 7.5 x 5.0 mm

- reflow soldering temperature: 260 °C max.
- ceramic/metal package

RoHS 2002/95/EC — RoHS compliant

Pb free: pins / pads

General Data

type		JO75 3.3 V
frequency range		1.0 ~ 170.0 MHz (15pF max.)
		1.0 ~ 80.0 MHz (30pF max)
frequency stability over all*		± 20ppm ~ ± 100ppm (table 1)
current consumption		see table 2
supply voltage V_{DC}		3.3 V ± 10%
temperature	operating	-10 °C ~ +70 °C / -40 °C ~ +85 °C
	storage	-55 °C ~ +125 °C
output	rise & fall time	see table 3
	load max	15pF / 30pF
	current max.	8mA
	low level max.	0.1 x V_{DC}
	high level min.	0.9 x V_{DC}
output enable time max.		10ms
output disable time max.		200ns
start-up time max.		10ms
standby function		stop
standby current max.		10µA
phase jitter 12 kHz ~ 20.0 MHz		< 1.0ps RMS
symmetry at 0.5 x V_{DC}		45% ~ 55% typ. (40% ~ 60% max.)

note: Suffix ``X'' includes 10 years aging, for A, B, G available.

Table 1: Frequency Stability Code

stability code	A	B	G	C	D	
	± 100 ppm	± 50 ppm	± 30 ppm	± 25 ppm	± 20 ppm	
-10 °C ~ +70 °C		●	○	○	Δ	
-40 °C ~ +85 °C	○	●	○	Δ		

● standard ○ available Δ excludes shock and vibration

* includes stability at 25 °C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption max.

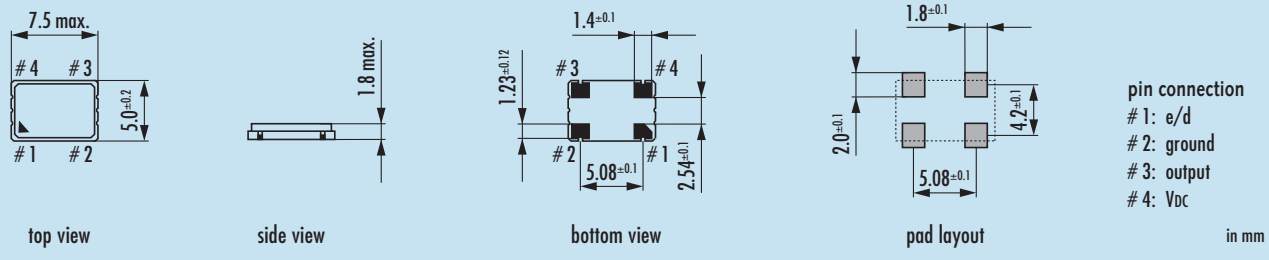
Current at 15pF load		Current at 30pF load	
1.0 ~ 19.9 MHz	8 mA	1.0 ~ 19.9 MHz	15 mA
20.0 ~ 49.9 MHz	15 mA	20.0 ~ 49.9 MHz	25 mA
50.0 ~ 79.9 MHz	25 mA	50.0 ~ 80.0 MHz	35 mA
80.0 ~ 99.9 MHz	35 mA		
100.0 ~ 124.9 MHz	45 mA		
125.0 ~ 170.0 MHz	60 mA		

Table 3: Rise & Fall Time max.

6.0 ns:	1.0 ~ 9.9 MHz
5.0 ns:	10.0 ~ 39.9 MHz
4.0 ns:	40.0 ~ 69.9 MHz
3.0 ns:	70.0 ~ 170.0 MHz

note:
- specific data on request
- rise time: 0.1 V_{DC} ~ 0.9 V_{DC}
- fall time: 0.9 V_{DC} ~ 0.1 V_{DC}

Dimensions



Order Information

0	frequency	type	frequency stability code	supply voltage code	output load code	option
Oscillator	1.0 ~ 170.0 MHz	JO75	see table 1	3.3 = 3.3 V	1 = 15 pF 2 = 30 pF	blank = -10 °C ~ +70 °C T1 = -40 °C ~ +85 °C

Example: O 20.0-JO75-B-3.3-1 (LF = RoHS compliant / Pb free pads)

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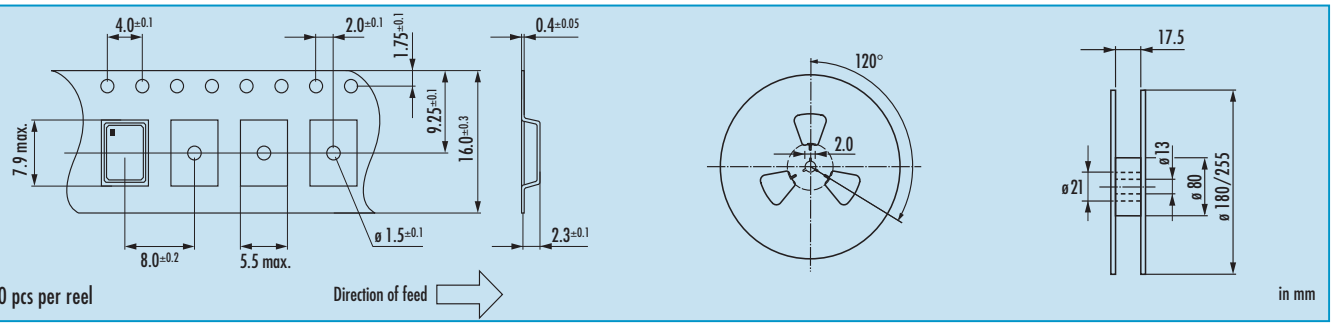
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Oscillator · JO75 · 3.3 V · Stop Function

Taping Specification



500 pcs per reel

Direction of feed

in mm

Enable / Disable Function

pin #1 (e/d control)	pin #3 (output)
open	active
high "1" ($V_{IH} \geq 0.8\ V_{DC}$)	active
low "0" ($V_{IL} \leq 0.2\ V_{DC}$)	high impedance

stop function:
- oscillator stops
- output high impedance

Marking

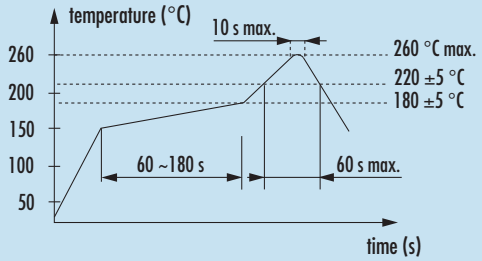
frequency type / date code

date code:
A ~ M: Jan.- Dec.
9: 2009
0: 2010
1: 2011

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

actual size

Oscillator · JO75H · 3.3 V

High Stability Oscillator with Stop Function · 7.5 x 5.0 mm

- tight tolerance down to ±10 ppm
- reflow soldering temperature: 260 °C max.
- ceramic/metal package

RoHS 2002/95/EC — RoHS compliant

Pb free: pins / pads

General Data

type		JO75H 3.3 V high stability
frequency range		1.80 ~ 50.0 MHz
frequency stability over all*		± 10ppm ~ ± 20ppm
		see table 1
current consumption		see table 2
supply voltage V_{DC}		3.3 V ± 5%
temperature	operating	-10 °C ~ +70 °C / -40 °C ~ +85 °C
	storage	-55 °C ~ +125 °C
output	rise & fall time	see table 3
	load max	15pF / 30pF
	current max.	4mA
	low level max.	0.1 x V_{DC}
	high level min.	0.9 x V_{DC}
output enable time max.		5ms
output disable time max.		150ns
start-up time max.		5ms
standby function		stop
standby current max.		50µA
phase jitter 12 kHz ~ 20.0 MHz		< 1.0ps RMS
symmetry at 0.5 x V_{DC}		45% ~ 55% max.

Table 1: Frequency Stability Code

stability code	D ± 20 ppm	E ± 15 ppm	F ± 10 ppm			
-10 °C ~ +70 °C	O	Δ	Δ			
-40 °C ~ +85 °C	O	Δ				

O available Δ excludes shock and vibration

* includes stability at 25 °C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

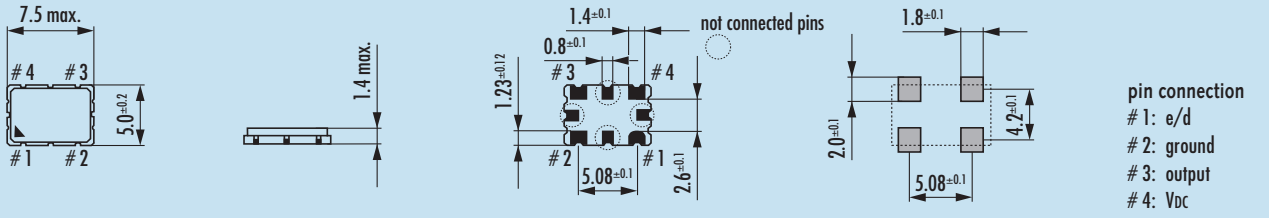
Table 2: Current Consumption max.

Current at 15pF load		Current at 30pF load	
1.8 ~ 19.9 MHz	10 mA	1.8 ~ 19.9 MHz	15 mA
20.0 ~ 50.0 MHz	22 mA	20.0 ~ 50.0 MHz	25 mA

Table 3: Rise & Fall Time max.

5.0 ns: 1.80 ~ 50.0 MHz	**note:** - specific data on request - rise time: 0.1 V_{DC} ~ 0.9 V_{DC} - fall time: 0.9 V_{DC} ~ 0.1 V_{DC}

Dimensions



Order Information

0	frequency	type	frequency stability code	supply voltage code	output load code	option
Oscillator	1.80 ~ 50.0 MHz	JO75H	see table 1	3.3 = 3.3 V	1 = 15 pF 2 = 30 pF	blank = -10 °C ~ +70 °C T1 = -40 °C ~ +85 °C

Example: O 20.0-JO75H-D-3.3-1 (LF = RoHS compliant / Pb free pads)

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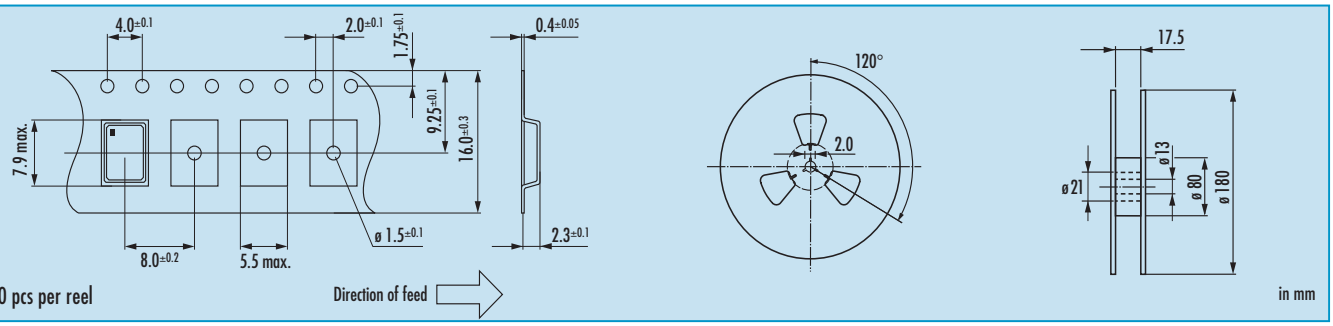
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Oscillator · JO75H · 3.3 V · High Stability

Taping Specification



Enable / Disable Function

pin #1 (e/d control)	pin #3 (output)
open	active
high "1" ($V_{IH} \geq 0.8\ V_{DC}$)	active
low "0" ($V_{IL} \leq 0.2\ V_{DC}$)	high impedance

stop function:
- oscillator stops
- output high impedance

Marking

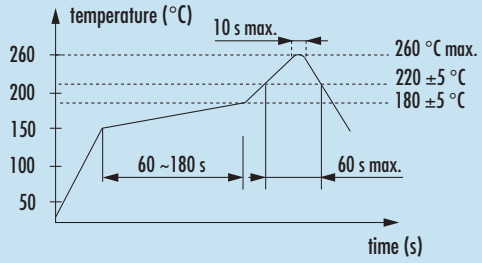
frequency type / date code

date code:
A ~ M: Jan.- Dec.
9: 2009
0: 2010
1: 2011

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

actual size

Oscillator · JO75 · 3.3 V

Low Frequency Oscillator with Stop Function · 7.5 x 5.0 mm

- high stability type for RTC application
- reflow soldering temperature: 260 °C max.
- ceramic/metal package

RoHS 2002/95/EC — RoHS compliant

Pb free: pins / pads

General Data

type		JO75 3.3 V
frequency range		12.0 kHz ~ 1.0 MHz (30pF max.)
frequency stability over all*		± 20ppm ~ ± 100ppm
		see table 1
current consumption		see table 2
supply voltage V_{DC}		3.3 V ± 10%
temperature	operating	-10 °C ~ +70 °C / -40 °C ~ +85 °C
	storage	-55 °C ~ +125 °C
output	rise & fall time	see table 3
	load max	15pF / 30pF
	current max.	2mA
	low level max.	0.1 x V_{DC}
	high level min.	0.9 x V_{DC}
output enable time max.		5ms
output disable time max.		150ns
start-up time max.		5ms
standby function		stop
standby current max.		10µA
symmetry at 0.5 x V_{DC}		45% ~ 55% max.

Table 1: Frequency Stability Code

stability code	A	B	G	C	D	
	± 100 ppm	± 50 ppm	± 30 ppm	± 25 ppm	± 20 ppm	
-10 °C ~ +70 °C	○	○	○	○	Δ	
-40 °C ~ +85 °C	○	○	○	Δ		

● standard ○ available Δ excludes shock and vibration

* includes stability at 25 °C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption max.

Current at 15pF load	Current at 30pF load
12.0 kHz ~ 1.0 MHz 10 mA	12.0 kHz ~ 1.0 MHz 16 mA

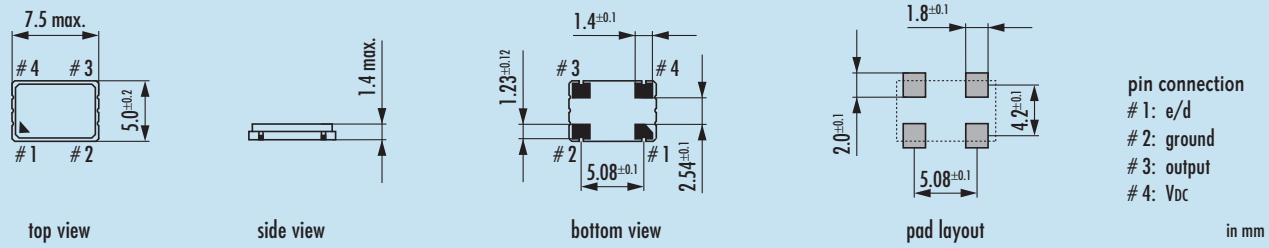
Table 3: Rise & Fall Time max.

6.0 ns: 12.0 kHz ~ 1.0 MHz	**note:** - specific data on request - rise time: 0.1 V_{DC} ~ 0.9 V_{DC} - fall time: 0.9 V_{DC} ~ 0.1 V_{DC}

Standard Frequency

32.768 KHz

Dimensions



Order Information

0	frequency	type	frequency stability code	supply voltage code	output load code	option
Oscillator	0.012 ~ 1.0 MHz	JO75	see table 1	3.3 = 3.3 V	1 = 15 pF 2 = 30 pF	blank = -10 °C ~ +70 °C T1 = -40 °C ~ +85 °C

Example: O 0.032768-JO75-B-3.3-1 (LF = RoHS compliant / Pb free pads)

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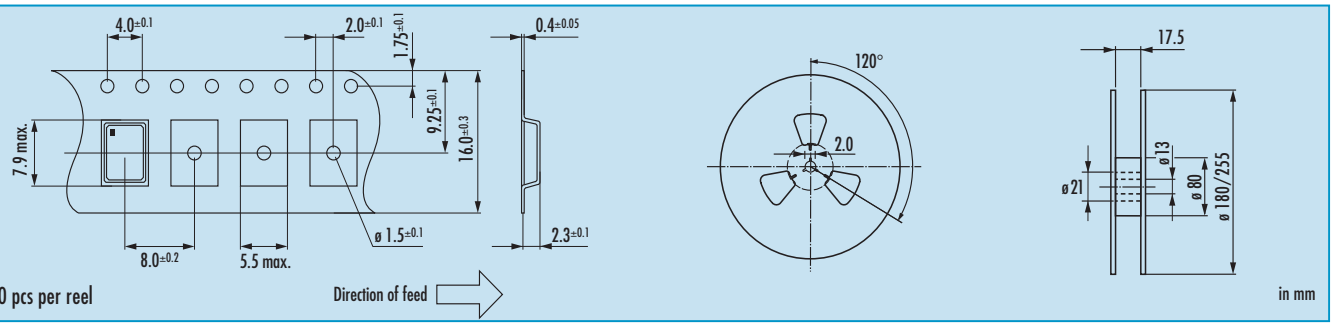
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Oscillator · JO75 · 3.3 V · Low Frequency

Taping Specification



Enable / Disable Function

pin #1 (e/d control)	pin #3 (output)
open	active
high "1" ($V_{IH} \geq 0.8\ V_{DC}$)	active
low "0" ($V_{IL} \leq 0.2\ V_{DC}$)	high impedance

stop function:
- oscillator stops
- output high impedance

Marking

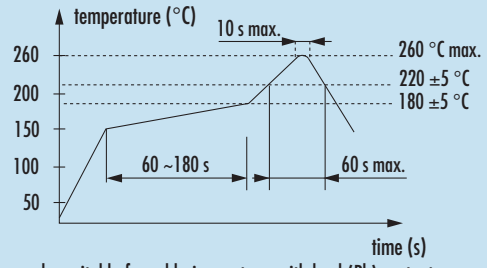
frequency type / date code

date code:
A ~ M: Jan.- Dec.
9: 2009
0: 2010
1: 2011

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

actual size

Oscillator · JO75 · 2.8 V

SMD Oscillator with Stop Function · 7.5 x 5.0 mm

- reflow soldering temperature: 260 °C max.
- ceramic/metal package

RoHS 2002/95/EC — RoHS compliant

Pb free: pins / pads

General Data

type		JO75 2.8V
frequency range		0.50 ~ 165.0 MHz (15pF max.)
		0.50 ~ 50.0 MHz (30pF max.)
frequency stability over all*		± 20ppm ~ ± 100ppm (table 1)
current consumption		see table 2
supply voltage V_{DC}		2.8V ± 5%
temperature	operating	-10 °C ~ +70 °C / -40 °C ~ +85 °C
	storage	-55 °C ~ +125 °C
output	rise & fall time	see table 3
	load max	15pF / 30pF
	current max.	4mA / 8mA
	low level max.	0.1 x V_{DC}
	high level min.	0.9 x V_{DC}
output enable time max.		10ms
output disable time max.		150ns
start-up time max.		10ms
standby function		stop
standby current max.		10µA
phase jitter 12 kHz ~ 20.0 MHz		< 1.0ps RMS
symmetry at 0.5 x V_{DC}		45% ~ 55% typ. (40% ~ 60% max.)

Table 1: Frequency Stability Code

stability code	A ± 100 ppm	B ± 50 ppm	G ± 30 ppm	C ± 25 ppm	
-10 °C ~ +70 °C		○	○	○	
-40 °C ~ +85 °C	○	○	○	Δ	

● standard ○ available Δ excludes shock and vibration

* includes stability at 25 °C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption max.

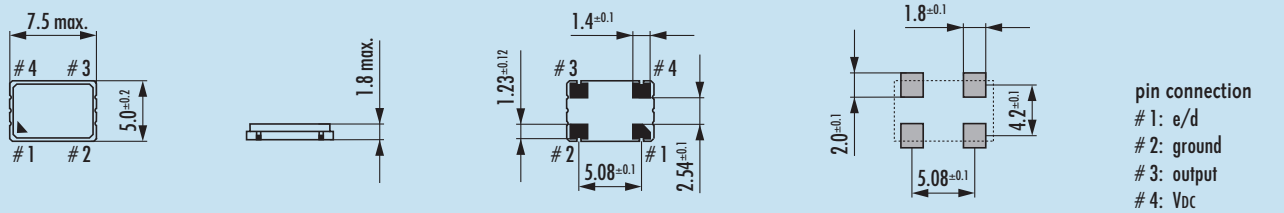
Current at 15pF load			Current at 30pF load	
0.5 ~	19.9 MHz	7 mA	0.5 ~ 19.9 MHz	12 mA
20.0 ~	49.9 MHz	12 mA	20.0 ~ 50.0 MHz	25 mA
50.0 ~	79.9 MHz	20 mA		
80.0 ~	124.9 MHz	30 mA		
125.0 ~	165.0 MHz	50 mA		

Table 3: Rise & Fall Time max.

8 ns:	0.5 ~	1.79 MHz
6 ns:	1.8 ~	49.99 MHz
5 ns:	50.0 ~	79.99 MHz
4 ns:	80.0 ~	124.99 MHz
3 ns:	125.0 ~	165.00 MHz

note:
- specific data on request
- rise time: 0.1 V_{DC} ~ 0.9 V_{DC}
- fall time: 0.9 V_{DC} ~ 0.1 V_{DC}

Dimensions



top view — side view — bottom view — pad layout — in mm

Order Information

0	frequency	–	type	–	frequency stability code	–	supply voltage code	–	output load code	–	option
Oscillator	0.50 ~ 165.0 MHz		JO75		see table 1		2.8 = 2.8 V		1 = 15 pF 2 = 30 pF		blank = -10 °C ~ +70 °C T1 = -40 °C ~ +85 °C

Example: O 20.0-JO75-B-2.8-1 (LF = RoHS compliant / Pb free pads)

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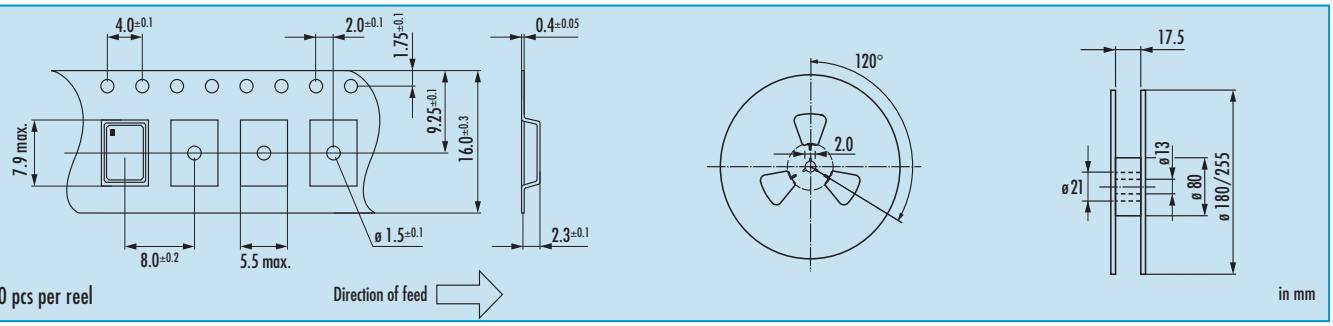
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Oscillator · JO75 · 2.8 V · Stop Function

Taping Specification



500 pcs per reel

Direction of feed

in mm

Enable / Disable Function

pin #1 (e/d control)	pin #3 (output)
open	use external pull-up resistor
high "1" ($V_{IH} \geq 0.8\ V_{DC}$)	active
low "0" ($V_{IL} \leq 0.2\ V_{DC}$)	high impedance

stop function:
- oscillator stops
- output high impedance

Marking

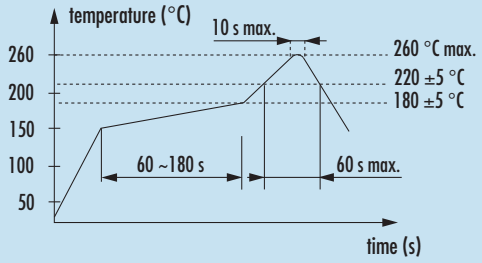
frequency type / date code

date code:
A ~ M: Jan.- Dec.
9: 2009
0: 2010
1: 2011

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

actual size

Oscillator · JO75 · 2.5 V

SMD Oscillator with Stop Function · 7.5 x 5.0 mm

- reflow soldering temperature: 260 °C max.
- ceramic/metal package

RoHS 2002/95/EC — RoHS compliant

Pb free: pins / pads

General Data

type		JO75 2.5 V
frequency range		0.50 ~ 160.0 MHz (15pF max.)
		0.50 ~ 50.00 MHz (30pF max.)
frequency stability over all*		± 20ppm ~ ± 50ppm (table 1)
current consumption		see table 2
supply voltage V_{DC}		2.5 V ± 5%
temperature	operating	-10 °C ~ +70 °C / -40 °C ~ +85 °C
	storage	-55 °C ~ +125 °C
output	rise & fall time	see table 3
	load max	15pF / 30pF
	current max.	4mA / 8mA
	low level max.	0.1 x V_{DC}
	high level min.	0.9 x V_{DC}
output enable time max.		10ms
output disable time max.		150ns
start-up time max.		10ms
standby function		stop
standby current max.		10µA
phase jitter 12 kHz ~ 20.0 MHz		< 1.0ps RMS
symmetry at 0.5 x V_{DC}		45% ~ 55% typ. (40% ~ 60% max.)

Table 1: Frequency Stability Code

stability code	A ± 100 ppm	B ± 50 ppm	G ± 30 ppm	C ± 25 ppm	
-10 °C ~ +70 °C		○	○	○	
-40 °C ~ +85 °C	○	○	○	Δ	

● standard ○ available Δ excludes shock and vibration

* includes stability at 25 °C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption max.

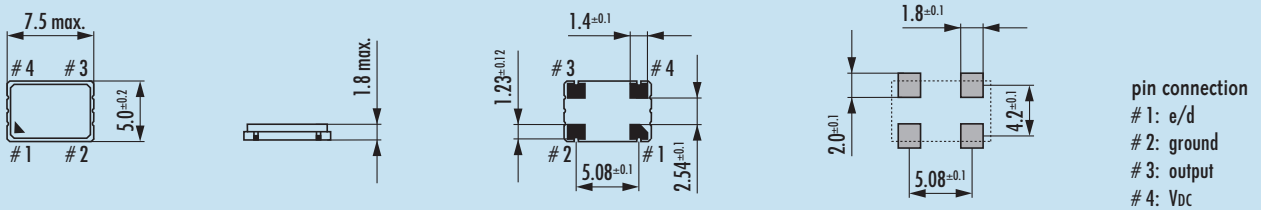
Current at 15pF load		Current at 30pF load	
0.5 ~ 19.9 MHz	6 mA	0.5 ~ 19.9 MHz	10 mA
20.0 ~ 49.9 MHz	11 mA	20.0 ~ 50.0 MHz	20 mA
50.0 ~ 79.9 MHz	17 mA		
80.0 ~ 124.9 MHz	28 mA		
125.0 ~ 160.0 MHz	38 mA		

Table 3: Rise & Fall Time max.

8 ns:	0.5 ~ 1.79 MHz
6 ns:	1.8 ~ 49.99 MHz
5 ns:	50.0 ~ 79.99 MHz
4 ns:	80.0 ~ 124.99 MHz
3 ns:	125.0 ~ 160.00 MHz

note:
- specific data on request
- rise time: 0.1 V_{DC} ~ 0.9 V_{DC}
- fall time: 0.9 V_{DC} ~ 0.1 V_{DC}

Dimensions



top view — side view — bottom view — pad layout — in mm

Order Information

0	frequency	–	type	–	frequency stability code	–	supply voltage code	–	output load code	–	option
Oscillator	0.5 ~ 160.0 MHz		JO75		see table 1		2.5 = 2.5 V		1 = 15 pF 2 = 30 pF		blank = -10 °C ~ +70 °C T1 = -40 °C ~ +85 °C

Example: O 20.0-JO75-B-2.5-1 (LF = RoHS compliant / Pb free pads)

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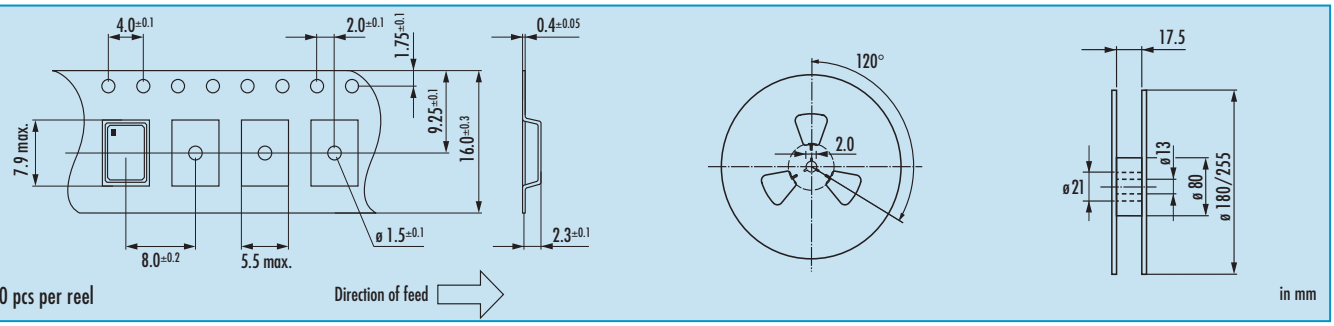
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Oscillator · JO75 · 2.5 V · Stop Function

Taping Specification



Enable / Disable Function

pin #1 (e/d control)	pin #3 (output)
open	use external pull-up resistor
high "1" ($V_{IH} \geq 0.8\ V_{DC}$)	active
low "0" ($V_{IL} \leq 0.2\ V_{DC}$)	high impedance

stop function:
- oscillator stops
- output high impedance

Marking

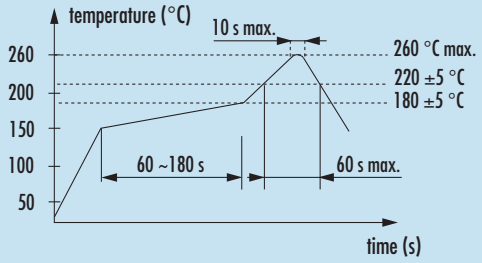
frequency type / date code

date code:
A ~ M: Jan.- Dec.
9: 2009
0: 2010
1: 2011

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

actual size

Oscillator · JO75 · 1.8 V

SMD Oscillator with Stop Function · 7.5 x 5.0 mm

- reflow soldering temperature: 260 °C max.
- ceramic/metal package

RoHS 2002/95/EC compliant

Pb free: pins / pads

General Data

type		JO75 1.8V
frequency range		0.50 ~ 160.0 MHz (15pF max.)
		0.50 ~ 50.0 MHz (30pF max.)
frequency stability over all*		± 20ppm ~ ± 100ppm (table 1)
current consumption		see table 2
supply voltage V_{DC}		1.8V ± 5%
temperature	operating	-10 °C ~ +70 °C / -40 °C ~ +85 °C
	storage	-55 °C ~ +125 °C
output	rise & fall time	see table 3
	load max.	15pF / 30pF
	current max.	2mA / 2.8mA
	low level max.	0.2 x V_{DC}
	high level min.	0.8 x V_{DC}
output enable time max.		10ms
output disable time max.		250ns
start-up time max.		10ms
standby function		stop
standby current max.		10µA
phase jitter 12 kHz ~ 20.0 MHz		< 1.0ps RMS
symmetry at 0.5 x V_{DC}		45% ~ 55% typ. (40% ~ 60% max.)

Table 1: Frequency Stability Code

stability code	A	B	G	C	
	± 100 ppm	± 50 ppm	± 30 ppm	± 25 ppm	
-10 °C ~ +70 °C		●	○	○	
-40 °C ~ +85 °C	●	○	○	Δ	

● standard ○ available Δ excludes shock and vibration

* includes stability at 25 °C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption max.

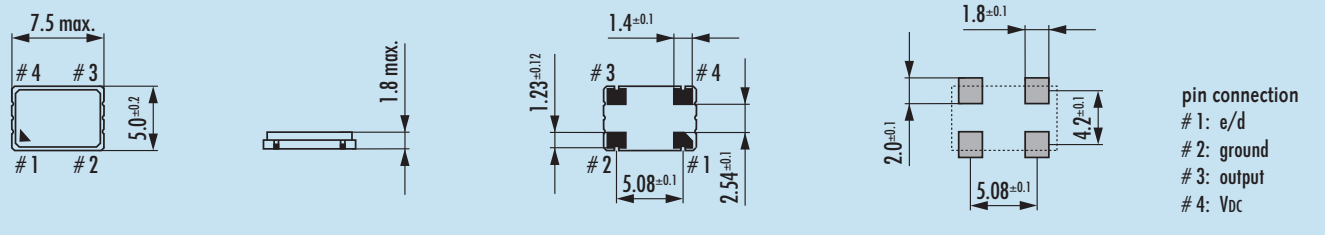
Current at 15pF load		Current at 30pF load	
0.5 ~ 19.9 MHz	5 mA	0.5 ~ 19.9 MHz	8 mA
20.0 ~ 49.9 MHz	8 mA	20.0 ~ 50.0 MHz	18 mA
50.0 ~ 79.9 MHz	15 mA		
80.0 ~ 124.9 MHz	25 mA		
125.0 ~ 160.0 MHz	35 mA		

Table 3: Rise & Fall Time max.

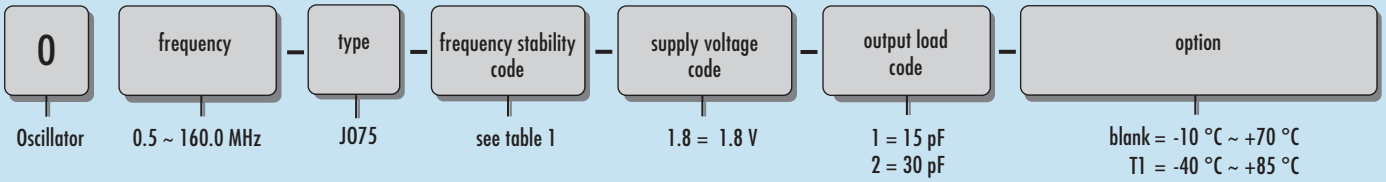
8 ns:	0.5 ~	1.79 MHz
7 ns:	1.8 ~	49.99 MHz
5 ns:	50.0 ~	79.99 MHz
4 ns:	80.0 ~	124.99 MHz
3 ns:	125.0 ~	160.00 MHz

note:
- specific data on request
- rise time: 0.1 V_{DC} ~ 0.9 V_{DC}
- fall time: 0.9 V_{DC} ~ 0.1 V_{DC}

Dimensions



Order Information



Example: O 20.0-JO75-B-1.8-1 (LF = RoHS compliant / Pb free pins or pads)

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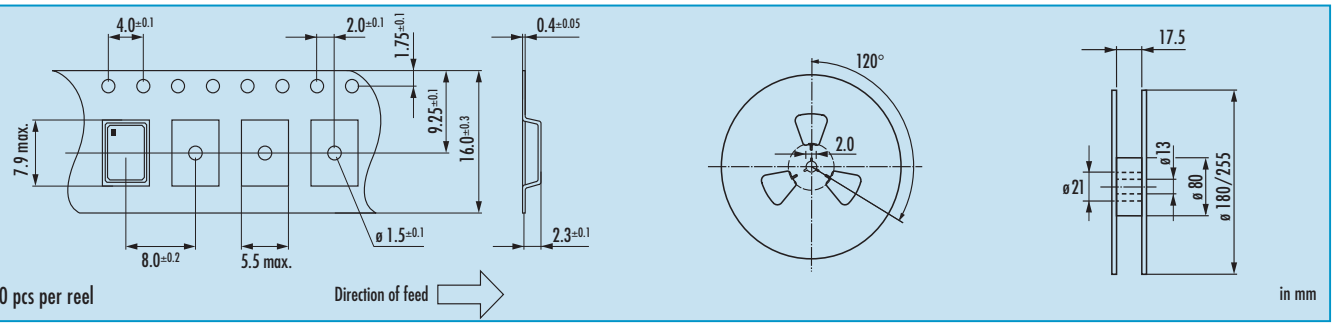
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Oscillator · JO75 · 1.8 V · Stop Function

Taping Specification



Enable / Disable Function

pin #1 (e/d control)	pin #3 (output)
open	active
high "1" ($V_{IH} \geq 0.8\ V_{DC}$)	active
low "0" ($V_{IL} \leq 0.2\ V_{DC}$)	high impedance

stop function:
- oscillator stops
- output high impedance

Marking

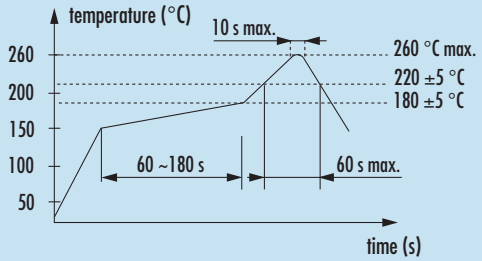
frequency type / date code

date code:
A ~ M: Jan.- Dec.
9: 2009
0: 2010
1: 2011

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

actual size

Oscillator · VX3 · 5.0 V

SMD Oscillator with Tristate Function · 7.0 x 5.0 mm

- preferred type for extended temperature range
- reflow soldering temperature: 260 °C max.
- full ceramic package

RoHS 2002/95/EC — RoHS compliant

Pb free: pins / pads

General Data

type		VX3 5.0 V
frequency range		0.50 ~ 107.0 MHz (15pF max.)
		0.50 ~ 80.0 MHz (50pF max.)
frequency stability over all*		± 20ppm ~ ± 100ppm (table 1)
current consumption		see table 2
supply voltage V_{DC}		5.0 V ± 10%
temperature	operating	-10 °C ~ +70 °C / -40 °C ~ +85 °C
	storage	-55 °C ~ +125 °C
output	rise & fall time	see table 3
	load max	15pF / 50pF
	current max.	16mA
	low level max.	0.1 x V_{DC}
	high level min.	0.9 x V_{DC}
output enable time max.		100ns
output disable time max.		100ns
start-up time max.		10ms
standby function		tristate
phase jitter 12 kHz ~ 20.0 MHz		< 1.0ps RMS
symmetry at 0.5 x V_{DC}		45% ~ 55% typ. (40% ~ 60% max.)

Table 1: Type

stability	± 100 ppm		± 50 ppm		± 30 ppm		± 25 ppm		± 20 ppm	
type VX3	**E**	**X**	**F**	**Y**	**FS**	**YS**	**EQ**	**XQ**	**EP**	**XP**
output load	15 pF	50 pF	15 pF	50 pF	15 pF	50 pF	15 pF	50 pF	15 pF	50 pF
-10 °C ~ +70 °C	●	○	○	○	○	○	○	○	Δ	Δ
-40 °C ~ +85 °C	●	○	○	○	○	○	○	○		

● standard ○ available Δ excludes aging

* includes stability at 25 °C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption max.

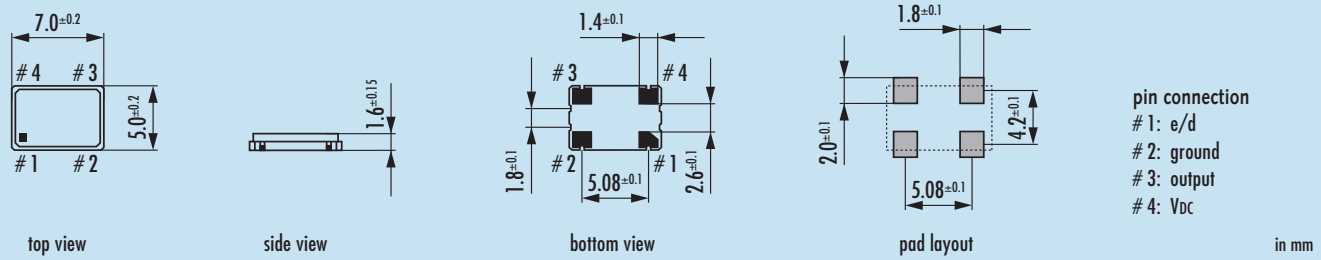
Current at 15pF load		Current at 50pF load	
0.5 ~ 29.9 MHz	10 mA	0.5 ~ 19.9 MHz	20 mA
30.0 ~ 34.9 MHz	15 mA	20.0 ~ 49.9 MHz	35 mA
35.0 ~ 65.9 MHz	30 mA	50.0 ~ 80.0 MHz	60 mA
66.0 ~ 79.9 MHz	50 mA		
80.0 ~ 107.0 MHz	60 mA		

Table 3: Rise & Fall Time max.

8.0 ns: 0.5 ~ 1.79 MHz
6.0 ns: 1.8 ~ 34.99 MHz
5.0 ns: 35.0 ~ 107.00 MHz

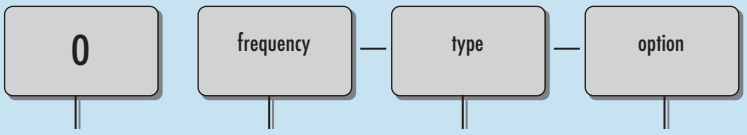
note:
- specific data on request
- rise time: 0.1 V_{DC} ~ 0.9 V_{DC}
- fall time: 0.9 V_{DC} ~ 0.1 V_{DC}

Dimensions



top view — side view — bottom view — pad layout — in mm

Order Information



Oscillator — 0.5 ~ 107.0 MHz — VX3E-VX3XP see table 1 — blank = -10 °C ~ +70 °C, T1 = -40 °C ~ +85 °C

Example: O 20.0-VX3X (LF = RoHS compliant / Pb free pins or pads)

Preferred Type

VX3E-T1: ± 100 ppm / 15 pF / -40 °C ~ +85 °C
VX3E: ± 100 ppm / 15 pF

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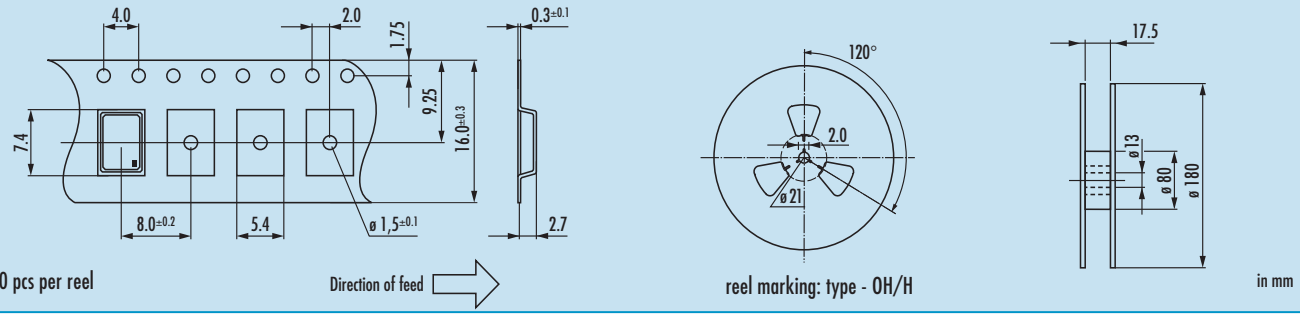
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Oscillator · VX3 · 5.0 V · Tristate Function

Taping Specification (JIS-C0806)



Enable / Disable Function

pin #1 (e/d control)	pin #3 (output)
open	active
high "1" ($V_{IH} \geq 0.8\ V_{DC}$)	active
low "0" ($V_{IL} \leq 0.2\ V_{DC}$)	high impedance

disabled conditions:
- oscillator active
- output high impedance

Marking

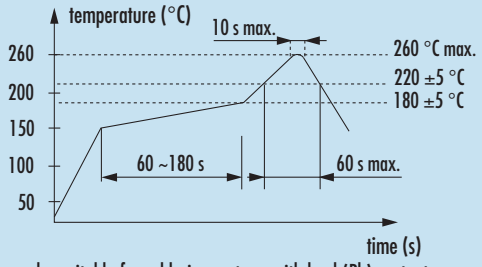
type / frequency

date code:
A ~ M: Jan.- Dec.
0: 2010
1: 2011
2: 2012

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

actual size

Oscillator · VX3 · 3.3 V

SMD Oscillator with Tristate Function · 7.0 x 5.0 mm

- preferred type for extended temperature range
- reflow soldering temperature: 260 °C max.
- full ceramic package

RoHS 2002/95/EC — RoHS compliant

Pb free: pins / pads

General Data

type		VX3 3.3 V
frequency range		0.50 ~ 70.0 MHz (15pF max.)
		0.50 ~ 70.0 MHz (30pF max.)
frequency stability over all*		± 20ppm ~ ± 100ppm (table 1)
current consumption		see table 2
supply voltage V_{DC}		3.3 V ± 10%
temperature	operating	-10 °C ~ +70 °C / -40 °C ~ +85 °C
	storage	-55 °C ~ +125 °C
output	rise & fall time	see table 3
	load max	15pF / 30pF
	current max.	8mA
	low level max.	0.1 x V_{DC}
	high level min.	0.9 x V_{DC}
output enable time max.		100ns
output disable time max.		100ns
start-up time max.		10ms
standby function		tristate
phase jitter 12 kHz ~ 20.0 MHz		< 1.0ps RMS
symmetry at 0.5 x V_{DC}		45% ~ 55% typ. (40% ~ 60% max.)

Table 1: Type

stability	± 100 ppm		± 50 ppm		± 30 ppm		± 25 ppm		± 20 ppm	
type VX3	**J**	**M**	**K**	**MH**	**JS**	**MS**	**JQ**	**MQ**	**JP**	**MP**
output load	15 pF	30 pF	15 pF	30 pF	15 pF	30 pF	15 pF	30 pF	15 pF	30 pF
-10 °C ~ +70 °C	○	○	○	●	○	○	○	○	Δ	Δ
-40 °C ~ +85 °C	○	○	○	●	○	○	○	○		

● standard ○ available Δ excludes aging

* includes stability at 25 °C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption max.

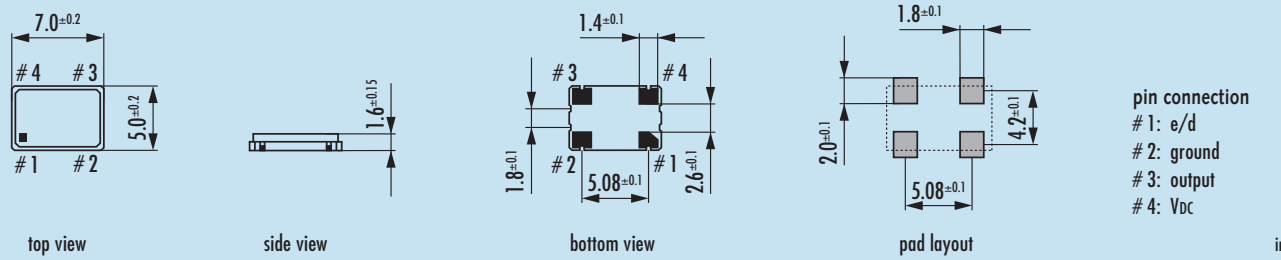
Current at 15pF load		Current at 30pF load	
0.5 ~ 33.9 MHz	8 mA	0.5 ~ 33.9 MHz	10 mA
34.0 ~ 49.9 MHz	12 mA	34.0 ~ 49.9 MHz	20 mA
50.0 ~ 70.0 MHz	25 mA	50.0 ~ 70.0 MHz	25 mA

Table 3: Rise & Fall Time max.

8.0 ns: 0.5 ~ 1.79 MHz
6.0 ns: 1.8 ~ 34.99 MHz
5.0 ns: 35.0 ~ 70.00 MHz

note:
- specific data on request
- rise time: 0.1 V_{DC} ~ 0.9 V_{DC}
- fall time: 0.9 V_{DC} ~ 0.1 V_{DC}

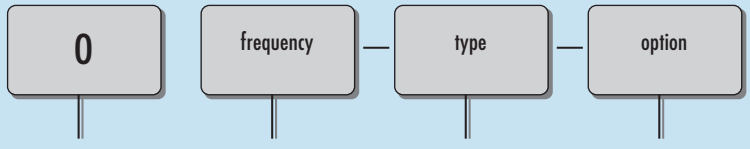
Dimensions



top view — side view — bottom view — pad layout

in mm

Order Information



Oscillator — 0.5 ~ 70.0 MHz — VX3J-VX3MP see table 1 — blank = -10 °C ~ +70 °C; T1 = -40 °C ~ +85 °C

Example: O 20.0-VX3MH (LF = RoHS compliant / Pb free pads)

Preferred Type

VX3MH-T1: ± 50 ppm / 30 pF/ -40 °C ~ +85 °C
VX3MH: ± 50 ppm / 30 pF

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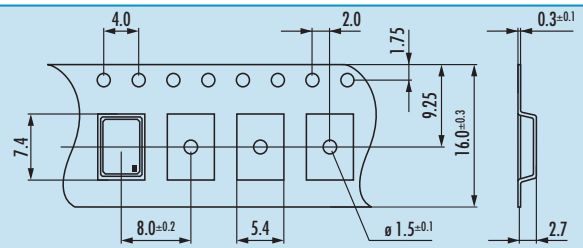
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

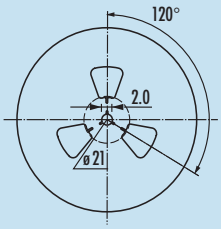
Oscillator · VX3 · 3.3 V · Tristate Function

Taping Specification (JIS-C0806)

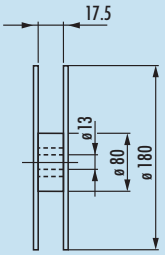


500 pcs per reel

Direction of feed



reel marking: type - OH/H



in mm

Enable / Disable Function

pin #1 (e/d control)	pin #3 (output)
open	active
high "1" ($V_{IH} \geq 0.8\ V_{DC}$)	active
low "0" ($V_{IL} \leq 0.2\ V_{DC}$)	high impedance

disabled conditions:
- oscillator active
- output high impedance

Marking

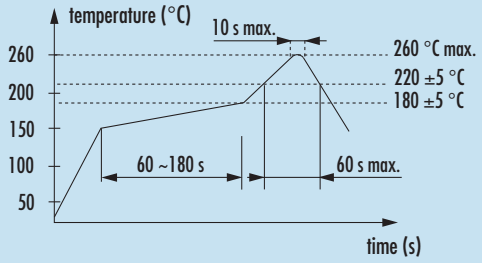
type / frequency

date code:
A ~ M: Jan.- Dec.
0: 2010
1: 2011
2: 2012

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

actual size

Oscillator · VX3 · 3.3 V

SMD Oscillator with Stop Function · 7.0 x 5.0 mm

- preferred type for extended temperature range
- reflow soldering temperature: 260 °C max.
- full ceramic package

RoHS 2002/95/EC
RoHS compliant

Pb free: pins / pads

General Data

type		VX3 3.3 V
frequency range	VX3W □	0.50 ~ 100.0 MHz (30pF max.)
	VX3L □	100.0 ~ 165.0 MHz (15pF max.)
frequency stability over all*		± 20ppm ~ ± 100ppm (table 1)
current consumption		see table 2
supply voltage V_{DC}		3.3 V +/-10%
temperature	operating	-10 °C ~ +70 °C / -40 °C ~ +85 °C
	storage	-55 °C ~ +125 °C
output	rise & fall time	see table 3
	load max	15pF / 30pF
	current max.	8mA
	low level max.	0.1 x V_{DC}
	high level min.	0.9 x V_{DC}
output enable time max.		10ms
output disable time max.		200ns
start-up time max.		10ms
standby function		stop
standby current max.		10µA
phase jitter 12 kHz ~ 20.0 MHz		< 1.0ps RMS
symmetry at 0.5 x V_{DC}		45% ~ 55% typ. (40% ~ 60% max.)

Table 1: Type

stability	± 100 ppm		± 50 ppm		± 30 ppm		± 25 ppm		± 20 ppm	
type VX3	**L**	**W**	**LH**	**WH**	**LS**	**WS**	**LQ**	**WQ**	**LP**	**WP**
output load	15 pF	30 pF	15 pF	30 pF	15 pF	30 pF	15 pF	30 pF	15 pF	30 pF
-10 °C ~ +70 °C	○	○	○	○	○	○	○	○	Δ	Δ
-40 °C ~ +85 °C	○	○	○	○	○	○	○	○		

● standard ○ available Δ excludes aging

* includes stability at 25 °C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

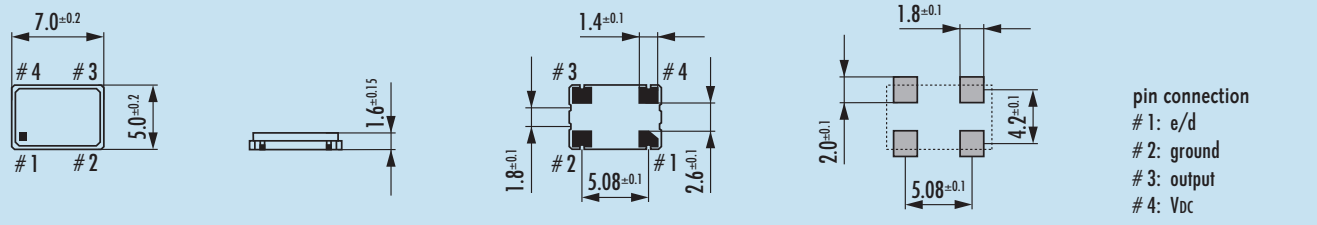
Table 2: Current Consumption max.

Current at 15pF load		Current at 30pF load	
0.5 ~ 19.9 MHz	8 mA	0.5 ~ 19.9 MHz	10 mA
20.0 ~ 49.9 MHz	15 mA	20.0 ~ 49.9 MHz	20 mA
50.0 ~ 79.9 MHz	20 mA	50.0 ~ 79.9 MHz	25 mA
80.0 ~ 99.9 MHz	30 mA	80.0 ~ 100.0 MHz	40 mA
100.0 ~ 124.9 MHz	45 mA		
125.0 ~ 165.0 MHz	60 mA		

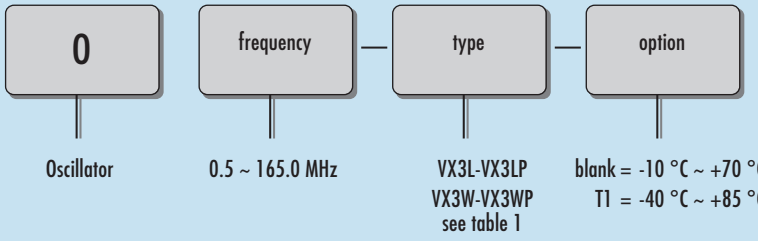
Table 3: Rise & Fall Time max.

8.0 ns: 0.5 ~ 1.79 MHz	**note:**
6.0 ns: 1.8 ~ 79.99 MHz	- specific data on request
5.0 ns: 80.0 ~ 99.99 MHz	- rise time: 0.1 V_{DC} ~ 0.9 V_{DC}
3.0 ns: 100.0 ~ 165.00 MHz	- fall time: 0.9 V_{DC} ~ 0.1 V_{DC}

Dimensions



Order Information



Example: O 100.0-VX3L (LF = RoHS compliant / Pb free pins or pads)

Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

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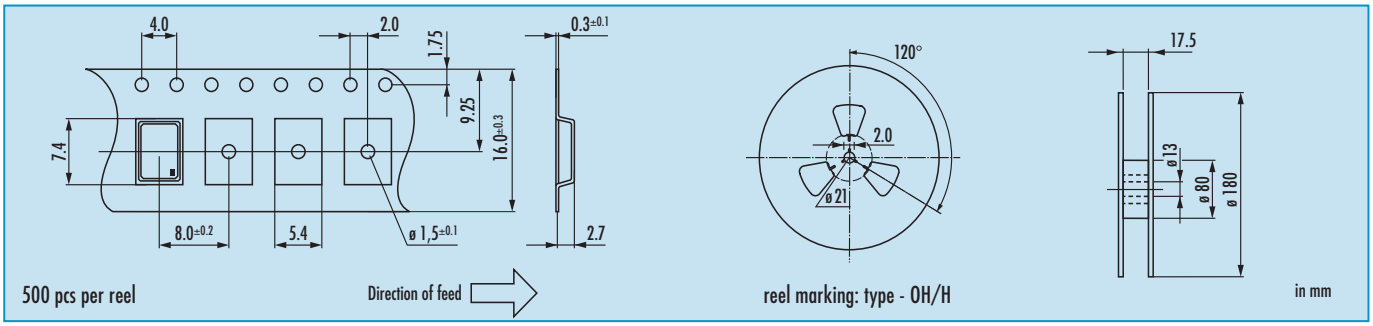
Oscillator · VX3 · 3.3 V · Stop Function

Taping Specification (JIS-C0806)



Enable / Disable Function

pin #1 (e/d control)	pin #3 (output)
open	active
high "1" ($V_{IH} \geq 0.8\ V_{DC}$)	active
low "0" ($V_{IL} \leq 0.2\ V_{DC}$)	high impedance

stop function:
- oscillator stops
- output high impedance

Marking

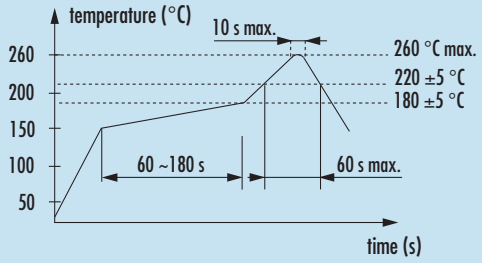
type / frequency

date code:
A ~ M: Jan.- Dec.
0: 2010
1: 2011
2: 2012

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

actual size

Oscillator · VX3 · 2.8 V

SMD Oscillator with Stop Function · 7.0 x 5.0 mm

- preferred type for extended temperature range
- reflow soldering temperature: 260 °C max.
- full ceramic package

RoHS 2002/95/EC — RoHS compliant

Pb free: pins / pads

General Data

type		VX3 2.8V
frequency range		0.50 ~ 165.0 MHz (15pF max.)
		0.50 ~ 100.0 MHz (30pF max.)
frequency stability over all*		± 20ppm ~ ± 100ppm (table 1)
current consumption		see table 2
supply voltage V_{DC}		2.8V ± 5%
temperature	operating	-10 °C ~ +70 °C / -40 °C ~ +85 °C
	storage	-55 °C ~ +125 °C
output	rise & fall time	see table 3
	load max	15pF / 30pF
	current max.	8mA
	low level max.	0.1 x V_{DC}
	high level min.	0.9 x V_{DC}
output enable time max.		10ms
output disable time max.		200ns
start-up time max.		10ms
standby function		stop
standby current max.		10µA
phase jitter 12 kHz ~ 20.0 MHz		< 1.0ps RMS
symmetry at 0.5 x V_{DC}		45% ~ 55% typ. (40% ~ 60% max.)

Table 1: Type

stability	± 100 ppm		± 50 ppm		± 30 ppm		± 25 ppm		± 20 ppm	
type VX3	**P**	**N**	**PH**	**NH**	**PS**	**NS**	**PQ**	**NQ**	**PP**	**NP**
output load	15 pF	30 pF	15 pF	30 pF	15 pF	30 pF	15 pF	30 pF	15 pF	30 pF
-10 °C ~ +70 °C	○	○	○	○	○	○	○	○	Δ	Δ
-40 °C ~ +85 °C	○	○	○	○	○	○	○	○		

● standard ○ available Δ excludes aging

* includes stability at 25 °C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

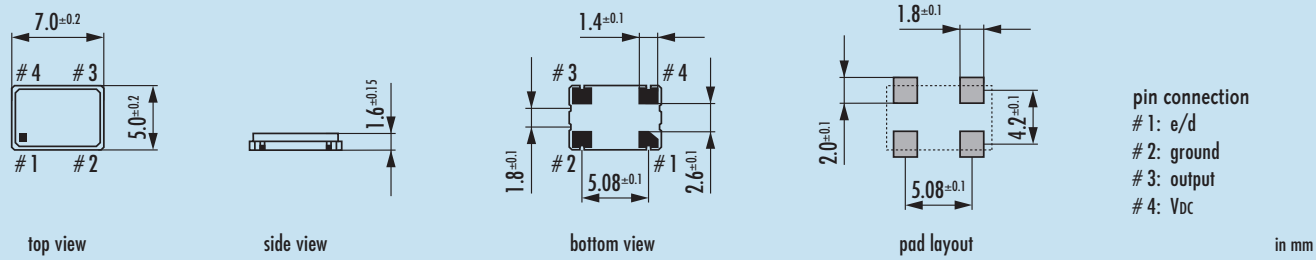
Table 2: Current Consumption max.

Current at 15pF load		Current at 30pF load	
0.5 ~ 33.9 MHz	8 mA	0.5 ~ 19.9 MHz	10 mA
34.0 ~ 49.9 MHz	12 mA	20.0 ~ 49.9 MHz	20 mA
50.0 ~ 79.9 MHz	18 mA	50.0 ~ 79.9 MHz	25 mA
80.0 ~ 99.9 MHz	30 mA	80.0 ~ 100.0 MHz	35 mA
100.0 ~ 124.9 MHz	40 mA		
125.0 ~ 165.0 MHz	60 mA		

Table 3: Rise & Fall Time max.

8.0 ns: 0.5 ~ 1.79 MHz	**note:**
6.0 ns: 1.8 ~ 79.99 MHz	- specific data on request
5.0 ns: 80.0 ~ 99.99 MHz	- rise time: 0.1 V_{DC} ~ 0.9 V_{DC}
3.0 ns: 100.0 ~ 165.00 MHz	- fall time: 0.9 V_{DC} ~ 0.1 V_{DC}

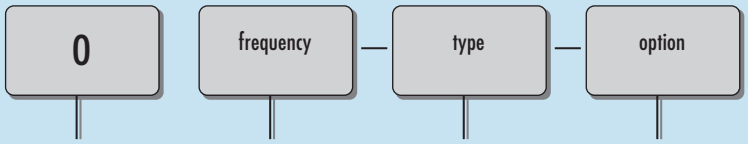
Dimensions



top view — side view — bottom view — pad layout

in mm

Order Information



Oscillator — 0.5 ~ 165.0 MHz — VX3P-VX3NP see table 1 — blank = -10 °C ~ +70 °C; T1 = -40 °C ~ +85 °C

Example: O 20.0-VX3PH (LF = RoHS compliant / Pb free pins or pads)

Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

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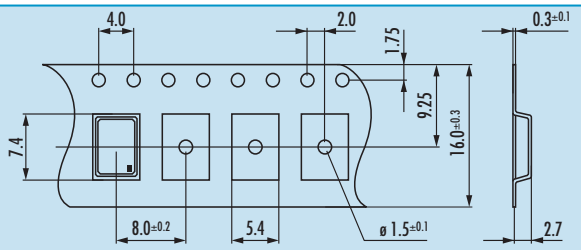
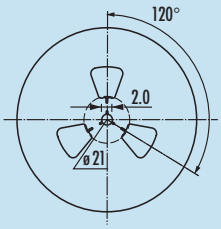
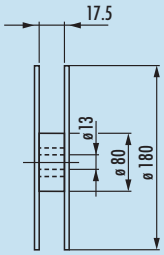
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Oscillator · VX3 · 2.8 V · Stop Function

Taping Specification (JIS-C0806)







500 pcs per reel

Direction of feed

reel marking: type - OH/H

in mm

Enable / Disable Function

pin #1 (e/d control)	pin #3 (output)
open	active
high "1" ($V_{IH} \geq 0.8\ V_{DC}$)	active
low "0" ($V_{IL} \leq 0.2\ V_{DC}$)	high impedance

stop function:
- oscillator stops
- output high impedance

Marking

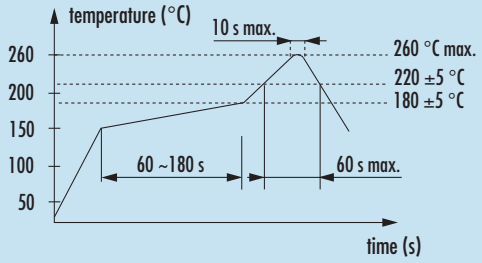
type / frequency

date code:
A ~ M: Jan.- Dec.
0: 2010
1: 2011
2: 2012

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

actual size

Oscillator · VX3 · 2.5 V

SMD Oscillator with Stop Function · 7.0 x 5.0 mm

- preferred type for extended temperature range
- reflow soldering temperature: 260 °C max.
- full ceramic package

RoHS 2002/95/EC — RoHS compliant

Pb free: pins / pads

General Data

type		VX3 2.5 V
frequency range		0.50 ~ 125.0 MHz (15pF max.)
		0.50 ~ 80.0 MHz (30pF max.)
frequency stability over all*		± 20ppm ~ ± 100ppm (table 1)
current consumption		see table 2
supply voltage V_{DC}		2.5 V ± -10%
temperature	operating	-10 °C ~ +70 °C / -40 °C ~ +85 °C
	storage	-55 °C ~ +125 °C
output	rise & fall time	see table 3
	load max	15pF / 30pF
	current max.	8mA
	low level max.	0.1 x V_{DC}
	high level min.	0.9 x V_{DC}
output enable time max.		10ms
output disable time max.		100ns
start-up time max.		10ms
standby function		stop
standby current max.		3µA
phase jitter 12 kHz ~ 20.0 MHz		< 1.0ps RMS
symmetry at 0.5 x V_{DC}		45% ~ 55% typ. (40% ~ 60% max.)

Table 1: Type

stability	± 100 ppm		± 50 ppm		± 30 ppm		± 25 ppm		± 20 ppm	
type VX3	**U**	**D**	**UH**	**DH**	**US**	**DS**	**UQ**	**DQ**	**UP**	**DP**
output load	15 pF	30 pF	15 pF	30 pF	15 pF	30 pF	15 pF	30 pF	15 pF	30 pF
-10 °C ~ +70 °C	○	○	○	○	○	○	○	○	Δ	Δ
-40 °C ~ +85 °C	○	○	○	○	○	○	○	○		

● standard ○ available Δ excludes aging

* includes stability at 25 °C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

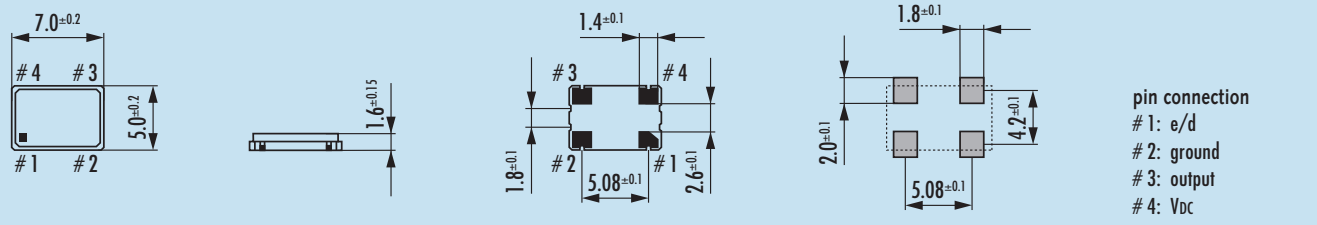
Table 2: Current Consumption max.

Current at 15pF load		Current at 30pF load	
0.5 ~ 33.9 MHz	7 mA	0.5 ~ 19.9 MHz	9 mA
34.0 ~ 49.9 MHz	11 mA	20.0 ~ 49.9 MHz	15 mA
50.0 ~ 79.9 MHz	17 mA	50.0 ~ 80.0 MHz	20 mA
80.0 ~ 125.0 MHz	30 mA		

Table 3: Rise & Fall Time max.

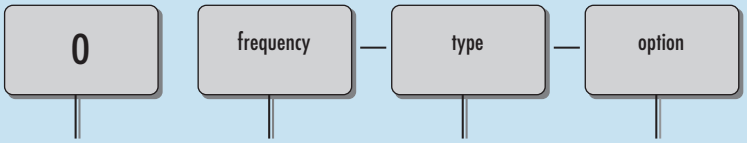
8.0 ns: 0.5 ~ 1.79 MHz 6.0 ns: 1.8 ~ 79.99 MHz 5.0 ns: 80.0 ~ 99.99 MHz 3.0 ns: 100.0 ~ 125.00 MHz	**note:** - specific data on request - rise time: 0.1 V_{DC} ~ 0.9 V_{DC} - fall time: 0.9 V_{DC} ~ 0.1 V_{DC}

Dimensions



top view — side view — bottom view — pad layout — in mm

Order Information



Oscillator — 0.5 ~ 125.0 MHz — VX3U-VX3DP see table 1 — blank = -10 °C ~ +70 °C; T1 = -40 °C ~ +85 °C

Example: O 20.0-VX3UH (LF = RoHS compliant / Pb free pins or pads)

Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

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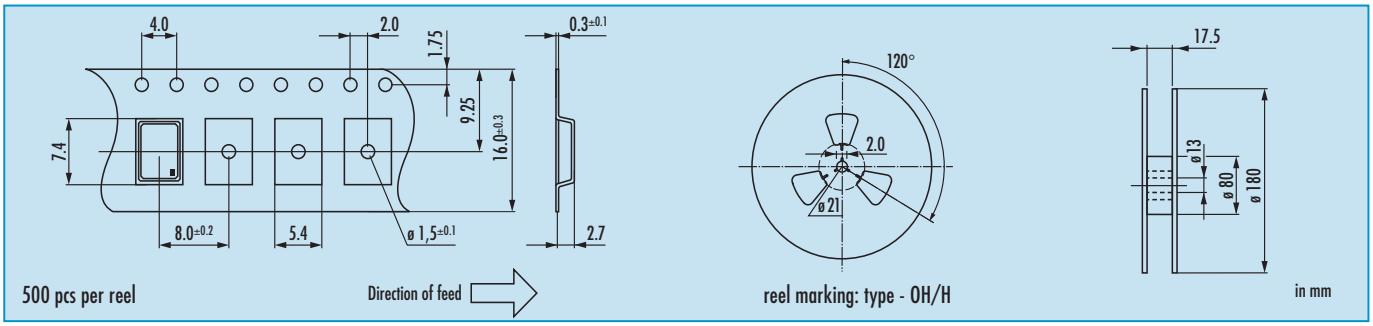
Oscillator · VX3 · 2.5 V · Stop Function

Taping Specification (JIS-C0806)



Enable / Disable Function

pin #1 (e/d control)	pin #3 (output)
open	active
high "1" ($V_{IH} \geq 0.8\ V_{DC}$)	active
low "0" ($V_{IL} \leq 0.2\ V_{DC}$)	high impedance

stop function:
- oscillator stops
- output high impedance

Marking

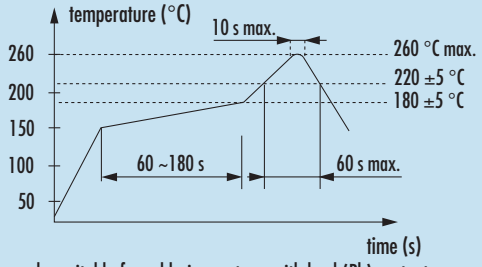
type / frequency

date code:
A ~ M: Jan.- Dec.
0: 2010
1: 2011
2: 2012

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

actual size

Oscillator · VX3 · 1.8 V

SMD Oscillator with Stop Function · 7.0 x 5.0 mm

- preferred type for extended temperature range
- reflow soldering temperature: 260 °C max.
- full ceramic package

RoHS 2002/95/EC
RoHS compliant

Pb free: pins / pads

General Data

type		VX3 1.8 V
frequency range		0.5 ~ 40.0 MHz
higher frequencies on request		40.1 ~ 125.0 MHz
frequency stability over all*		± 20ppm ~ ± 100ppm
		see table 1
current consumption		see table 2
supply voltage V_{DC}		1.8V ± 10%
temperature	operating	-10 °C ~ +70 °C / -40 °C ~ +85 °C
	storage	-55 °C ~ +125 °C
output	rise & fall time	see table 3
	load max	30pF
	current max.	2.8mA (<40MHz) / 8.0mA (>40MHz)
	low level max.	0.1 x V_{DC}
	high level min.	0.9 x V_{DC}
output enable time max.		10ms
output disable time max.		200ns
start-up time max.		10ms
standby function		stop
standby current max.		10µA (<40MHz) / 100µA (>40MHz)
phase jitter 12 kHz ~ 20.0 MHz		< 1.0ps RMS
symmetry at 0.5 x V_{DC}		45% ~ 55% typ. (40% ~ 60% max.)

Table 1: Type

stability	± 100 ppm	± 50 ppm	± 30 ppm	± 25 ppm	± 20 ppm
type VX3	**V**	**VH**	**VS**	**VQ**	**VP**
output load	30 pF	30 pF	30 pF	30 pF	30 pF
-10 °C ~ +70 °C	○	○	○	○	Δ
-40 °C ~ +85 °C	○	○	○	○	

● standard ○ available Δ excludes aging

* includes stability at 25 °C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption max.

Current at 30pF load

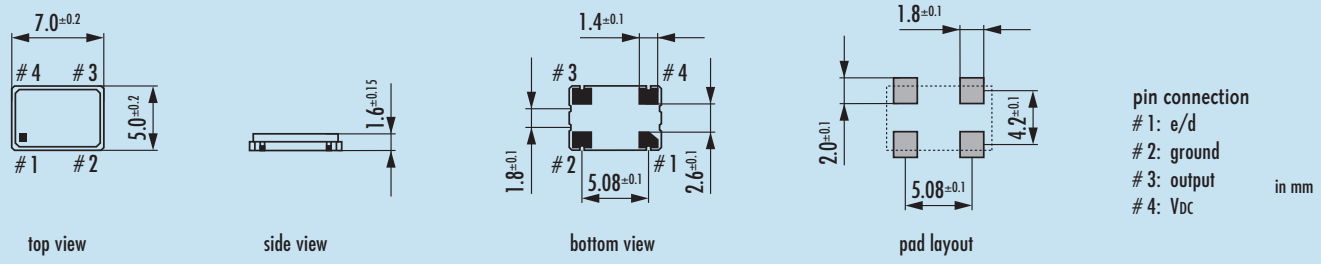
0.50 ~ 19.9 MHz	7 mA
20.0 ~ 39.9 MHz	10 mA
40.0 ~ 69.9 MHz	18 mA
70.0 ~ 94.9 MHz	25 mA
95.0 ~ 125.0 MHz	30 mA

Table 3: Rise & Fall Time max.

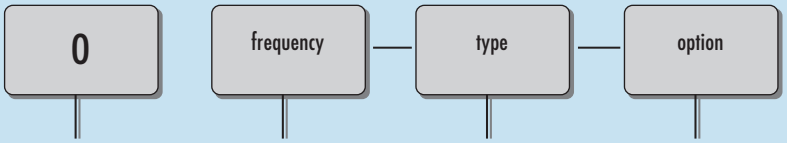
8.0 ns:	0.5 ~ 1.79 MHz
6.0 ns:	1.8 ~ 69.90 MHz
5.0 ns:	70.00 ~ 99.90 MHz
4.0 ns:	100.00 ~ 125.00 MHz

note:
- specific data on request
- rise time: 0.1 V_{DC} ~ 0.9 V_{DC}
- fall time: 0.9 V_{DC} ~ 0.1 V_{DC}

Dimensions



Order Information



Example: O 20.0-VX3VH (LF = RoHS compliant / Pb free pins or pads)

Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

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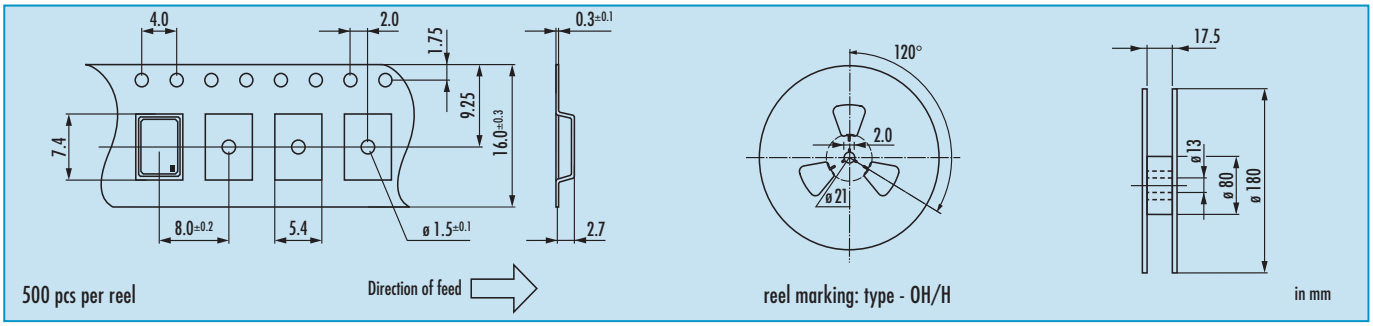
Oscillator · VX3 · 1.8 V · Stop Function

Taping Specification (JIS-C0806)



Enable / Disable Function

pin #1 (e/d control)	pin #3 (output)
open	active
high "1" ($V_{IH} \geq 0.8\ V_{DC}$)	active
low "0" ($V_{IL} \leq 0.2\ V_{DC}$)	high impedance

stop function:
- oscillator stops
- output high impedance

Marking

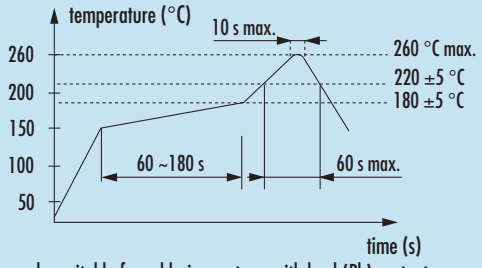
type / frequency

date code:
A ~ M: Jan.- Dec.
0: 2010
1: 2011
2: 2012

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

actual size

Programmed Oscillator · JPO22 · 3.3/2.5/1.8 V

Programmed SMD CMOS Oscillator · 2.5 x 2.0 mm

- fast delivery service
- tristate or stop function available
- reflow soldering temperature: 260 °C max.
- RoHS compliant, ceramic/metal package

RoHS 2002/95/EC — RoHS compliant

Pb free: pins / pads

General Data

type		JPO22 3.3 V / 2.5 V / 1.8 V
frequency range		3.0 ~ 200.0 MHz (3.3 V, 15 pF)
		3.0 ~ 130.0 MHz (2.5 V, 15 pF)
		3.0 ~ 100.0 MHz (1.8 V, 15 pF)
		3.0 ~ 50.0 MHz (3.3 V / 2.5 V / 1.8 V, 30 pF)
frequency stability over all*		± 25 ppm ~ ± 100 ppm (see table 1)
current consumption		see table 2
supply voltage V_{DC}		3.3 V / 2.5 V / 1.8 V ± 10%
temperature	operating	-20 °C ~ +70 °C / -40 °C ~ +85 °C
	storage	-55 °C ~ +125 °C
output	rise & fall time	see table 3
	load max.	15 pF / 30 pF
	current max.	8 mA (3.3 V) / 4 mA (2.5 V) / 2 mA (1.8 V)
	low level max.	0.4 V
	high level min.	V_{DC} - 0.4 V
standby function		tristate (TRI) / stop (STP)
output enable time max.		100 ns (TRI) / 10 ms (STP)
output disable time max.		250 ns
start-up time max.		10 ms
standby current max.		10 µA (STP version only)
symmetry at 0.5 x V_{DC}		45% ~ 55% typ. (40% ~ 60% max.)

Table 1: Frequency Stability Code

stability code	A ± 100 ppm	B ± 50 ppm	G ± 30 ppm	C ± 25 ppm
-20 °C ~ +70 °C	○	○	○	○
-40 °C ~ +85 °C	○	○	○	○
○ available				

* includes stability at 25 °C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption max.

frequency range	V_{DC} = 3.3 V	V_{DC} = 2.5 V	V_{DC} = 1.8 V	load
3.0 ~ 50.0 MHz	18 mA	15 mA	8 mA	30 pf
3.0 ~ 100.0 MHz	17 mA	12 mA	8 mA	15 pf
100.0 ~ 130.0 MHz	20 mA	16 mA	–	15 pf
130.0 ~ 200.0 MHz	25 mA	–	–	15 pf

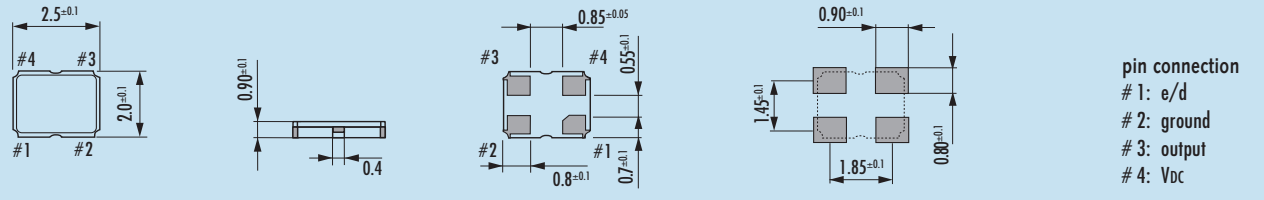
* a ceramics capacitor of 100nF between pin #2 and pin #4 with short distance wiring is strongly recommended

Table 3: Rise & fall time max.

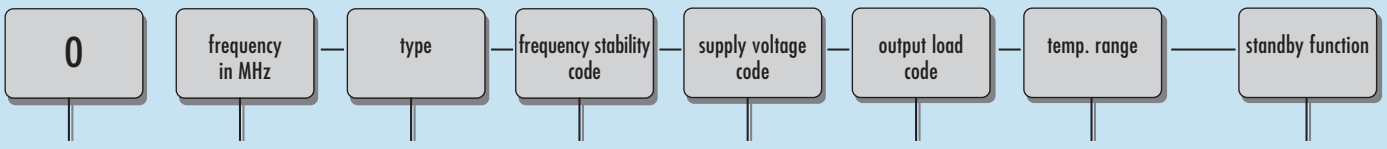
6 ns: 3.0 ~ 50.0 MHz at 30 pF / 1.8 V
5 ns: 3.0 ~ 50.0 MHz at 30 pF / 3.3 V & 2.5 V
4 ns: 3.0 ~ 100.0 MHz at 15 pF / 3.3 V & 2.5 V & 1.8 V
3 ns: 100.0 ~ 130.0 MHz at 15 pF / 2.5 V & 3.3 V
2 ns: 130.0 ~ 200.0 MHz at 15 pF / 3.3 V

note:
- specific data on request
- rise time: 0.1 V_{DC} ~ 0.9 V_{DC}
- fall time: 0.9 V_{DC} ~ 0.1 V_{DC}

Dimensions



Order Information



Example: O 125.0-JPO22-B-2.5-1-T1-STP-LF (LF = RoHS compliant / Pb free pins or pads)

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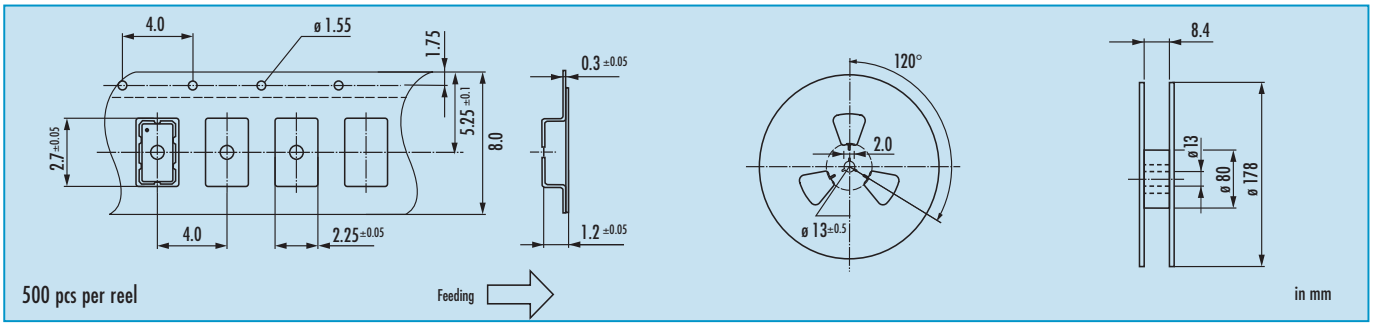
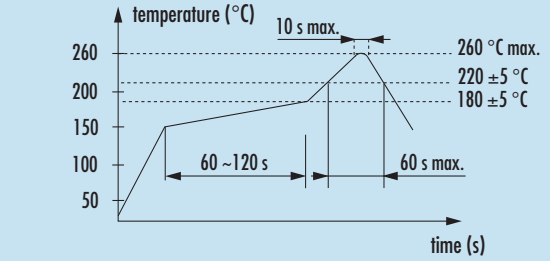
Programmed Oscillator · JPO22 · 3.3/2.5/1.8 V

Taping specification



Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

Marking (optional)

JPO / year / month / internal code

date code:

A ~ M: Jan. - Dec.

1: 2011 4: 2014

2: 2012 5: 2015

3: 2013 6: 2016

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

Enable / Disable Function

pin #1 (e/d control)	pin #3 (output, STP)	pin #3 (output, TRI)
open	active	active
high "1" ($V_{IH} \geq 0.7\ V_{DC}$)	active	active
low "0" ($V_{IL} \leq 0.3\ V_{DC}$)	stop, high impedance	high impedance
	stop (STP) function: • oscillator stops • output high impedance	**tristate (TRI) function:** • oscillator active • output high impedance

actual size

Programmed Oscillator · JPO22 · 3.3/2.5/1.8 V

Programmed SMD CMOS Oscillator · 2.5 x 2.0 mm

- fast delivery service
- tristate or stop function available
- reflow soldering temperature: 260 °C max.
- RoHS compliant, ceramic/metal package

RoHS 2002/95/EC — RoHS compliant

Pb free: pins / pads

General Data

type		JPO22 3.3 V / 2.5 V / 1.8 V
frequency range		3.0 ~ 200.0 MHz (3.3 V, 15 pF)
		3.0 ~ 130.0 MHz (2.5 V, 15 pF)
		3.0 ~ 100.0 MHz (1.8 V, 15 pF)
		3.0 ~ 50.0 MHz (3.3 V / 2.5 V / 1.8 V, 30 pF)
frequency stability over all*		± 25 ppm ~ ± 100 ppm (see table 1)
current consumption		see table 2
supply voltage V_{DC}		3.3 V / 2.5 V / 1.8 V ± 10%
temperature	operating	-20 °C ~ +70 °C / -40 °C ~ +85 °C
	storage	-55 °C ~ +125 °C
output	rise & fall time	see table 3
	load max.	15 pF / 30 pF
	current max.	8 mA (3.3 V) / 4 mA (2.5 V) / 2 mA (1.8 V)
	low level max.	0.4 V
	high level min.	V_{DC} - 0.4 V
standby function		tristate (TRI) / stop (STP)
output enable time max.		100 ns (TRI) / 10 ms (STP)
output disable time max.		250 ns
start-up time max.		10 ms
standby current max.		10 µA (STP version only)
symmetry at 0.5 x V_{DC}		45% ~ 55% typ. (40% ~ 60% max.)

Table 1: Frequency Stability Code

stability code	A ± 100 ppm	B ± 50 ppm	G ± 30 ppm	C ± 25 ppm
-20 °C ~ +70 °C	O	O	O	O
-40 °C ~ +85 °C	O	O	O	O

O available

* includes stability at 25 °C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption max.

frequency range	V_{DC} = 3.3 V	V_{DC} = 2.5 V	V_{DC} = 1.8 V	load
3.0 ~ 50.0 MHz	18 mA	15 mA	8 mA	30 pf
3.0 ~ 100.0 MHz	17 mA	12 mA	8 mA	15 pf
100.0 ~ 130.0 MHz	20 mA	16 mA	–	15 pf
130.0 ~ 200.0 MHz	25 mA	–	–	15 pf

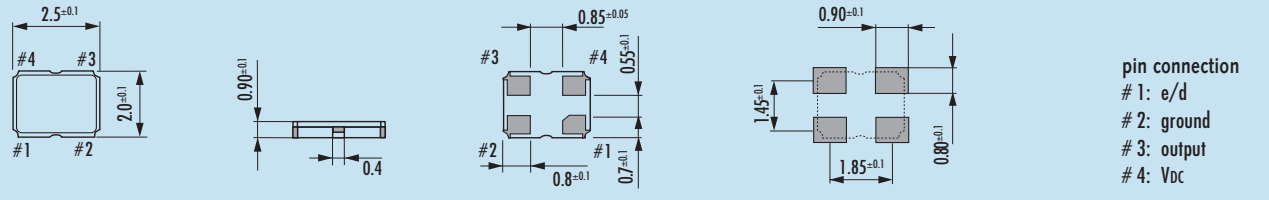
* a ceramics capacitor of 100nF between pin #2 and pin #4 with short distance wiring is strongly recommended

Table 3: Rise & fall time max.

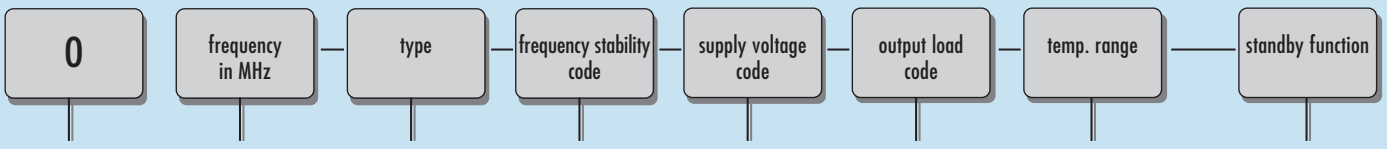
6 ns: 3.0 ~ 50.0 MHz at 30 pF / 1.8 V
5 ns: 3.0 ~ 50.0 MHz at 30 pF / 3.3 V & 2.5 V
4 ns: 3.0 ~ 100.0 MHz at 15 pF / 3.3 V & 2.5 V & 1.8 V
3 ns: 100.0 ~ 130.0 MHz at 15 pF / 2.5 V & 3.3 V
2 ns: 130.0 ~ 200.0 MHz at 15 pF / 3.3 V

note:
- specific data on request
- rise time: 0.1 V_{DC} ~ 0.9 V_{DC}
- fall time: 0.9 V_{DC} ~ 0.1 V_{DC}

Dimensions



Order Information



Example: O 125.0-JPO22-B-2.5-1-T1-STP-LF (LF = RoHS compliant / Pb free pins or pads)

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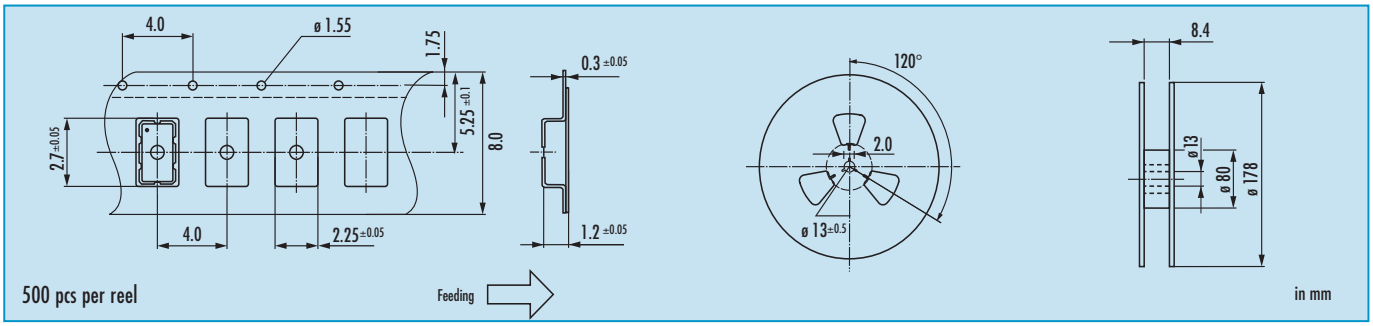
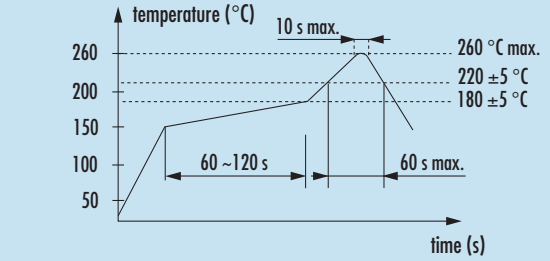
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Taping specification



Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

Marking (optional)

JPO / year / month / internal code

date code:

A ~ M: Jan. - Dec.

1: 2011 4: 2014

2: 2012 5: 2015

3: 2013 6: 2016

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

Enable / Disable Function

pin #1 (e/d control)	pin #3 (output, STP)	pin #3 (output, TRI)
open	active	active
high "1" ($V_{IH} \geq 0.7\ V_{DC}$)	active	active
low "0" ($V_{IL} \leq 0.3\ V_{DC}$)	stop, high impedance	high impedance
	stop (STP) function: • oscillator stops • output high impedance	**tristate (TRI) function:** • oscillator active • output high impedance

actual size

Programmed Oscillator · JPO22 · 3.3/2.5/1.8 V

Programmed SMD CMOS Oscillator · 2.5 x 2.0 mm

- fast delivery service
- tristate or stop function available
- reflow soldering temperature: 260 °C max.
- RoHS compliant, ceramic/metal package

RoHS 2002/95/EC — RoHS compliant

Pb free: pins / pads

General Data

type		JPO22 3.3 V / 2.5 V / 1.8 V
frequency range		3.0 ~ 200.0 MHz (3.3 V, 15 pF)
		3.0 ~ 130.0 MHz (2.5 V, 15 pF)
		3.0 ~ 100.0 MHz (1.8 V, 15 pF)
		3.0 ~ 50.0 MHz (3.3 V / 2.5 V / 1.8 V, 30 pF)
frequency stability over all*		± 25 ppm ~ ± 100 ppm (see table 1)
current consumption		see table 2
supply voltage V_{DC}		3.3 V / 2.5 V / 1.8 V ± 10%
temperature	operating	-20 °C ~ +70 °C / -40 °C ~ +85 °C
	storage	-55 °C ~ +125 °C
output	rise & fall time	see table 3
	load max.	15 pF / 30 pF
	current max.	8 mA (3.3 V) / 4 mA (2.5 V) / 2 mA (1.8 V)
	low level max.	0.4 V
	high level min.	V_{DC} - 0.4 V
standby function		tristate (TRI) / stop (STP)
output enable time max.		100 ns (TRI) / 10 ms (STP)
output disable time max.		250 ns
start-up time max.		10 ms
standby current max.		10 µA (STP version only)
symmetry at 0.5 x V_{DC}		45% ~ 55% typ. (40% ~ 60% max.)

Table 1: Frequency Stability Code

stability code	A ± 100 ppm	B ± 50 ppm	G ± 30 ppm	C ± 25 ppm
-20 °C ~ +70 °C	O	O	O	O
-40 °C ~ +85 °C	O	O	O	O

O available

* includes stability at 25 °C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption max.

frequency range	V_{DC} = 3.3 V	V_{DC} = 2.5 V	V_{DC} = 1.8 V	load
3.0 ~ 50.0 MHz	18 mA	15 mA	8 mA	30 pf
3.0 ~ 100.0 MHz	17 mA	12 mA	8 mA	15 pf
100.0 ~ 130.0 MHz	20 mA	16 mA	–	15 pf
130.0 ~ 200.0 MHz	25 mA	–	–	15 pf

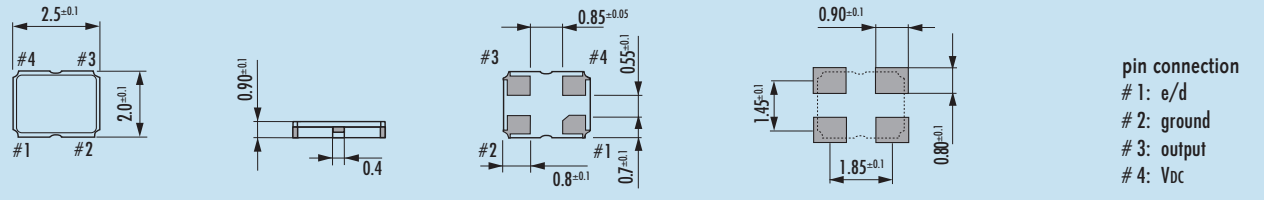
* a ceramics capacitor of 100nF between pin #2 and pin #4 with short distance wiring is strongly recommended

Table 3: Rise & fall time max.

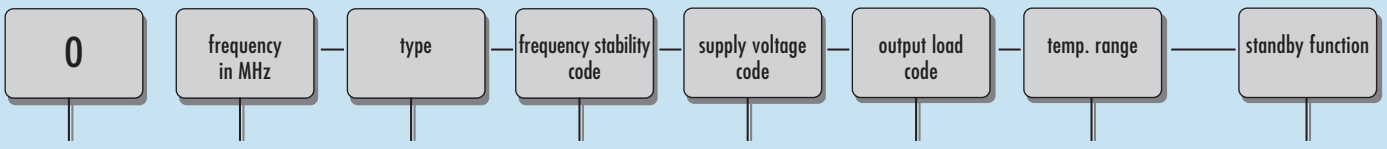
6 ns: 3.0 ~ 50.0 MHz at 30 pF / 1.8 V
5 ns: 3.0 ~ 50.0 MHz at 30 pF / 3.3 V & 2.5 V
4 ns: 3.0 ~ 100.0 MHz at 15 pF / 3.3 V & 2.5 V & 1.8 V
3 ns: 100.0 ~ 130.0 MHz at 15 pF / 2.5 V & 3.3 V
2 ns: 130.0 ~ 200.0 MHz at 15 pF / 3.3 V

note:
- specific data on request
- rise time: 0.1 V_{DC} ~ 0.9 V_{DC}
- fall time: 0.9 V_{DC} ~ 0.1 V_{DC}

Dimensions



Order Information



Example: O 125.0-JPO22-B-2.5-1-T1-STP-LF (LF = RoHS compliant / Pb free pins or pads)

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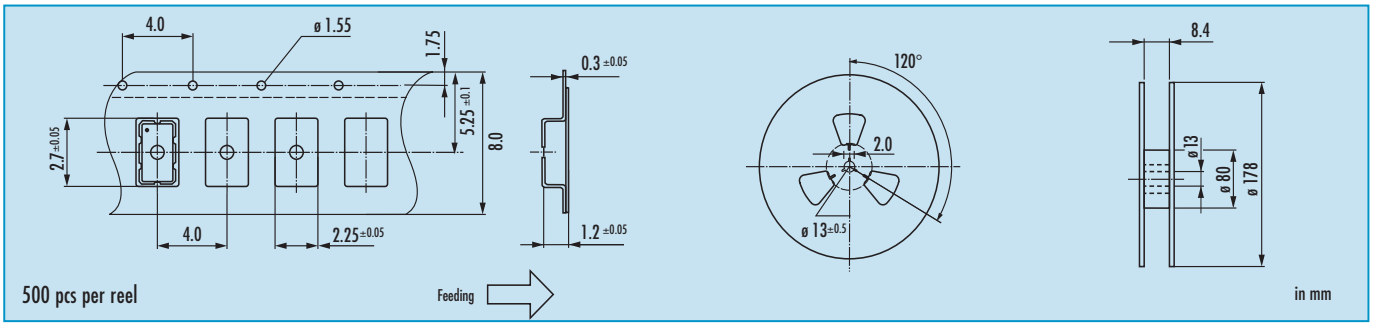
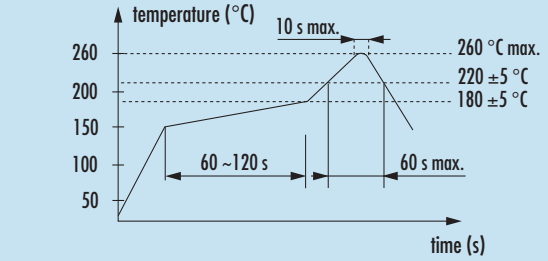
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Taping specification



Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

Marking (optional)

JPO / year / month / internal code

date code:

A ~ M: Jan. - Dec.

1: 2011 4: 2014

2: 2012 5: 2015

3: 2013 6: 2016

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

Enable / Disable Function

pin #1 (e/d control)	pin #3 (output, STP)	pin #3 (output, TRI)
open	active	active
high "1" ($V_{IH} \geq 0.7\ V_{DC}$)	active	active
low "0" ($V_{IL} \leq 0.3\ V_{DC}$)	stop, high impedance	high impedance
	stop (STP) function: • oscillator stops • output high impedance	**tristate (TRI) function:** • oscillator active • output high impedance

actual size

Programmed Oscillator · JPO32 · 3.3/2.5/1.8 V

Programmed SMD CMOS Oscillator · 3.2 x 2.5 mm

- fast delivery service
- tristate or stop function available
- reflow soldering temperature: 260 °C max.
- RoHS compliant, ceramic/metal package

RoHS 2002/95/EC — RoHS compliant

Pb free: pins / pads

General Data

type		JPO32 3.3 V / 2.5 V / 1.8 V
frequency range		3.0 ~ 200.0 MHz (3.3 V, 15 pF)
		3.0 ~ 130.0 MHz (2.5 V, 15 pF)
		3.0 ~ 100.0 MHz (1.8 V, 15 pF)
		3.0 ~ 50.0 MHz (3.3 V / 2.5 V / 1.8 V, 30 pF)
frequency stability over all*		± 25 ppm ~ ± 100 ppm (see table 1)
current consumption		see table 2
supply voltage V_{DC}		3.3 V / 2.5 V / 1.8 V ± 10%
temperature	operating	-20 °C ~ +70 °C / -40 °C ~ +85 °C
	storage	-55 °C ~ +125 °C
output	rise & fall time	see table 3
	load max.	15 pF / 30 pF
	current max.	8 mA (3.3 V) / 4 mA (2.5 V) / 2 mA (1.8 V)
	low level max.	0.4 V
	high level min.	V_{DC} - 0.4 V
standby function		tristate (TRI) / stop (STP)
output enable time max.		100 ns (TRI) / 10 ms (STP)
output disable time max.		250 ns
start-up time max.		10 ms
standby current max.		10 µA (STP version only)
symmetry at 0.5 x V_{DC}		45% ~ 55% typ. (40% ~ 60% max.)

Table 1: Frequency Stability Code

stability code	A ± 100 ppm	B ± 50 ppm	G ± 30 ppm	C ± 25 ppm
-20 °C ~ +70 °C	○	○	○	○
-40 °C ~ +85 °C	○	○	○	○

○ available

* includes stability at 25 °C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption max.

frequency range	V_{DC} = 3.3 V	V_{DC} = 2.5 V	V_{DC} = 1.8 V	load
3.0 ~ 50.0 MHz	18 mA	15 mA	8 mA	30 pf
3.0 ~ 100.0 MHz	17 mA	12 mA	8 mA	15 pf
100.0 ~ 130.0 MHz	20 mA	16 mA	–	15 pf
130.0 ~ 200.0 MHz	25 mA	–	–	15 pf

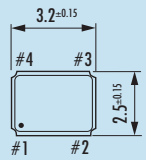
* a ceramics capacitor of 100nF between pin #2 and pin #4 with short distance wiring is strongly recommended

Table 3: Rise & fall time max.

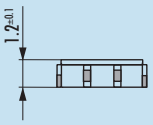
6 ns: 3.0 ~ 50.0 MHz at 30 pF / 1.8 V
5 ns: 3.0 ~ 50.0 MHz at 30 pF / 3.3 V & 2.5 V
4 ns: 3.0 ~ 100.0 MHz at 15 pF / 3.3 V & 2.5 V & 1.8 V
3 ns: 100.0 ~ 130.0 MHz at 15 pF / 2.5 V & 3.3 V
2 ns: 130.0 ~ 200.0 MHz at 15 pF / 3.3 V

note:
- specific data on request
- rise time: 0.1 V_{DC} ~ 0.9 V_{DC}
- fall time: 0.9 V_{DC} ~ 0.1 V_{DC}

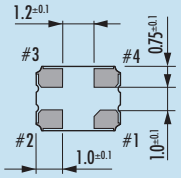
Dimensions



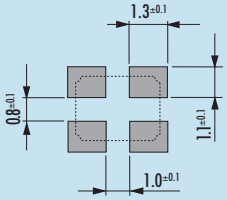
top view



side view



bottom view



pad layout

pin connection
1: e/d
2: ground
3: output
4: V_{DC}

in mm

Order Information

0 — frequency in MHz — type — frequency stability code — supply voltage code — output load code — temp. range — standby function

Oscillator	3.0 ~ 200.0 MHz (3.3 V) 3.0 ~ 130.0 MHz (2.5 V) 3.0 ~ 100.0 MHz (1.8 V)	JPO32	see table 1	3.3 = 3.3 V 2.5 = 2.5 V 1.8 = 1.8 V	1 = 15 pF 2 = 30 pF	blank = -20 °C ~ +70 °C T1 = -40 °C ~ +85 °C	STP = stop function TRI = tristate function

Example: O 125.0-JPO32-B-2.5-1-T1-STP-LF (LF = RoHS compliant / Pb free pins or pads)

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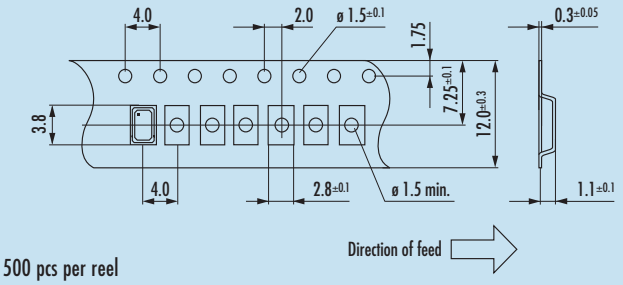
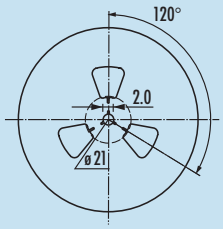
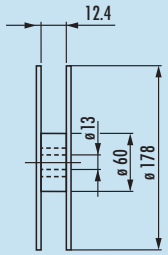
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Taping specification



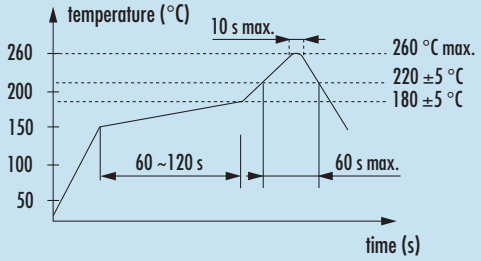




500 pcs per reel

in mm

Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

Marking (optional)

JPO / year / month / internal code

date code:

A ~ M: Jan. - Dec.

1: 2011 4: 2014

2: 2012 5: 2015

3: 2013 6: 2016

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

Enable / Disable Function

pin #1 (e/d control)	pin #3 (output, STP)	pin #3 (output, TRI)
open	active	active
high "1" ($V_{IH} \geq 0.7\ V_{DC}$)	active	active
low "0" ($V_{IL} \leq 0.3\ V_{DC}$)	stop, high impedance	high impedance
	stop (STP) function: • oscillator stops • output high impedance	**tristate (TRI) function:** • oscillator active • output high impedance

actual size

Programmed Oscillator · JPO32 · 3.3/2.5/1.8 V

Programmed SMD CMOS Oscillator · 3.2 x 2.5 mm

- fast delivery service
- tristate or stop function available
- reflow soldering temperature: 260 °C max.
- RoHS compliant, ceramic/metal package

RoHS 2002/95/EC — RoHS compliant

Pb free: pins / pads

General Data

type		JPO32 3.3 V / 2.5 V / 1.8 V
frequency range		3.0 ~ 200.0 MHz (3.3 V, 15 pF)
		3.0 ~ 130.0 MHz (2.5 V, 15 pF)
		3.0 ~ 100.0 MHz (1.8 V, 15 pF)
		3.0 ~ 50.0 MHz (3.3 V / 2.5 V / 1.8 V, 30 pF)
frequency stability over all*		± 25 ppm ~ ± 100 ppm (see table 1)
current consumption		see table 2
supply voltage V_{DC}		3.3 V / 2.5 V / 1.8 V ± 10%
temperature	operating	-20 °C ~ +70 °C / -40 °C ~ +85 °C
	storage	-55 °C ~ +125 °C
output	rise & fall time	see table 3
	load max.	15 pF / 30 pF
	current max.	8 mA (3.3 V) / 4 mA (2.5 V) / 2 mA (1.8 V)
	low level max.	0.4 V
	high level min.	V_{DC} - 0.4 V
standby function		tristate (TRI) / stop (STP)
output enable time max.		100 ns (TRI) / 10 ms (STP)
output disable time max.		250 ns
start-up time max.		10 ms
standby current max.		10 µA (STP version only)
symmetry at 0.5 x V_{DC}		45% ~ 55% typ. (40% ~ 60% max.)

Table 1: Frequency Stability Code

stability code	A ± 100 ppm	B ± 50 ppm	G ± 30 ppm	C ± 25 ppm
-20 °C ~ +70 °C	○	○	○	○
-40 °C ~ +85 °C	○	○	○	○

○ available

* includes stability at 25 °C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption max.

frequency range	V_{DC} = 3.3 V	V_{DC} = 2.5 V	V_{DC} = 1.8 V	load
3.0 ~ 50.0 MHz	18 mA	15 mA	8 mA	30 pf
3.0 ~ 100.0 MHz	17 mA	12 mA	8 mA	15 pf
100.0 ~ 130.0 MHz	20 mA	16 mA	–	15 pf
130.0 ~ 200.0 MHz	25 mA	–	–	15 pf

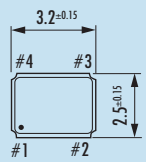
* a ceramics capacitor of 100nF between pin #2 and pin #4 with short distance wiring is strongly recommended

Table 3: Rise & fall time max.

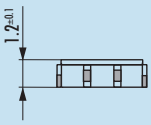
6 ns: 3.0 ~ 50.0 MHz at 30 pF / 1.8 V
5 ns: 3.0 ~ 50.0 MHz at 30 pF / 3.3 V & 2.5 V
4 ns: 3.0 ~ 100.0 MHz at 15 pF / 3.3 V & 2.5 V & 1.8 V
3 ns: 100.0 ~ 130.0 MHz at 15 pF / 2.5 V & 3.3 V
2 ns: 130.0 ~ 200.0 MHz at 15 pF / 3.3 V

note:
- specific data on request
- rise time: 0.1 V_{DC} ~ 0.9 V_{DC}
- fall time: 0.9 V_{DC} ~ 0.1 V_{DC}

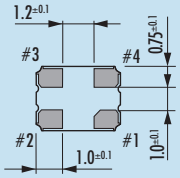
Dimensions



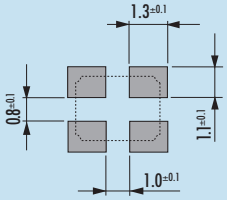
top view



side view



bottom view



pad layout

pin connection
1: e/d
2: ground
3: output
4: V_{DC}

in mm

Order Information

0 — frequency in MHz — type — frequency stability code — supply voltage code — output load code — temp. range — standby function

Oscillator	3.0 ~ 200.0 MHz (3.3 V) 3.0 ~ 130.0 MHz (2.5 V) 3.0 ~ 100.0 MHz (1.8 V)	JPO32	see table 1	3.3 = 3.3 V 2.5 = 2.5 V 1.8 = 1.8 V	1 = 15 pF 2 = 30 pF	blank = -20 °C ~ +70 °C T1 = -40 °C ~ +85 °C	STP = stop function TRI = tristate function

Example: O 125.0-JPO32-B-2.5-1-T1-STP-LF (LF = RoHS compliant / Pb free pins or pads)

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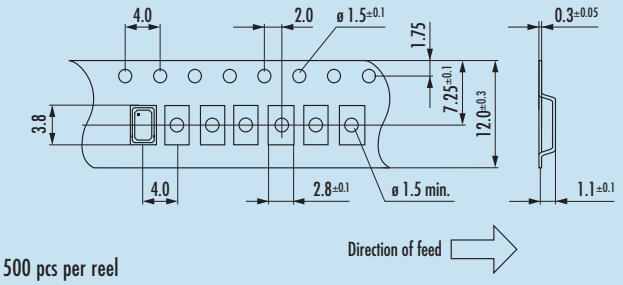
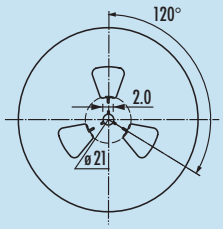
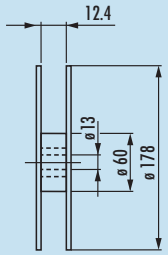
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Taping specification



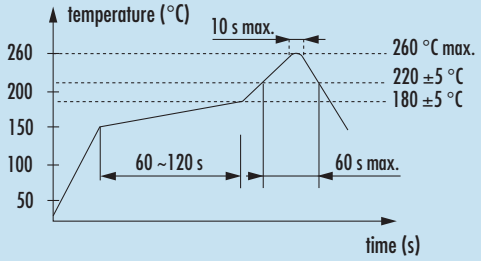




500 pcs per reel

in mm

Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

Marking (optional)

JPO / year / month / internal code

date code:

A ~ M: Jan. - Dec.

1: 2011 4: 2014

2: 2012 5: 2015

3: 2013 6: 2016

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

Enable / Disable Function

pin #1 (e/d control)	pin #3 (output, STP)	pin #3 (output, TRI)
open	active	active
high "1" ($V_{IH} \geq 0.7\ V_{DC}$)	active	active
low "0" ($V_{IL} \leq 0.3\ V_{DC}$)	stop, high impedance	high impedance
	stop (STP) function: • oscillator stops • output high impedance	**tristate (TRI) function:** • oscillator active • output high impedance

actual size

Programmed Oscillator · JPO32 · 3.3/2.5/1.8 V

Programmed SMD CMOS Oscillator · 3.2 x 2.5 mm

- fast delivery service
- tristate or stop function available
- reflow soldering temperature: 260 °C max.
- RoHS compliant, ceramic/metal package

RoHS 2002/95/EC — RoHS compliant

Pb free: pins / pads

General Data

type		JPO32 3.3 V / 2.5 V / 1.8 V
frequency range		3.0 ~ 200.0 MHz (3.3 V, 15 pF)
		3.0 ~ 130.0 MHz (2.5 V, 15 pF)
		3.0 ~ 100.0 MHz (1.8 V, 15 pF)
		3.0 ~ 50.0 MHz (3.3 V / 2.5 V / 1.8 V, 30 pF)
frequency stability over all*		± 25 ppm ~ ± 100 ppm (see table 1)
current consumption		see table 2
supply voltage V_{DC}		3.3 V / 2.5 V / 1.8 V ± 10%
temperature	operating	-20 °C ~ +70 °C / -40 °C ~ +85 °C
	storage	-55 °C ~ +125 °C
output	rise & fall time	see table 3
	load max.	15 pF / 30 pF
	current max.	8 mA (3.3 V) / 4 mA (2.5 V) / 2 mA (1.8 V)
	low level max.	0.4 V
	high level min.	V_{DC} - 0.4 V
standby function		tristate (TRI) / stop (STP)
output enable time max.		100 ns (TRI) / 10 ms (STP)
output disable time max.		250 ns
start-up time max.		10 ms
standby current max.		10 µA (STP version only)
symmetry at 0.5 x V_{DC}		45% ~ 55% typ. (40% ~ 60% max.)

Table 1: Frequency Stability Code

stability code	A ± 100 ppm	B ± 50 ppm	G ± 30 ppm	C ± 25 ppm
-20 °C ~ +70 °C	○	○	○	○
-40 °C ~ +85 °C	○	○	○	○

○ available

* includes stability at 25 °C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption max.

frequency range	V_{DC} = 3.3 V	V_{DC} = 2.5 V	V_{DC} = 1.8 V	load
3.0 ~ 50.0 MHz	18 mA	15 mA	8 mA	30 pf
3.0 ~ 100.0 MHz	17 mA	12 mA	8 mA	15 pf
100.0 ~ 130.0 MHz	20 mA	16 mA	–	15 pf
130.0 ~ 200.0 MHz	25 mA	–	–	15 pf

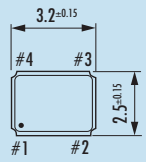
* a ceramics capacitor of 100nF between pin #2 and pin #4 with short distance wiring is strongly recommended

Table 3: Rise & fall time max.

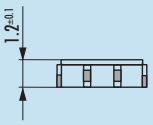
6 ns: 3.0 ~ 50.0 MHz at 30 pF / 1.8 V
5 ns: 3.0 ~ 50.0 MHz at 30 pF / 3.3 V & 2.5 V
4 ns: 3.0 ~ 100.0 MHz at 15 pF / 3.3 V & 2.5 V & 1.8 V
3 ns: 100.0 ~ 130.0 MHz at 15 pF / 2.5 V & 3.3 V
2 ns: 130.0 ~ 200.0 MHz at 15 pF / 3.3 V

note:
- specific data on request
- rise time: 0.1 V_{DC} ~ 0.9 V_{DC}
- fall time: 0.9 V_{DC} ~ 0.1 V_{DC}

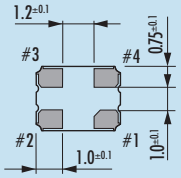
Dimensions



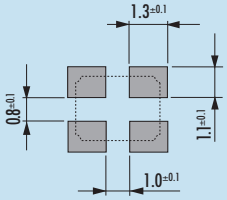
top view



side view



bottom view



pad layout

pin connection
1: e/d
2: ground
3: output
4: V_{DC}

in mm

Order Information

0	frequency in MHz	type	frequency stability code	supply voltage code	output load code	temp. range	standby function
Oscillator	3.0 ~ 200.0 MHz (3.3 V) 3.0 ~ 130.0 MHz (2.5 V) 3.0 ~ 100.0 MHz (1.8 V)	JPO32	see table 1	3.3 = 3.3 V 2.5 = 2.5 V 1.8 = 1.8 V	1 = 15 pF 2 = 30 pF	blank = -20 °C ~ +70 °C T1 = -40 °C ~ +85 °C	STP = stop function TRI = tristate function

Example: O 125.0-JPO32-B-2.5-1-T1-STP-LF (LF = RoHS compliant / Pb free pins or pads)

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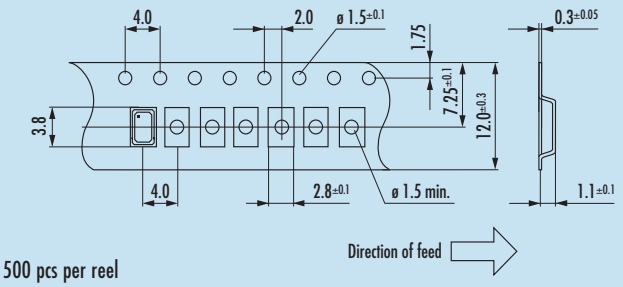
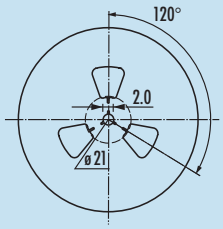
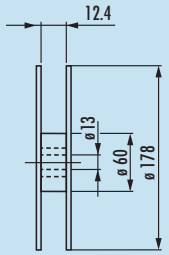
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Taping specification



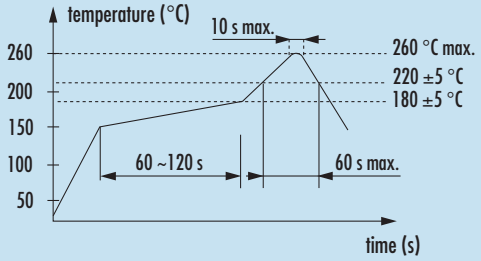




500 pcs per reel

in mm

Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

Marking (optional)

JPO / year / month / internal code

date code:

A ~ M: Jan. - Dec.

1: 2011 4: 2014

2: 2012 5: 2015

3: 2013 6: 2016

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

Enable / Disable Function

pin #1 (e/d control)	pin #3 (output, STP)	pin #3 (output, TRI)
open	active	active
high "1" ($V_{IH} \geq 0.7\ V_{DC}$)	active	active
low "0" ($V_{IL} \leq 0.3\ V_{DC}$)	stop, high impedance	high impedance
	stop (STP) function: • oscillator stops • output high impedance	**tristate (TRI) function:** • oscillator active • output high impedance

actual size

Programmed Oscillator · JPO53 · 3.3/2.5/1.8 V

Programmed SMD CMOS Oscillator · 5.0 x 3.2 mm

- fast delivery service
- tristate or stop function available
- reflow soldering temperature: 260 °C max.
- RoHS compliant, ceramic/metal package

RoHS 2002/95/EC — RoHS compliant

Pb free: pins / pads

General Data

type		JPO53 3.3 V / 2.5 V / 1.8 V
frequency range		3.0 ~ 200.0 MHz (3.3 V, 15 pF)
		3.0 ~ 130.0 MHz (2.5 V, 15 pF)
		3.0 ~ 100.0 MHz (1.8 V, 15 pF)
		3.0 ~ 50.0 MHz (3.3 V / 2.5 V / 1.8 V, 30 pF)
frequency stability over all*		± 25 ppm ~ ± 100 ppm (see table 1)
current consumption		see table 2
supply voltage V_{DC}		3.3 V / 2.5 V / 1.8 V ± 10%
temperature	operating	-20 °C ~ +70 °C / -40 °C ~ +85 °C
	storage	-55 °C ~ +125 °C
output	rise & fall time	see table 3
	load max.	15 pF / 30 pF
	current max.	8 mA (3.3 V) / 4 mA (2.5 V) / 2 mA (1.8 V)
	low level max.	0.4 V
	high level min.	V_{DC} - 0.4 V
standby function		tristate (TRI) / stop (STP)
output enable time max.		100 ns (TRI) / 10 ms (STP)
output disable time max.		250 ns
start-up time max.		10 ms
standby current max.		10 µA (STP version only)
symmetry at 0.5 x V_{DC}		45% ~ 55% typ. (40% ~ 60% max.)

Table 1: Frequency Stability Code

stability code	A ± 100 ppm	B ± 50 ppm	G ± 30 ppm	C ± 25 ppm
-20 °C ~ +70 °C	O	O	O	O
-40 °C ~ +85 °C	O	O	O	O

O available

* includes stability at 25 °C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption max.

frequency range	V_{DC} = 3.3 V	V_{DC} = 2.5 V	V_{DC} = 1.8 V	load
3.0 ~ 50.0 MHz	18 mA	15 mA	8 mA	30 pf
3.0 ~ 100.0 MHz	17 mA	12 mA	8 mA	15 pf
100.0 ~ 130.0 MHz	20 mA	16 mA	–	15 pf
130.0 ~ 200.0 MHz	25 mA	–	–	15 pf

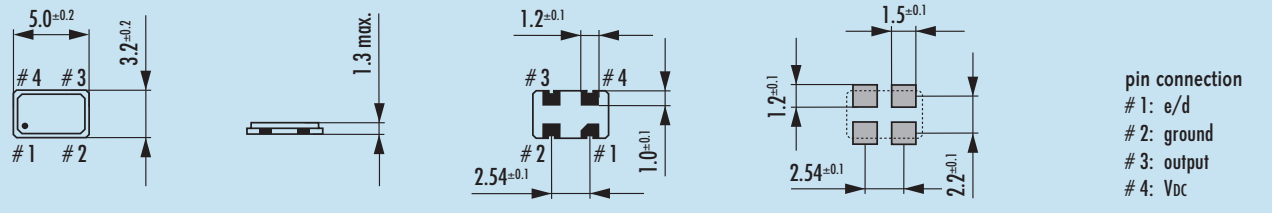
* a ceramics capacitor of 100nF between pin #2 and pin #4 with short distance wiring is strongly recommended

Table 3: Rise & fall time max.

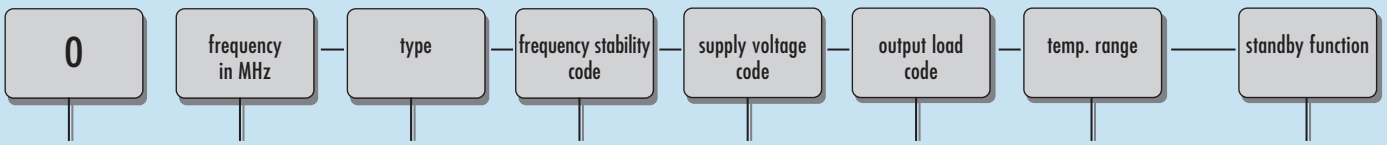
6 ns: 3.0 ~ 50.0 MHz at 30 pF / 1.8 V
5 ns: 3.0 ~ 50.0 MHz at 30 pF / 3.3 V & 2.5 V
4 ns: 3.0 ~ 100.0 MHz at 15 pF / 3.3 V & 2.5 V & 1.8 V
3 ns: 100.0 ~ 130.0 MHz at 15 pF / 2.5 V & 3.3 V
2 ns: 130.0 ~ 200.0 MHz at 15 pF / 3.3 V

note:
- specific data on request
- rise time: 0.1 V_{DC} ~ 0.9 V_{DC}
- fall time: 0.9 V_{DC} ~ 0.1 V_{DC}

Dimensions



Order Information

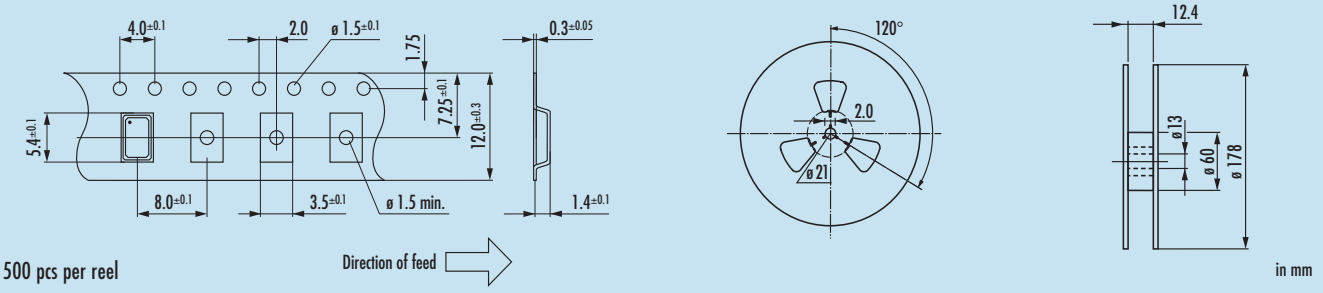


Example: O 125.0-JPO53-B-2.5-1-T1-TRI-LF (LF = RoHS compliant / Pb free pins or pads)

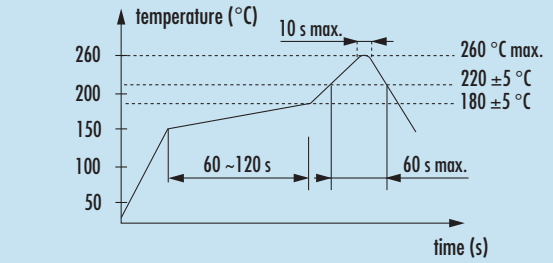
Jauch Quartz GmbH • e-mail: info@jauch.de
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Programmed Oscillator · JPO53 · 3.3/2.5/1.8 V

Taping specification



Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

Marking (optional)

JPO / year / month / internal code

date code:

A ~ M: Jan. - Dec.

1: 2011 4: 2014

2: 2012 5: 2015

3: 2013 6: 2016

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

Enable / Disable Function

pin #1 (e/d control)	**pin #3 (output)**
open	active
high "1" ($V_{IH} \geq 0.7\ V_{DC}$)	active
low "0" ($V_{IL} \leq 0.3\ V_{DC}$)	high impedance

tristate (TRI) function:

- oscillator active
- output high impedance (weak pull up)

actual size

Programmed Oscillator · JPO53 · 3.3/2.5/1.8 V

Programmed SMD CMOS Oscillator · 5.0 x 3.2 mm

- fast delivery service
- tristate or stop function available
- reflow soldering temperature: 260 °C max.
- RoHS compliant, ceramic/metal package

RoHS 2002/95/EC — RoHS compliant

Pb free: pins / pads

General Data

type		JPO53 3.3 V / 2.5 V / 1.8 V
frequency range		3.0 ~ 200.0 MHz (3.3 V, 15 pF)
		3.0 ~ 130.0 MHz (2.5 V, 15 pF)
		3.0 ~ 100.0 MHz (1.8 V, 15 pF)
		3.0 ~ 50.0 MHz (3.3 V / 2.5 V / 1.8 V, 30 pF)
frequency stability over all*		± 25 ppm ~ ± 100 ppm (see table 1)
current consumption		see table 2
supply voltage V_{DC}		3.3 V / 2.5 V / 1.8 V ± 10%
temperature	operating	-20 °C ~ +70 °C / -40 °C ~ +85 °C
	storage	-55 °C ~ +125 °C
output	rise & fall time	see table 3
	load max.	15 pF / 30 pF
	current max.	8 mA (3.3 V) / 4 mA (2.5 V) / 2 mA (1.8 V)
	low level max.	0.4 V
	high level min.	V_{DC} - 0.4 V
standby function		tristate (TRI) / stop (STP)
output enable time max.		100 ns (TRI) / 10 ms (STP)
output disable time max.		250 ns
start-up time max.		10 ms
standby current max.		10 µA (STP version only)
symmetry at 0.5 x V_{DC}		45% ~ 55% typ. (40% ~ 60% max.)

Table 1: Frequency Stability Code

stability code	A ± 100 ppm	B ± 50 ppm	G ± 30 ppm	C ± 25 ppm
-20 °C ~ +70 °C	○	○	○	○
-40 °C ~ +85 °C	○	○	○	○

○ available

* includes stability at 25 °C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption max.

frequency range	V_{DC} = 3.3 V	V_{DC} = 2.5 V	V_{DC} = 1.8 V	load
3.0 ~ 50.0 MHz	18 mA	15 mA	8 mA	30 pf
3.0 ~ 100.0 MHz	17 mA	12 mA	8 mA	15 pf
100.0 ~ 130.0 MHz	20 mA	16 mA	–	15 pf
130.0 ~ 200.0 MHz	25 mA	–	–	15 pf

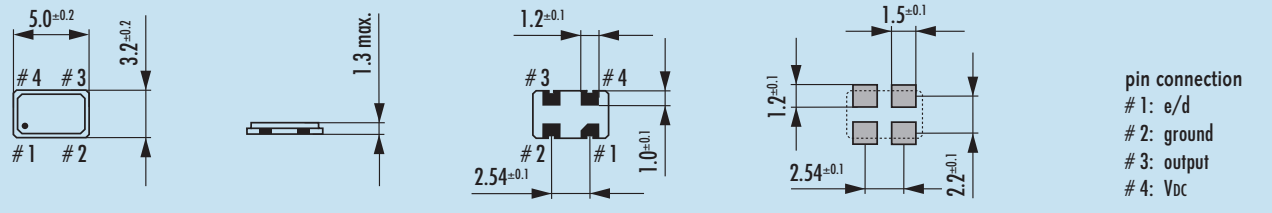
* a ceramics capacitor of 100nF between pin #2 and pin #4 with short distance wiring is strongly recommended

Table 3: Rise & fall time max.

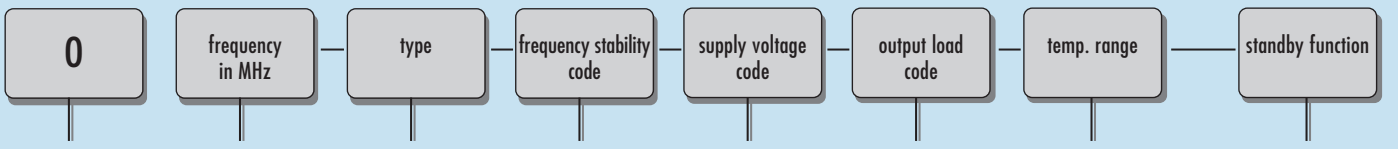
6 ns: 3.0 ~ 50.0 MHz at 30 pF / 1.8 V
5 ns: 3.0 ~ 50.0 MHz at 30 pF / 3.3 V & 2.5 V
4 ns: 3.0 ~ 100.0 MHz at 15 pF / 3.3 V & 2.5 V & 1.8 V
3 ns: 100.0 ~ 130.0 MHz at 15 pF / 2.5 V & 3.3 V
2 ns: 130.0 ~ 200.0 MHz at 15 pF / 3.3 V

note:
- specific data on request
- rise time: 0.1 V_{DC} ~ 0.9 V_{DC}
- fall time: 0.9 V_{DC} ~ 0.1 V_{DC}

Dimensions



Order Information

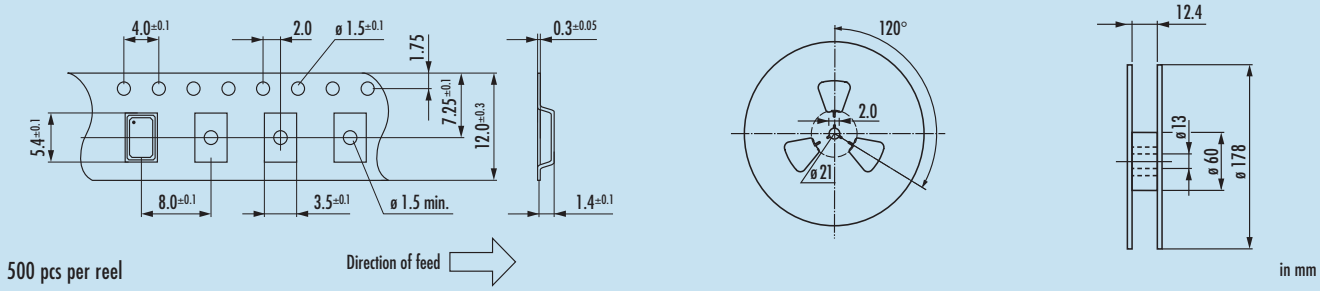


Example: O 125.0-JPO53-B-2.5-1-T1-TRI-LF (LF = RoHS compliant / Pb free pins or pads)

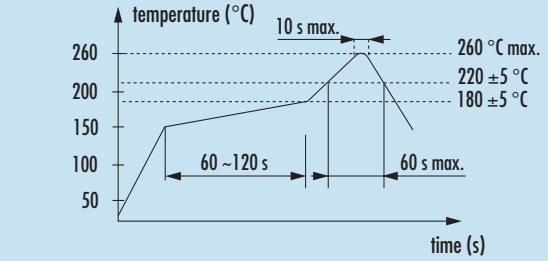
Jauch Quartz GmbH • e-mail: info@jauch.de
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Programmed Oscillator · JPO53 · 3.3/2.5/1.8 V

Taping specification



Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

Marking (optional)

JPO / year / month / internal code

date code:

A ~ M: Jan. - Dec.

1: 2011 4: 2014

2: 2012 5: 2015

3: 2013 6: 2016

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

Enable / Disable Function

pin #1 (e/d control)	**pin #3 (output)**
open	active
high "1" ($V_{IH} \geq 0.7\ V_{DC}$)	active
low "0" ($V_{IL} \leq 0.3\ V_{DC}$)	high impedance

tristate (TRI) function:

- oscillator active
- output high impedance (weak pull up)

actual size

Programmed Oscillator · JPO53 · 3.3/2.5/1.8 V

Programmed SMD CMOS Oscillator · 5.0 x 3.2 mm

- fast delivery service
- tristate or stop function available
- reflow soldering temperature: 260 °C max.
- RoHS compliant, ceramic/metal package

RoHS 2002/95/EC — RoHS compliant

Pb free: pins / pads

General Data

type		JPO53 3.3 V / 2.5 V / 1.8 V
frequency range		3.0 ~ 200.0 MHz (3.3 V, 15 pF)
		3.0 ~ 130.0 MHz (2.5 V, 15 pF)
		3.0 ~ 100.0 MHz (1.8 V, 15 pF)
		3.0 ~ 50.0 MHz (3.3 V / 2.5 V / 1.8 V, 30 pF)
frequency stability over all*		± 25 ppm ~ ± 100 ppm (see table 1)
current consumption		see table 2
supply voltage V_{DC}		3.3 V / 2.5 V / 1.8 V ± 10%
temperature	operating	-20 °C ~ +70 °C / -40 °C ~ +85 °C
	storage	-55 °C ~ +125 °C
output	rise & fall time	see table 3
	load max.	15 pF / 30 pF
	current max.	8 mA (3.3 V) / 4 mA (2.5 V) / 2 mA (1.8 V)
	low level max.	0.4 V
	high level min.	V_{DC} - 0.4 V
standby function		tristate (TRI) / stop (STP)
output enable time max.		100 ns (TRI) / 10 ms (STP)
output disable time max.		250 ns
start-up time max.		10 ms
standby current max.		10 µA (STP version only)
symmetry at 0.5 x V_{DC}		45% ~ 55% typ. (40% ~ 60% max.)

Table 1: Frequency Stability Code

stability code	A ± 100 ppm	B ± 50 ppm	G ± 30 ppm	C ± 25 ppm
-20 °C ~ +70 °C	O	O	O	O
-40 °C ~ +85 °C	O	O	O	O

O available

* includes stability at 25 °C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption max.

frequency range	V_{DC} = 3.3 V	V_{DC} = 2.5 V	V_{DC} = 1.8 V	load
3.0 ~ 50.0 MHz	18 mA	15 mA	8 mA	30 pf
3.0 ~ 100.0 MHz	17 mA	12 mA	8 mA	15 pf
100.0 ~ 130.0 MHz	20 mA	16 mA	–	15 pf
130.0 ~ 200.0 MHz	25 mA	–	–	15 pf

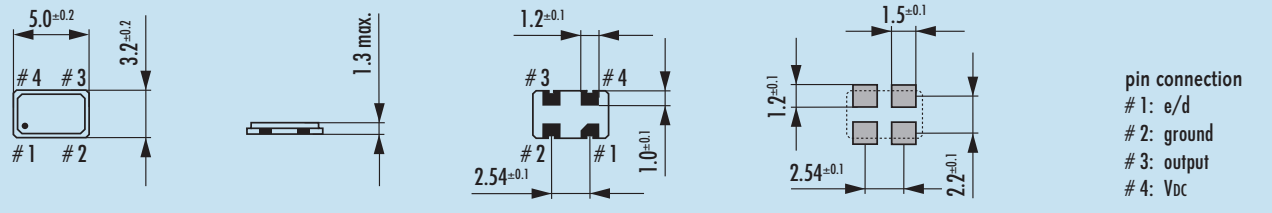
* a ceramics capacitor of 100nF between pin #2 and pin #4 with short distance wiring is strongly recommended

Table 3: Rise & fall time max.

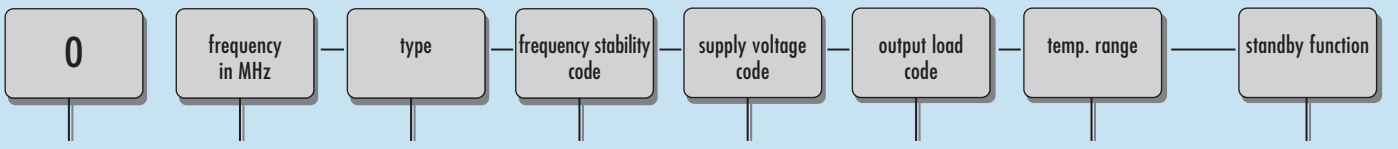
6 ns: 3.0 ~ 50.0 MHz at 30 pF / 1.8 V
5 ns: 3.0 ~ 50.0 MHz at 30 pF / 3.3 V & 2.5 V
4 ns: 3.0 ~ 100.0 MHz at 15 pF / 3.3 V & 2.5 V & 1.8 V
3 ns: 100.0 ~ 130.0 MHz at 15 pF / 2.5 V & 3.3 V
2 ns: 130.0 ~ 200.0 MHz at 15 pF / 3.3 V

note:
- specific data on request
- rise time: 0.1 V_{DC} ~ 0.9 V_{DC}
- fall time: 0.9 V_{DC} ~ 0.1 V_{DC}

Dimensions



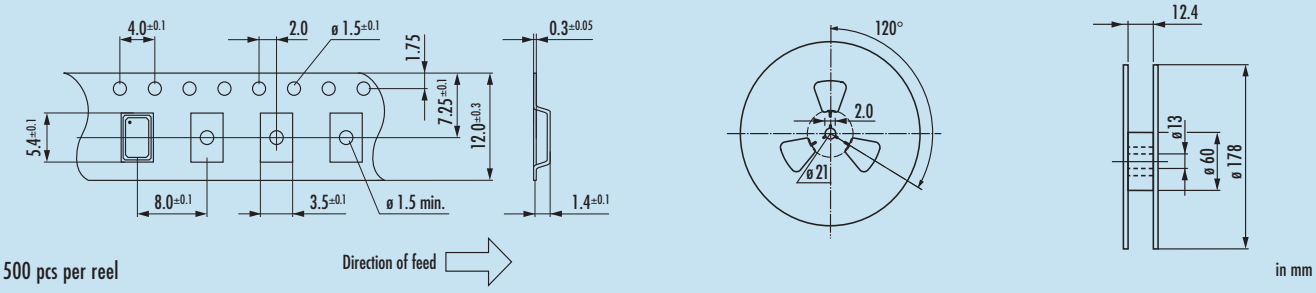
Order Information



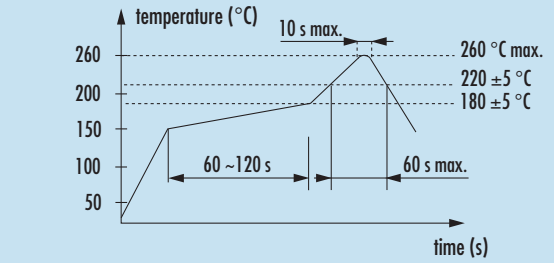
Example: O 125.0-JPO53-B-2.5-1-T1-TRI-LF (LF = RoHS compliant / Pb free pins or pads)

Jauch Quartz GmbH • e-mail: info@jauch.de
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Taping specification



Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

Marking (optional)

JPO / year / month / internal code

date code:

A ~ M: Jan. - Dec.

1: 2011 4: 2014

2: 2012 5: 2015

3: 2013 6: 2016

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

Enable / Disable Function

pin #1 (e/d control)	**pin #3 (output)**
open	active
high "1" ($V_{IH} \geq 0.7\ V_{DC}$)	active
low "0" ($V_{IL} \leq 0.3\ V_{DC}$)	high impedance

tristate (TRI) function:

- oscillator active
- output high impedance (weak pull up)

actual size

Programmed Oscillator · JPO75 · 3.3/2.5/1.8 V

Programmed SMD CMOS Oscillator · 7.0 x 5.0 mm

- fast delivery service
- tristate or stop function available
- reflow soldering temperature: 260 °C max.
- RoHS compliant, ceramic/metal package

RoHS 2002/95/EC — RoHS compliant

Pb free: pins / pads

General Data

type		JPO75 3.3 V / 2.5 V / 1.8 V
frequency range		3.0 ~ 200.0 MHz (3.3 V, 15 pF)
		3.0 ~ 130.0 MHz (2.5 V, 15 pF)
		3.0 ~ 100.0 MHz (1.8 V, 15 pF)
		3.0 ~ 50.0 MHz (3.3 V / 2.5 V / 1.8 V, 30 pF)
frequency stability over all*		± 25 ppm ~ ± 100 ppm (see table 1)
current consumption		see table 2
supply voltage V_{DC}		3.3 V / 2.5 V / 1.8 V ± 10%
temperature	operating	-20 °C ~ +70 °C / -40 °C ~ +85 °C
	storage	-55 °C ~ +125 °C
output	rise & fall time	see table 3
	load max.	15 pF / 30 pF
	current max.	8 mA (3.3 V) / 4 mA (2.5 V) / 2 mA (1.8 V)
	low level max.	0.4 V
	high level min.	V_{DC} - 0.4 V
standby function		tristate (TRI) / stop (STP)
output enable time max.		100 ns (TRI) / 10 ms (STP)
output disable time max.		250 ns
start-up time max.		10 ms
standby current max.		10 µA (STP version only)
symmetry at 0.5 x V_{DC}		45% ~ 55% typ. (40% ~ 60% max.)

Table 1: Frequency Stability Code

stability code	A ± 100 ppm	B ± 50 ppm	G ± 30 ppm	C ± 25 ppm
-20 °C ~ +70 °C	O	O	O	O
-40 °C ~ +85 °C	O	O	O	O

O available

* includes stability at 25 °C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption max.

frequency range	V_{DC} = 3.3 V	V_{DC} = 2.5 V	V_{DC} = 1.8 V	load
3.0 ~ 50.0 MHz	18 mA	15 mA	8 mA	30 pf
3.0 ~ 100.0 MHz	17 mA	12 mA	8 mA	15 pf
100.0 ~ 130.0 MHz	20 mA	16 mA	–	15 pf
130.0 ~ 200.0 MHz	25 mA	–	–	15 pf

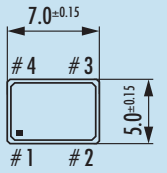
* a ceramics capacitor of 100nF between pin #2 and pin #4 with short distance wiring is strongly recommended

Table 3: Rise & fall time max.

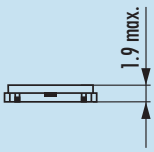
6 ns: 3.0 ~ 50.0 MHz at 30 pF / 1.8 V
5 ns: 3.0 ~ 50.0 MHz at 30 pF / 3.3 V & 2.5 V
4 ns: 3.0 ~ 100.0 MHz at 15 pF / 3.3 V & 2.5 V & 1.8 V
3 ns: 100.0 ~ 130.0 MHz at 15 pF / 2.5 V & 3.3 V
2 ns: 130.0 ~ 200.0 MHz at 15 pF / 3.3 V

note:
- specific data on request
- rise time: 0.1 V_{DC} ~ 0.9 V_{DC}
- fall time: 0.9 V_{DC} ~ 0.1 V_{DC}

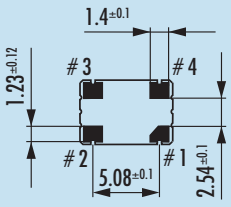
Dimensions



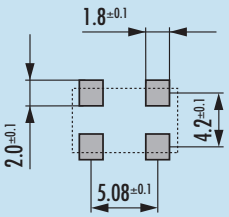
top view



side view



bottom view



pad layout

pin connection
1: e/d
2: ground
3: output
4: V_{DC}

in mm

Order Information

0 — frequency in MHz — type — frequency stability code — supply voltage code — output load code — temp. range — standby function

Oscillator	3.0 ~ 200.0 MHz (3.3 V) 3.0 ~ 130.0 MHz (2.5 V) 3.0 ~ 100.0 MHz (1.8 V)	JPO75	see table 1	3.3 = 3.3 V 2.5 = 2.5 V 1.8 = 1.8 V	1 = 15 pF 2 = 30 pF	blank = -20 °C ~ +70 °C T1 = -40 °C ~ +85 °C	STP = stop function TRI = tristate function

Example: O 125.0-JPO75-B-2.5-1-T1-TRI-LF (LF = RoHS compliant / Pb free pins or pads)

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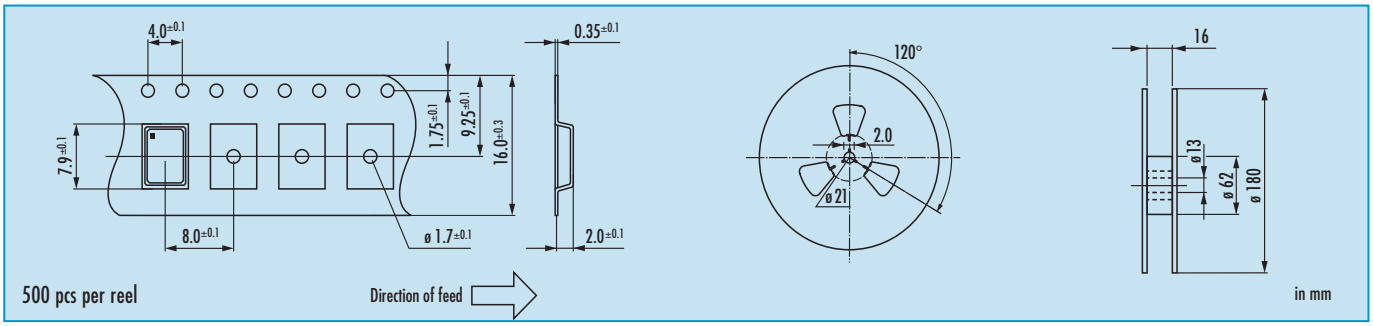
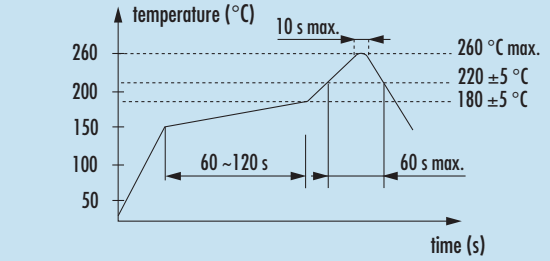
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Taping specification



Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

Marking (optional)

JPO / year / month / internal code

date code:
A ~ M: Jan. - Dec.
1: 2011 4: 2014
2: 2012 5: 2015
3: 2013 6: 2016

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

Enable / Disable Function

pin #1 (e/d control)	**pin #3 (output)**
open	active
high "1" ($V_{IH} \geq 0.7\ V_{DC}$)	active
low "0" ($V_{IL} \leq 0.3\ V_{DC}$)	high impedance

tristate (TRI) function:
- oscillator active
- output high impedance (weak pull up)

actual size

Programmed Oscillator · JPO75 · 3.3/2.5/1.8 V

Programmed SMD CMOS Oscillator · 7.0 x 5.0 mm

- fast delivery service
- tristate or stop function available
- reflow soldering temperature: 260 °C max.
- RoHS compliant, ceramic/metal package

RoHS 2002/95/EC — RoHS compliant

Pb free: pins / pads

General Data

type		JPO75 3.3 V / 2.5 V / 1.8 V
frequency range		3.0 ~ 200.0 MHz (3.3 V, 15 pF)
		3.0 ~ 130.0 MHz (2.5 V, 15 pF)
		3.0 ~ 100.0 MHz (1.8 V, 15 pF)
		3.0 ~ 50.0 MHz (3.3 V / 2.5 V / 1.8 V, 30 pF)
frequency stability over all*		± 25 ppm ~ ± 100 ppm (see table 1)
current consumption		see table 2
supply voltage V_{DC}		3.3 V / 2.5 V / 1.8 V ± 10%
temperature	operating	-20 °C ~ +70 °C / -40 °C ~ +85 °C
	storage	-55 °C ~ +125 °C
output	rise & fall time	see table 3
	load max.	15 pF / 30 pF
	current max.	8 mA (3.3 V) / 4 mA (2.5 V) / 2 mA (1.8 V)
	low level max.	0.4 V
	high level min.	V_{DC} - 0.4 V
standby function		tristate (TRI) / stop (STP)
output enable time max.		100 ns (TRI) / 10 ms (STP)
output disable time max.		250 ns
start-up time max.		10 ms
standby current max.		10 µA (STP version only)
symmetry at 0.5 x V_{DC}		45% ~ 55% typ. (40% ~ 60% max.)

Table 1: Frequency Stability Code

stability code	A ± 100 ppm	B ± 50 ppm	G ± 30 ppm	C ± 25 ppm
-20 °C ~ +70 °C	O	O	O	O
-40 °C ~ +85 °C	O	O	O	O

O available

* includes stability at 25 °C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption max.

frequency range	V_{DC} = 3.3 V	V_{DC} = 2.5 V	V_{DC} = 1.8 V	load
3.0 ~ 50.0 MHz	18 mA	15 mA	8 mA	30 pf
3.0 ~ 100.0 MHz	17 mA	12 mA	8 mA	15 pf
100.0 ~ 130.0 MHz	20 mA	16 mA	–	15 pf
130.0 ~ 200.0 MHz	25 mA	–	–	15 pf

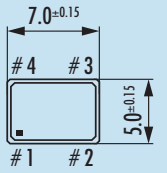
* a ceramics capacitor of 100nF between pin #2 and pin #4 with short distance wiring is strongly recommended

Table 3: Rise & fall time max.

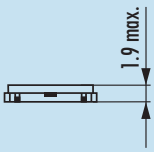
6 ns: 3.0 ~ 50.0 MHz at 30 pF / 1.8 V
5 ns: 3.0 ~ 50.0 MHz at 30 pF / 3.3 V & 2.5 V
4 ns: 3.0 ~ 100.0 MHz at 15 pF / 3.3 V & 2.5 V & 1.8 V
3 ns: 100.0 ~ 130.0 MHz at 15 pF / 2.5 V & 3.3 V
2 ns: 130.0 ~ 200.0 MHz at 15 pF / 3.3 V

note:
- specific data on request
- rise time: 0.1 V_{DC} ~ 0.9 V_{DC}
- fall time: 0.9 V_{DC} ~ 0.1 V_{DC}

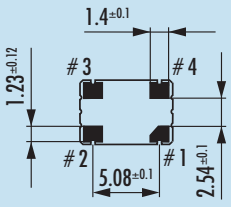
Dimensions



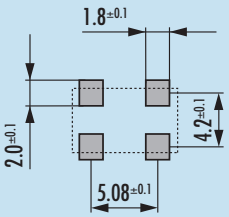
top view



side view



bottom view



pad layout

pin connection
1: e/d
2: ground
3: output
4: V_{DC}

in mm

Order Information

0 — frequency in MHz — type — frequency stability code — supply voltage code — output load code — temp. range — standby function

Oscillator	3.0 ~ 200.0 MHz (3.3 V) 3.0 ~ 130.0 MHz (2.5 V) 3.0 ~ 100.0 MHz (1.8 V)	JPO75	see table 1	3.3 = 3.3 V 2.5 = 2.5 V 1.8 = 1.8 V	1 = 15 pF 2 = 30 pF	blank = -20 °C ~ +70 °C T1 = -40 °C ~ +85 °C	STP = stop function TRI = tristate function

Example: O 125.0-JPO75-B-2.5-1-T1-TRI-LF (LF = RoHS compliant / Pb free pins or pads)

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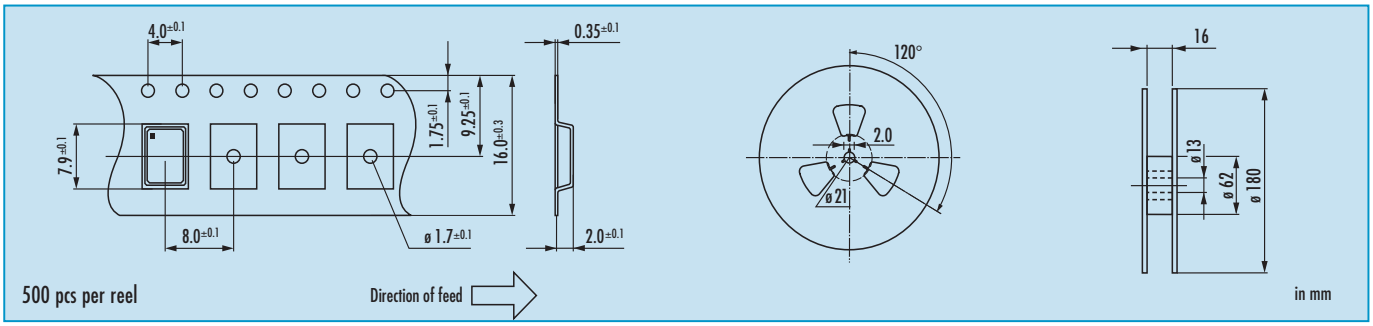
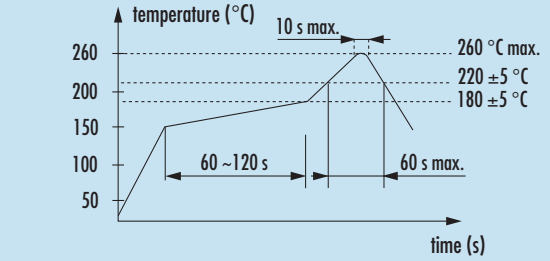
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Taping specification



Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

Marking (optional)

JPO / year / month / internal code

date code:

A ~ M: Jan. - Dec.

1: 2011 4: 2014

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Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

Enable / Disable Function

pin #1 (e/d control)	pin #3 (output)
open	active
high "1" ($V_{IH} \geq 0.7\ V_{DC}$)	active
low "0" ($V_{IL} \leq 0.3\ V_{DC}$)	high impedance

tristate (TRI) function:

- oscillator active
- output high impedance (weak pull up)

actual size

Programmed Oscillator · JPO75 · 3.3/2.5/1.8 V

Programmed SMD CMOS Oscillator · 7.0 x 5.0 mm

- fast delivery service
- tristate or stop function available
- reflow soldering temperature: 260 °C max.
- RoHS compliant, ceramic/metal package

RoHS 2002/95/EC — RoHS compliant

Pb free: pins / pads

General Data

type		JPO75 3.3 V / 2.5 V / 1.8 V
frequency range		3.0 ~ 200.0 MHz (3.3 V, 15 pF)
		3.0 ~ 130.0 MHz (2.5 V, 15 pF)
		3.0 ~ 100.0 MHz (1.8 V, 15 pF)
		3.0 ~ 50.0 MHz (3.3 V / 2.5 V / 1.8 V, 30 pF)
frequency stability over all*		± 25 ppm ~ ± 100 ppm (see table 1)
current consumption		see table 2
supply voltage V_{DC}		3.3 V / 2.5 V / 1.8 V ± 10%
temperature	operating	-20 °C ~ +70 °C / -40 °C ~ +85 °C
	storage	-55 °C ~ +125 °C
output	rise & fall time	see table 3
	load max.	15 pF / 30 pF
	current max.	8 mA (3.3 V) / 4 mA (2.5 V) / 2 mA (1.8 V)
	low level max.	0.4 V
	high level min.	V_{DC} - 0.4 V
standby function		tristate (TRI) / stop (STP)
output enable time max.		100 ns (TRI) / 10 ms (STP)
output disable time max.		250 ns
start-up time max.		10 ms
standby current max.		10 µA (STP version only)
symmetry at 0.5 x V_{DC}		45% ~ 55% typ. (40% ~ 60% max.)

Table 1: Frequency Stability Code

stability code	A ± 100 ppm	B ± 50 ppm	G ± 30 ppm	C ± 25 ppm
-20 °C ~ +70 °C	O	O	O	O
-40 °C ~ +85 °C	O	O	O	O

O available

* includes stability at 25 °C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption max.

frequency range	V_{DC} = 3.3 V	V_{DC} = 2.5 V	V_{DC} = 1.8 V	load
3.0 ~ 50.0 MHz	18 mA	15 mA	8 mA	30 pf
3.0 ~ 100.0 MHz	17 mA	12 mA	8 mA	15 pf
100.0 ~ 130.0 MHz	20 mA	16 mA	–	15 pf
130.0 ~ 200.0 MHz	25 mA	–	–	15 pf

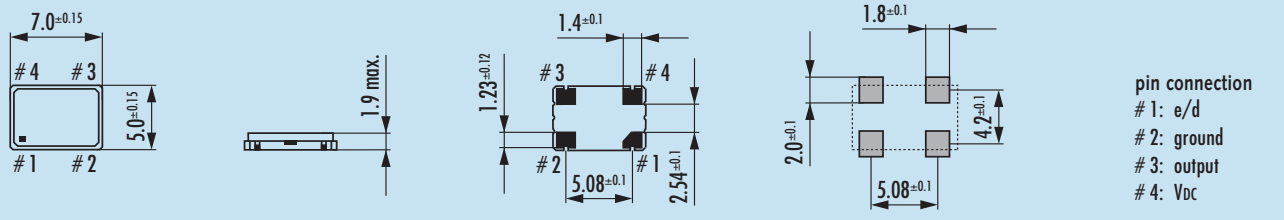
* a ceramics capacitor of 100nF between pin #2 and pin #4 with short distance wiring is strongly recommended

Table 3: Rise & fall time max.

6 ns: 3.0 ~ 50.0 MHz at 30 pF / 1.8 V
5 ns: 3.0 ~ 50.0 MHz at 30 pF / 3.3 V & 2.5 V
4 ns: 3.0 ~ 100.0 MHz at 15 pF / 3.3 V & 2.5 V & 1.8 V
3 ns: 100.0 ~ 130.0 MHz at 15 pF / 2.5 V & 3.3 V
2 ns: 130.0 ~ 200.0 MHz at 15 pF / 3.3 V

note:
- specific data on request
- rise time: 0.1 V_{DC} ~ 0.9 V_{DC}
- fall time: 0.9 V_{DC} ~ 0.1 V_{DC}

Dimensions



Order Information

0	frequency in MHz	type	frequency stability code	supply voltage code	output load code	temp. range	standby function
Oscillator	3.0 ~ 200.0 MHz (3.3 V) 3.0 ~ 130.0 MHz (2.5 V) 3.0 ~ 100.0 MHz (1.8 V)	JPO75	see table 1	3.3 = 3.3 V 2.5 = 2.5 V 1.8 = 1.8 V	1 = 15 pF 2 = 30 pF	blank = -20 °C ~ +70 °C T1 = -40 °C ~ +85 °C	STP = stop function TRI = tristate function

Example: O 125.0-JPO75-B-2.5-1-T1-TRI-LF (LF = RoHS compliant / Pb free pins or pads)

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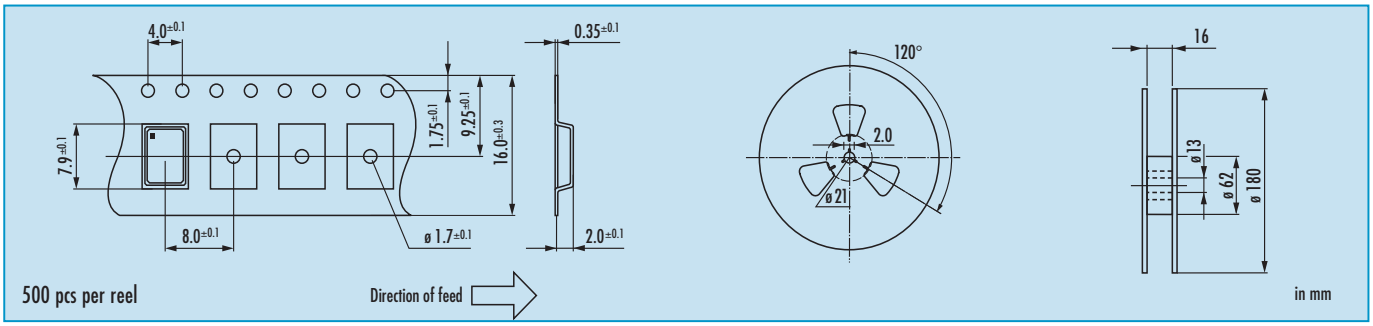
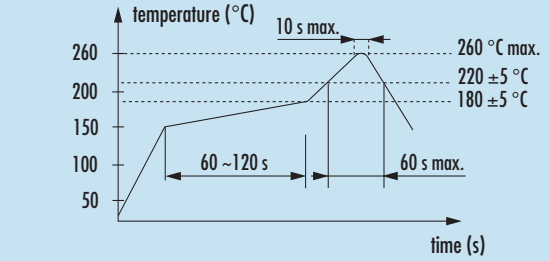
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Taping specification



Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

Marking (optional)

JPO / year / month / internal code

date code:

A ~ M: Jan. - Dec.

1: 2011 4: 2014

2: 2012 5: 2015

3: 2013 6: 2016

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

Enable / Disable Function

pin #1 (e/d control)	pin #3 (output)
open	active
high "1" ($V_{IH} \geq 0.7\ V_{DC}$)	active
low "0" ($V_{IL} \leq 0.3\ V_{DC}$)	high impedance

tristate (TRI) function:

- oscillator active
- output high impedance (weak pull up)

actual size

Oscillator · VCXO · JV53 · 3.3 V

SMD Voltage Control Crystal Oscillator · 5.0 x 3.2 mm

- pulling range up to ± 100 ppm min.
- reflow soldering temperature: 260 °C max.
- ceramic/metal package

RoHS 2002/95/EC — RoHS compliant

Pb free: pins / pads

General Data

type		JV53 3.3 V
frequency range		2.0 ~ 54.0 MHz
frequency stability over all*		± 25 ppm / ± 30 ppm / ± 50 ppm
		see table 1
current consumption		see table 2
supply voltage V_{DC}		3.3 V ± 10%
frequency pulling range min.		± 100 ppm (± 150 ppm typ.)
pulling	control voltage	1.65 V ± 1.35 V▪
	linearity	<10%
	input imp. min.	100 KΩ
	modulation min.	20 KHz
temperature	operating	-20 °C ~ +70 °C / -40 °C ~ +85 °C
	storage	-55 °C ~ +125 °C
output	rise & fall time	see table 3
	load max.	15pF
	current max.	4 mA
	low level max.	0.1 x V_{DC}
	high level min.	0.9 x V_{DC}
standby function		no
start-up time max.		10 ms
symmetry at 0.5 x V_{DC}		45% ~ 55% max.

Table 1: Frequency Stability Code

stability code	B ± 50 ppm	G ± 30 ppm	C ± 25 ppm			
-20 °C ~ +70 °C	○	○	○			
-40 °C ~ +85 °C	○	○				

● standard ○ available

* includes stability at 25 °C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption max.

Current at 15pF load:

2.0 ~ 19.9 MHz	10 mA
20.0 ~ 29.9 MHz	15 mA
30.0 ~ 39.9 MHz	20 mA
40.0 ~ 54.0 MHz	25 mA

Table 3: Rise & Fall Time max.

6.0 ns:	> 10.0 MHz
10.0 ns:	< 10.0 MHz

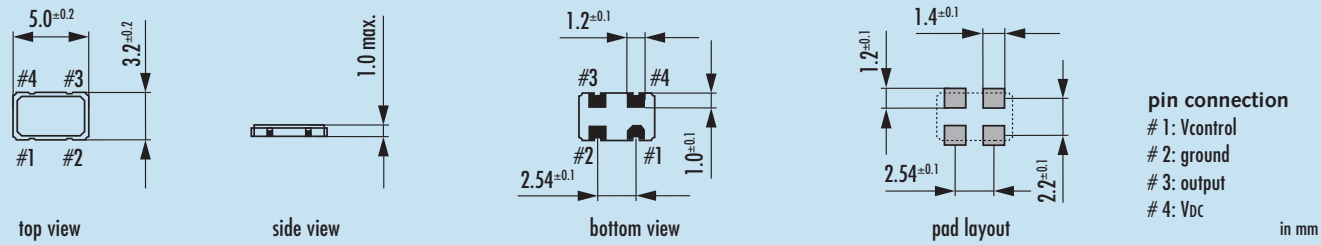
note:
- specific data on request
- rise time: 0.1 V_{DC} ~ 0.9 V_{DC}
- fall time: 0.9 V_{DC} ~ 0.1 V_{DC}

▪Recommendation

To avoid phase noise or FM modulation in the output frequency spectrum, we recommend to feed the Vcontrol input pin by a low source impedance.

For supply voltage noise reduction, connect a capacitor close to the oscillator's supply voltage pins.

Dimensions



Order Information

0	frequency in MHz	–	type	–	frequency stability in ppm	–	supply voltage in Volt	–	pulling range in ppm	–	option
Oscillator	2.0 ~ 54.0 MHz		JV53		C = ± 25 ppm G = ± 30 ppm B = ± 50 ppm		3.3 = 3.3 V		10 = ± 100 ppm		blank = -20 °C ~ +70 °C T 1 = -40 °C ~ +85 °C on request

Example: O 27.0-JV53-B-3.3-10-LF (Suffix LF = RoHS compliant / Pb free pins or pads)

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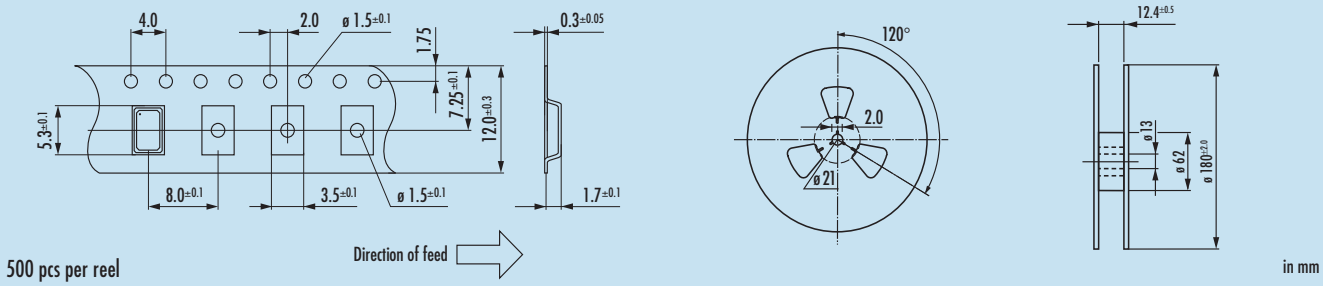
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Oscillator · VCXO · JV53 · 3.3 V

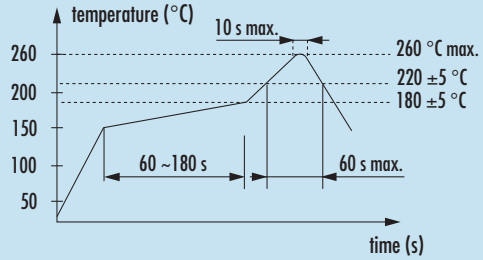
Taping Specification



500 pcs per reel

in mm

Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

Marking

frequency

type / date code

date code:

A ~ M: Jan. - Dec.

0: 2010 3: 2013

1: 2011 4: 2014

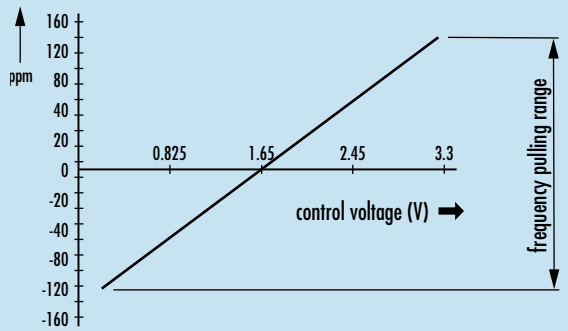
2: 2012 5: 2015

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

Control Voltage Characteristic

3.3 V version



Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

actual size

Oscillator · VCXO · 5.0 V

SMD Voltage Control Crystal Oscillator · 7.5 x 5.0 mm

- two pinout versions available
- reflow soldering temperature: 260 °C max.
- ceramic/metal package

RoHS 2002/95/EC — RoHS compliant

Pb free: pins / pads

General Data

type		JV75 5.0 V
frequency range		1.0 ~ 80.0 MHz
frequency stability over all*		± 25ppm* / ± 50ppm
		see table 1
current consumption		see table 2
supply voltage V_{DC}		5.0 V ± 5%
frequency pulling range min.		± 50ppm / ± 100ppm / ± 150ppm▲
pulling control voltage		2.5 V ± 2.0 V■
pulling linearity		<10%
temperature	operating	-10 °C ~ +70 °C / -40 °C ~ +85 °C
	storage	-55 °C ~ +125 °C
output	rise & fall time	see table 3
	load max.	15pF
	current max.	8mA
	low level max.	0.1 x V_{DC}
	high level min.	0.9 x V_{DC}
standby function		yes
start-up time max.		10ms
symmetry at 0.5 x V_{DC}		45% ~ 55% max.

* not available > 52.0 MHz ▲on request, if < 52.0 MHz

Table 1: Frequency Stability Code

stability code	B ± 50 ppm	C ± 25 ppm				
-10 °C ~ +70 °C	○	○				
-40 °C ~ +85 °C	○	○				

● standard ○ available

* includes stability at 25 °C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption max.

Current at 15pF load:

1.0 ~ 17.9 MHz	20 mA
18.0 ~ 35.9 MHz	30 mA
36.0 ~ 51.9 MHz	40 mA
52.0 ~ 80.0 MHz	50 mA

Table 3: Rise & Fall Time max.

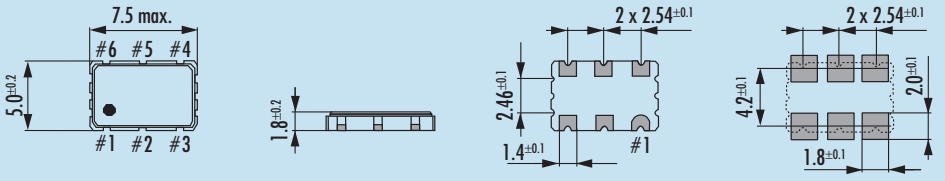
5.0 ns:	1.0 ~ 39.9 MHz
4.0 ns:	40.0 ~ 80.0 MHz

note:
- specific data on request
- rise time: 0.1 V_{DC} ~ 0.9 V_{DC}
- fall time: 0.9 V_{DC} ~ 0.1 V_{DC}

■Recommendation

To avoid phase noise or FM modulation in the output frequency spectrum, we recommend to feed the Vcontrol input pin by a low source impedance.

Dimensions



top view — side view — bottom view — pad layout

standard pin connection B	optional pin connection A
# 1: Vcontrol	# 1: Vcontrol
# 2: e/d	# 2: nc
# 3: ground	# 3: ground
# 4: output	# 4: output
# 5: nc	# 5: e/d
# 6: V_{DD}	# 6: V_{DD}

in mm

Order Information

0	frequency in MHz	type	frequency stability in ppm	supply voltage in Volt	pulling range in ppm	pin version	option
Oscillator	1.0 ~ 80.0 MHz	JV75	C = ± 25 ppm B = ± 50 ppm	5.0 = 5.0 V	05 = ±50 ppm 10 = ±100 ppm 15 = ±150 ppm*	B = standard A = optional	blank = -10°C ~ +70°C T1 = -40°C ~ +85°C

* on request, if < 52.0 MHz

Example: O 20.0-JV75-B-5.0-10-B (LF = RoHS compliant / Pb free pins or pads)

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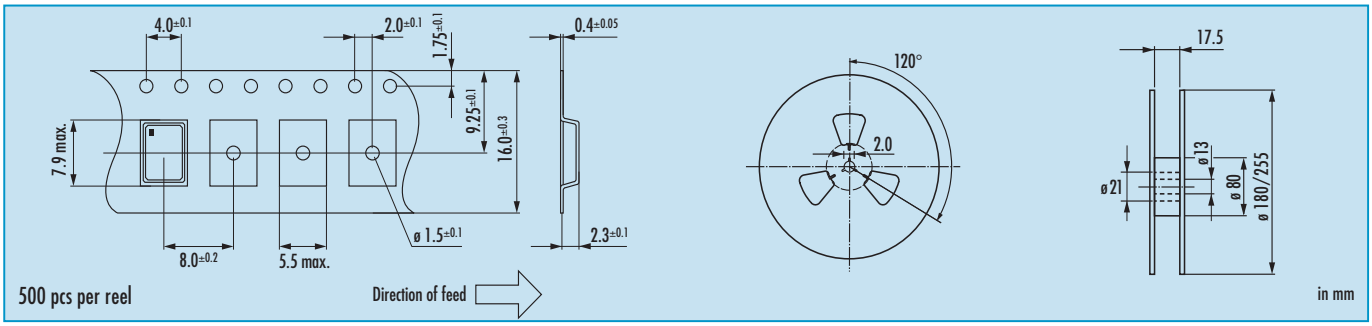
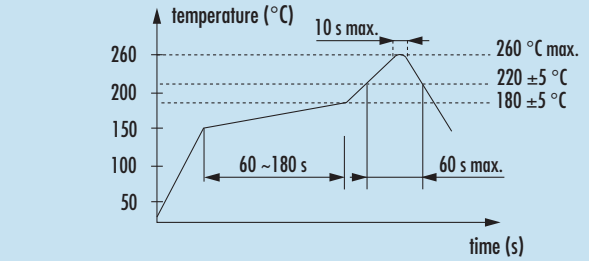
full data can be found under: www.jauch.de / www.jauch.fr / www.jauchusa.com

Oscillator · VCXO · JV75 · 5.0 V

Taping Specification



Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

Marking

frequency

type / date code

date code:

A ~ M: Jan.- Dec.

9: 2009

0: 2010

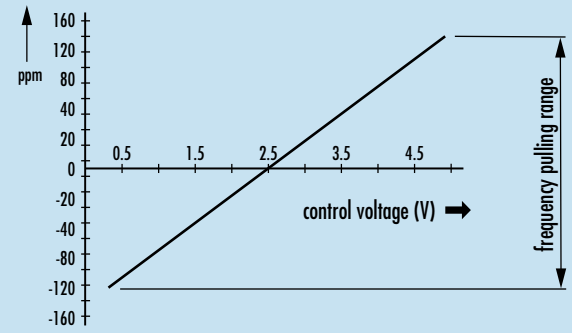
1: 2011

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

Control Voltage Characteristic

5.0 V version



Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

Enable / Disable Function

pin #2/#5	pin #4
open or high	oscillation
gnd or low	high impedance

actual size

Oscillator · VCXO · 3.3 V

SMD Voltage Control Crystal Oscillator · 7.5 x 5.0 mm

- two pinout versions available
- reflow soldering temperature: 260 °C max.
- ceramic/metal package

RoHS 2002/95/EC — RoHS compliant

Pb free: pins / pads

General Data

type		JV75 3.3 V
frequency range		1.0 ~ 125.0 MHz
frequency stability over all*		± 25ppm◆ / ± 50ppm
		see table 1
current consumption		see table 2
supply voltage V_{DC}		3.3 V ± 10%
frequency pulling range min.		± 50ppm / ± 100ppm▲ / ± 150ppm▸
pulling control voltage		1.65 V ± 1.65 V■
pulling linearity max.		± 10%
temperature	operating	-10 °C ~ +70 °C / -40 °C ~ +85 °C
	storage	-40 °C ~ +85 °C
output	rise & fall time	see table 3
	load max.	15pF
	current max.	4mA
	low level max.	0.1 x V_{DC}
	high level min.	0.9 x V_{DC}
standby function		yes
start-up time max.		10ms
symmetry at 0.5 x V_{DC}		45% ~ 55% typ. (40% ~ 60% max.)

◆not available > 52.0 MHz ▲not available > 80.0 MHz ▸on request, if < 52.0 MHz

Table 1: Frequency Stability Code

stability code	B ± 50 ppm	C ± 25 ppm				
-10 °C ~ +70 °C	○	○				
-40 °C ~ +85 °C	○	○				

● standard ○ available

*includes stability at 25 °C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption max.

Current at 15pF load:

1.0 ~ 29.9 MHz	15 mA
30.0 ~ 44.9 MHz	20 mA
45.0 ~ 51.9 MHz	25 mA
52.0 ~ 125.0 MHz	35 mA

Table 3: Rise & Fall Time max.

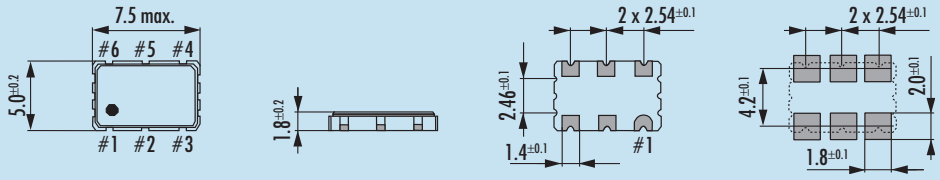
6.0 ns: 1.0 ~ 39.9 MHz
5.0 ns: 40.0 ~ 125.0 MHz

note:
- specific data on request
- rise time: 0.1 V_{DC} ~ 0.9 V_{DC}
- fall time: 0.9 V_{DC} ~ 0.1 V_{DC}

■Recommendation

To avoid phase noise or FM modulation in the output frequency spectrum, we recommend to feed the Vcontrol input pin by a low source impedance.

Dimensions



top view — side view — bottom view — pad layout

standard pin connection B	optional pin connection A
# 1: Vcontrol	# 1: Vcontrol
# 2: e/d	# 2: nc
# 3: ground	# 3: ground
# 4: output	# 4: output
# 5: nc	# 5: e/d
# 6: V_{DD}	# 6: V_{DD}

in mm

Order Information

0	frequency in MHz	type	frequency stability in ppm	supply voltage in Volt	pulling range in ppm	pin version	option
Oscillator	1.0 ~ 125.0 MHz	JV75	C = ± 25 ppm◆ B = ± 50 ppm	3.3 = 3.3 V	05 = ±50 ppm 10 = ±100 ppm▲ 15 = ±150 ppm▸	B = standard A = optional	blank = -10 °C ~ +70 °C T1 = -40 °C ~ +85 °C

◆not available > 52.0 MHz

▲not available > 80.0 MHz
▸on request, if < 52.0 MHz

Example: O 20.0-JV75-C-3.3-10-B (LF = RoHS compliant / Pb free pins or pads)

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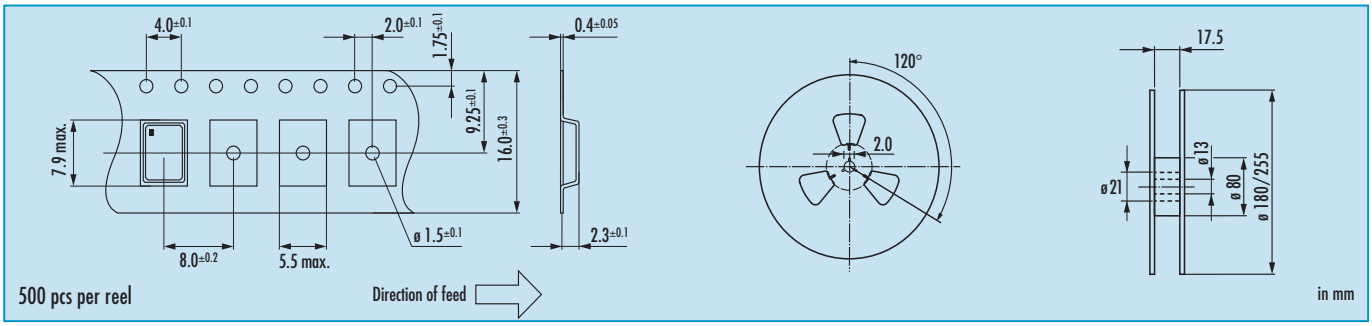
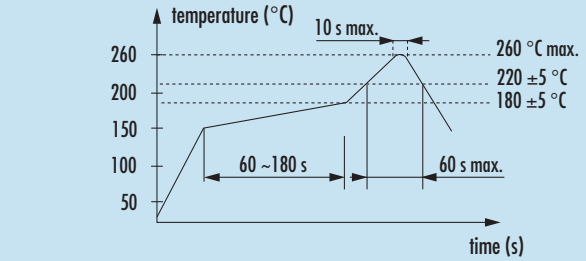
full data can be found under: www.jauch.de / www.jauch.fr / www.jauchusa.com

Oscillator · VCXO · JV75 · 3.3 V

Taping Specification



Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

Marking

frequency

type / date code

date code:

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Jan.	Febr.	Mar.	Apr.	May	June
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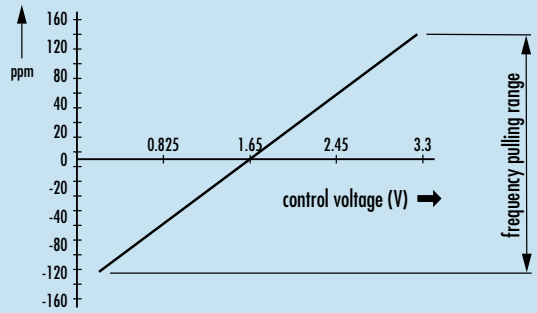
G	H	J	K	L	M

Control Voltage Characteristic

3.3 V version



Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

Enable / Disable Function

pin #2/#5	pin #4
open or ≥ 0.7 V_{DC}	enable
gnd or ≥ 0.3 V_{DC}	high impedance

actual size

Oscillator · TCXO · JT22C

TCXO with HCMOS output · 2.5 x 2.0 mm

- excellent phase noise
- operating temperature range -40 °C ~ +85 °C
- reflow soldering temperature: 260 °C max.
- ceramic/metal package

RoHS 2002/95/EC
RoHS compliant

Pb free: pins / pads

General Data

type		JT22C
frequency range		4.0 ~ 54.0 MHz
frequency stability	at +25 °C	± 0.5 ppm
	temperature	± 2.5 ppm (others on request)
	aging first year	± 1.0 ppm
	supply voltage	± 0.2 ppm (at V_{DC} ± 5%)
	load change	± 0.2 ppm
	after reflow	± 1.0 ppm
current consumption max.		→ see table 1
supply voltage V_{DC}		2.5 / 2.8 / 3.3 (± 5%)
temperature	operating	-30 °C ~ +75 °C / -40 °C ~ +85 °C
	storage	-40 °C ~ +125 °C
output	rise & fall time	5.0 ns max.
	load max.	15 pF
	current max.	4.0 mA
	low level max.	0.1 x V_{DC}
	high level min.	0.9 x V_{DC}
harmonics distortion max.		-5.0 dBc
symmetry at 0.5 x V_{DC}		45% ~ 55% max.
start-up time max.		10 ms
standby current max.		10 µA
output enable time max.		10 ms
output disable time max.		250 ns
Jitter 1 σ		3.0 ps
phase noise at 10 kHz offset		-145 dBc/Hz

Table 1: Current Consumption max.

	4 ~ 10 MHz	~ 20 MHz	~ 30 MHz	~ 40 MHz	~ 54 MHz
2.5 V	3.1 mA	3.7 mA	4.2 mA	4.6 mA	5.5 mA
2.8 V	3.4 mA	4.1 mA	4.7 mA	5.2 mA	6.0 mA
3.3 V	4.0 mA	4.8 mA	5.5 mA	6.0 mA	7.0 mA

Enable / Disable Function

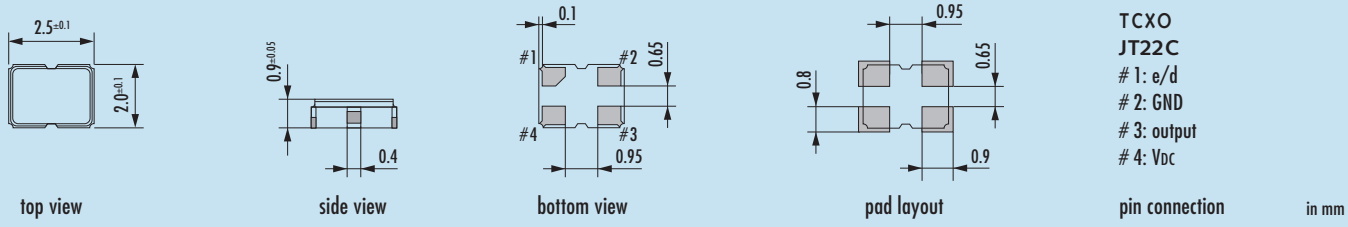
pin #1 (e/d control)	pin #3 (output)
open	active
high "1" ($V_{IH} \geq 0.7\ V_{DC}$)	active
low "0" ($V_{IL} \leq 0.3\ V_{DC}$)	high impedance

stop function:
- oscillator stops
- output high impedance

Note

4 user pins (e/d, GND, output, V_{DC})
leave the other pins unconnected!

Dimensions



in mm

Order Information

0	frequency in MHz	—	type	—	frequency stability code	—	operating temp. code	—	supply voltage
Oscillator	4.0 ~ 54.0 MHz		JT22C = TCXO		A = ± 2.5 ppm		G = -30 °C ~ +75 °C K = -40 °C ~ +85 °C		2.5 = 2.5 V 2.8 = 2.8 V 3.3 = 3.3 V

Example: O 16.3680-JT22C-A-K-3.3-LF (Suffix LF = RoHS compliant / Pb free pads)

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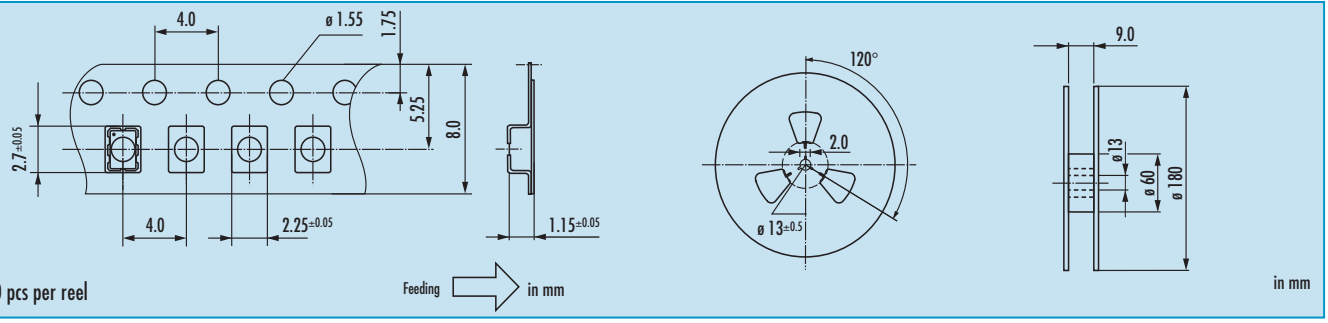
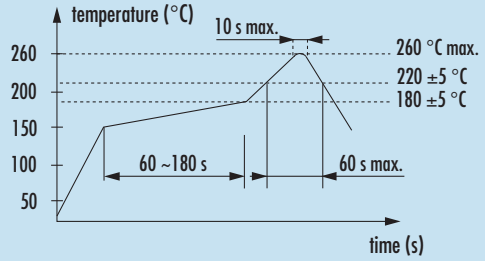
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Taping Specification



Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

Marking

frequency

company code / stability code / date code (YM)

date code:

A ~ M: Jan. - Dec.

9: 2009 2: 2012

0: 2010 3: 2013

1: 2011 4: 2014

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

actual size

Oscillator · TCXO · JT32C

TCXO with HCMOS output · 3.2 x 2.5 mm

- excellent phase noise
- operating temperature range -40 °C ~ +85 °C
- reflow soldering temperature: 260 °C max.
- ceramic/metal package

RoHS 2002/95/EC
RoHS compliant

Pb free: pins / pads

General Data

type		JT32C
frequency range		4.0 ~ 54.0 MHz
frequency stability	at +25 °C	± 0.5 ppm
	temperature	± 2.5 ppm (others on request)
	aging first year	± 1.0 ppm
	supply voltage	± 0.2 ppm (at V_{DC} ± 5%)
	load change	± 0.2 ppm
	after reflow	± 1.0 ppm
current consumption max.		→ see table 1
supply voltage V_{DC}		2.5 / 2.8 / 3.3 (± 5%)
temperature	operating	-30 °C ~ +75 °C / -40 °C ~ +85 °C
	storage	-40 °C ~ +125 °C
output	rise & fall time	5.0 ns max.
	load max.	15 pF
	current max.	4.0 mA
	low level max.	0.1 x V_{DC}
	high level min.	0.9 x V_{DC}
harmonics distortion max.		-5.0 dBc
symmetry at 0.5 x V_{DC}		45% ~ 55% max.
start-up time max.		10 ms
standby current max.		10 µA
output enable time max.		10 ms
output disable time max.		250 ns
Jitter 1 σ		3.0 ps
phase noise at 10 kHz offset		-145 dBc/Hz

Table 1: Current Consumption max.

	4 ~ 10 MHz	~ 20 MHz	~ 30 MHz	~ 40 MHz	~ 54 MHz
2.5 V	3.1 mA	3.7 mA	4.2 mA	4.6 mA	5.5 mA
2.8 V	3.4 mA	4.1 mA	4.7 mA	5.2 mA	6.0 mA
3.3 V	4.0 mA	4.8 mA	5.5 mA	6.0 mA	7.0 mA

Enable / Disable Function

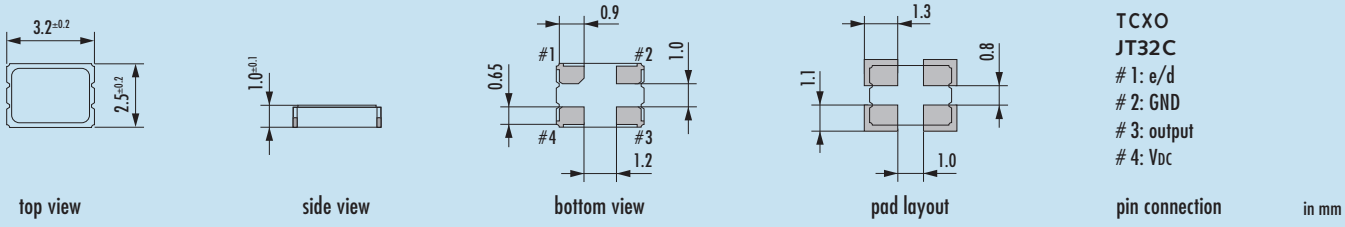
pin #1 (e/d control)	pin #3 (output)
open	active
high "1" ($V_{IH} \geq 0.7\ V_{DC}$)	active
low "0" ($V_{IL} \leq 0.3\ V_{DC}$)	high impedance

stop function:
- oscillator stops
- output high impedance

Note

4 user pins (e/d, GND, output, V_{DC})
leave the other pins unconnected!

Dimensions



top view | side view | bottom view | pad layout | pin connection | in mm

Order Information

0	frequency in MHz	—	type	—	frequency stability code	—	operating temp. code	—	supply voltage
Oscillator	4.0 ~ 54.0 MHz		JT32C = TCXO		A = ± 2.5 ppm		G = -30 °C ~ +75 °C K = -40 °C ~ +85 °C		2.5 = 2.5 V 2.8 = 2.8 V 3.3 = 3.3 V

Example: O 16.3680-JT32C-A-K-3.3-LF (Suffix LF = RoHS compliant / Pb free pads)

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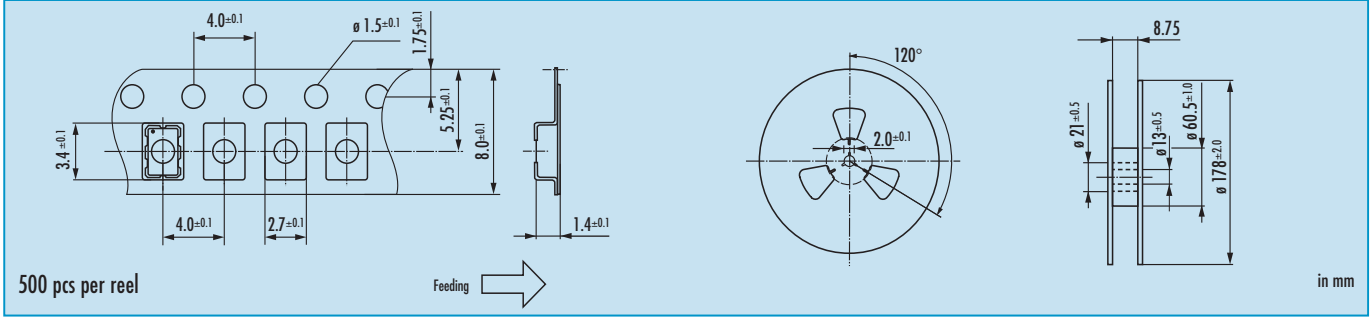
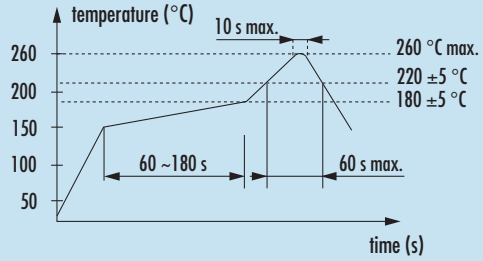
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Oscillator · TCXO · JT32C

Taping Specification



Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

Marking

frequency

company code / stability code / date code (YM)

date code:

A ~ M: Jan. - Dec.

9: 2009 2: 2012

0: 2010 3: 2013

1: 2011 4: 2014

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

actual size

Oscillator · TCXO · JT53C

TCXO with HCMOS output · 5.0 x 3.2 mm

- excellent phase noise
- operating temperature range -40 °C ~ +85 °C
- reflow soldering temperature: 260 °C max.
- ceramic/metal package

RoHS 2002/95/EC
RoHS compliant

Pb free: pins / pads

General Data

type		JT53C
frequency range		4.0 ~ 54.0 MHz
frequency stability	at +25 °C	± 0.5 ppm
	temperature	± 2.5 ppm (others on request)
	aging first year	± 1.0 ppm
	supply voltage	± 0.2 ppm (at V_{DC} ± 5%)
	load change	± 0.2 ppm
	after reflow	± 1.0 ppm
current consumption max.		→ see table 1
supply voltage V_{DC}		2.5 / 2.8 / 3.3 (± 5%)
temperature	operating	-30 °C ~ +75 °C / -40 °C ~ +85 °C
	storage	-40 °C ~ +125 °C
output	rise & fall time	5.0 ns max.
	load max.	15 pF
	current max.	4.0 mA
	low level max.	0.1 x V_{DC}
	high level min.	0.9 x V_{DC}
harmonics distortion max.		-5.0 dBc
symmetry at 0.5 x V_{DC}		45% ~ 55% max.
start-up time max.		10 ms
standby current max.		10 µA
output enable time max.		10 ms
output disable time max.		250 ns
Jitter 1 σ		3.0 ps
phase noise at 10 kHz offset		-145 dBc/Hz

Table 1: Current Consumption max.

	4 ~ 10 MHz	~ 20 MHz	~ 30 MHz	~ 40 MHz	~ 54 MHz
2.5 V	3.1 mA	3.7 mA	4.2 mA	4.6 mA	5.5 mA
2.8 V	3.4 mA	4.1 mA	4.7 mA	5.2 mA	6.0 mA
3.3 V	4.0 mA	4.8 mA	5.5 mA	6.0 mA	7.0 mA

Enable / Disable Function

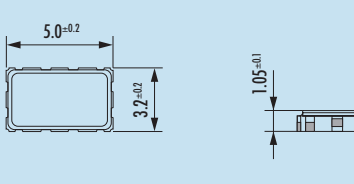
pin #1 (e/d control)	pin #3 (output)
open	active
high "1" ($V_{IH} \geq 0.7\ V_{DC}$)	active
low "0" ($V_{IL} \leq 0.3\ V_{DC}$)	high impedance

stop function:
- oscillator stops
- output high impedance

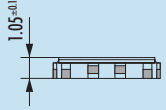
Note

4 user pins (e/d, GND, output, V_{DC})
leave the other pins unconnected!

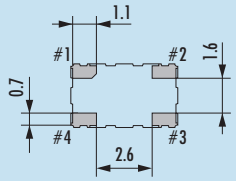
Dimensions



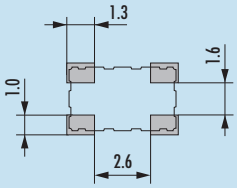
top view



side view



bottom view



pad layout

TCXO
JT53C
1: e/d
2: GND
3: output
4: V_{DC}

pin connection

in mm

Order Information

0	frequency in MHz	—	type	—	frequency stability code	—	operating temp. code	—	supply voltage
Oscillator	4.0 ~ 54.0 MHz		JT53C = TCXO		A = ± 2.5 ppm		G = -30 °C ~ +75 °C K = -40 °C ~ +85 °C		2.5 = 2.5 V 2.8 = 2.8 V 3.3 = 3.3 V

Example: O 16.3680-JT53C-A-K-3.3-LF (Suffix LF = RoHS compliant / Pb free pads)

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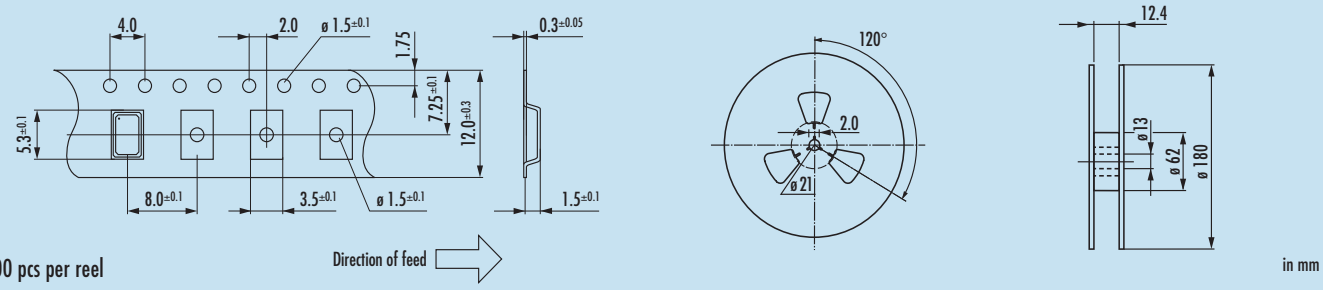
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Oscillator · TCXO · JT53C

Taping Specification

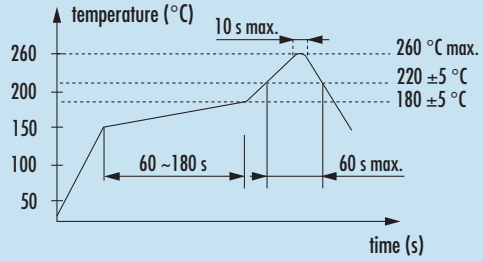


500 pcs per reel

Direction of feed

in mm

Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

Marking

frequency

company code / stability code / date code (YM)

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G	H	J	K	L	M

Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

actual size

Oscillator · (VC)TCXO · JT33(V)

Temp. Compensated Crystal Oscillator · 3.2 x 2.5 mm

- low power VCTCXO or TCXO
- temperature range -40 °C ~ +85 °C available
- reflow soldering temperature: 260 °C max.
- ceramic/metal package

RoHS 2011/65/EC — RoHS compliant

Pb free: pins / pads

General Data

type		JT33 / JT33V
frequency range		8.0 ~ 52.0 MHz
frequency tolerance/ stability	at +25 °C	± 1.5 ppm (incl. 2x reflow)
	temperature	± 1 ppm ~ ± 5 ppm (table 1)
	aging first year	± 1 ppm
	supply voltage	± 0.2 ppm (at V_{DC} ± 5%)
	load change	± 0.2 ppm
current consumption		2.5 mA max.
supply voltage V_{DC}		1.8 / 2.5 / 2.8 / 3.0 / 3.3 (± 5%)
temperature	operating	see table 1
	storage	-40 °C ~ +85 °C
output	load nom.	10 KΩ // 10 pF
	level min.	0.8 Vpp (clipped sine)
external tuning range JT33V		± 8 ppm min.
external tuning voltage JT33V		0.9 V ± 0.9 V at V_{DC} = 1.8 V (standard)
		1.5 V ± 1.0 V at V_{DC} ≥ 2.5 V (standard)
		1.4 V ± 1.0 V at V_{DC} ≥ 2.5 V (option)
start-up time max.		2.5 ms
phase noise	at 100 Hz	-109 dBc/Hz typ.
at f_0	at 1 KHz	-133 dBc/Hz typ.
26 MHz	at 10 KHz	-148 dBc/Hz typ.

Table 1: Frequency Stability vs. Temperature

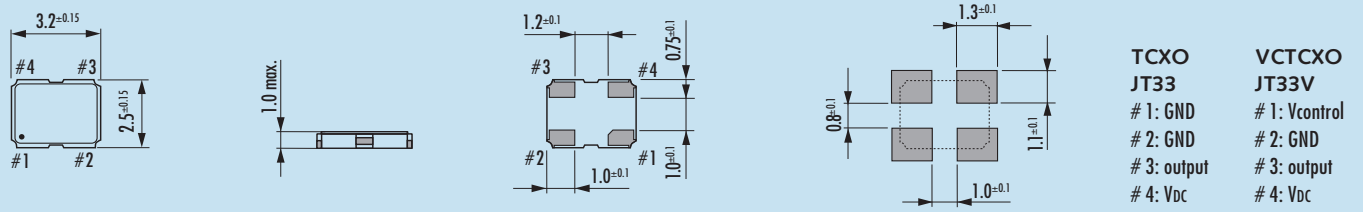
operating temperature code	frequency stability code Y ± 5.0 ppm	Z ± 3.0 ppm	A ± 2.5 ppm	B ± 2.0 ppm	C ± 1.5 ppm	D ± 1.0 ppm
A: -30 °C ~ +80 °C	○	○	○	○	○	○
B: -20 °C ~ +70 °C	○	○	○	○	○	○
C: -10 °C ~ +60 °C	○	○	○	○	○	○
D: 0 °C ~ +85 °C	○	○	○	○	○	○
E: 0 °C ~ +55 °C	○	○	○	○	○	○
F: -10 °C ~ +70 °C	○	○	○	○	○	○
G: -30 °C ~ +75 °C	○	○	○	○	○	○
H: -20 °C ~ +75 °C	○	○	○	○	○	○
K: -40 °C ~ +85 °C	○	○	○	○		
L: -20 °C ~ +85 °C	○	○	○	○	○	○
M: -30 °C ~ +85 °C	○	○	○	○		

● standard ○ on request

Note

- TCXO JT33: pin #1 connected to GND
- VCTCXO JT33V: pin #1 is control voltage Vc
- external AC coupling for output recommended

Dimensions



top view — side view — bottom view — pad layout

pin connection	TCXO JT33	VCTCXO JT33V
	# 1: GND	# 1: Vcontrol
	# 2: GND	# 2: GND
	# 3: output	# 3: output
	# 4: V_{DC}	# 4: V_{DC}

in mm

Order Information

0	frequency in MHz	type	frequency stability code	operating temp. code	supply voltage	control voltage (for JT33V only)
Oscillator	8.0 ~ 45.0 MHz	JT33 = TCXO JT33V = VCTCXO	A - Z see table 1	A - K see table 1	1.8 = 1.8 V 2.5 = 2.5 V 2.8 = 2.8 V 3.0 = 3.0 V 3.3 = 3.3 V	0.9 = V_C 0.9 V ± 0.9 V at V_{DC} = 1.8 V 1.5 = V_C 1.5 V ± 1.0 V at V_{DC} ≥ 2.5 V 1.4 = V_C 1.4 V ± 1.0 V at V_{DC} ≥ 2.5 V see General Data

Example: O 26.0-JT33V-A-G-3.3-1.5-LF (Suffix LF = RoHS compliant / Pb free pads)

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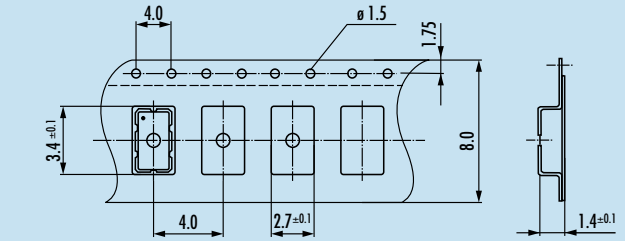
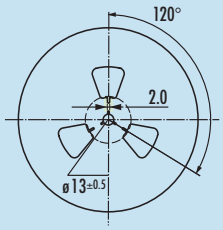
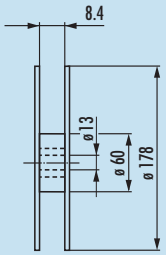
Taping Specification





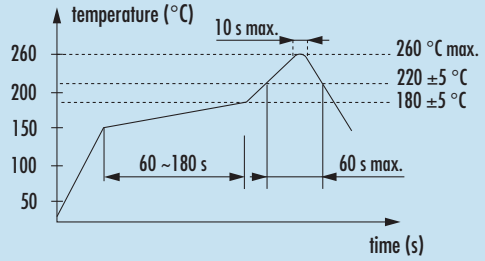


500 pcs per reel

Feeding

in mm

Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

Marking

type / frequency

company code / date code

date code:

A ~ M: Jan. - Dec.

1: 2011 4: 2014

2: 2012 5: 2015

3: 2013 6: 2016

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

actual size

Oscillator · (VC)TCXO · JT53L(V)

Temp. Compensated Crystal Oscillator · 5.0 x 3.2 mm

- low power VCTCXO or TCXO
- temperature range -40 °C ~ +85 °C available
- reflow soldering temperature: 260 °C max.
- ceramic/metal package

RoHS 2002/95/EC — RoHS compliant

Pb free: pins / pads

General Data

type		JT53L / JT53LV
frequency range		6.0 ~ 45.0 MHz
frequency stability	at +25 °C	± 0.5ppm
	temperature	± 1ppm ~ ± 5ppm (table 1)
	aging first year	± 1ppm
	supply voltage	± 0.2ppm (at V_{DC} ± 5%)
	load change	± 0.2ppm
current consumption max.		2.5mA max.
supply voltage V_{DC}		2.5 V (± 4%) and 2.8 V / 3.0 V / 3.3 V / 5.0 V (± 5%)
temperature	operating	see table 1
	storage	-45 °C ~ +85 °C
output	load nom.	10KΩ // 10pF
	level min.	0.8Vpp (clipped sine)
external tuning range JT53LV		± 8ppm min.
external tuning voltage		1.5 V ± 1.0 V
start-up time max.		2.5 ms
phase noise	at 100Hz	-113 dBc/Hz
at *fo*	at 1KHz	-135 dBc/Hz
13 MHz	at 10KHz	-140 dBc/Hz

Table 1: Frequency Stability vs. Temperature

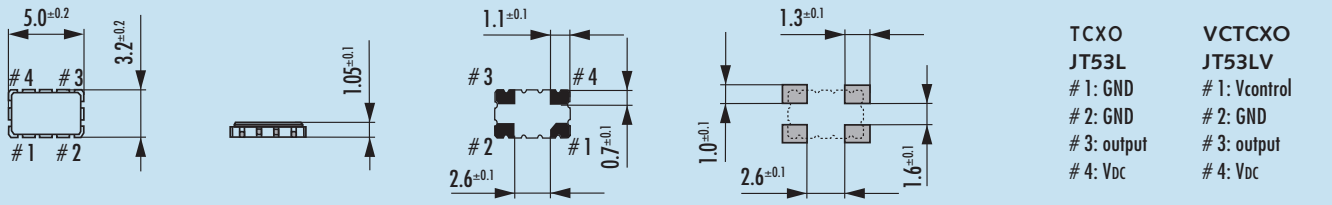
operating temperature code	frequency stability code Y ± 5.0 ppm	Z ± 3.0 ppm	A ± 2.5 ppm	B ± 2.0 ppm	C ± 1.5 ppm	D ± 1.0 ppm
A: -30 °C ~ +80 °C	○	○	○	○	○	○
B: -20 °C ~ +70 °C	○	○	○	○	○	○
C: -10 °C ~ +60 °C	○	○	○	○	○	○
D: 0 °C ~ +85 °C	○	○	○	○	○	○
E: 0 °C ~ +55 °C	○	○	○	○	○	○
F: -10 °C ~ +70 °C	○	○	○	○	○	○
G: -30 °C ~ +75 °C	○	○	○	○	○	○
H: -20 °C ~ +75 °C	○	○	○	○	○	○
K: -40 °C ~ +85 °C	○	○	○	○		
L: -20 °C ~ +85 °C	○	○	○	○	○	○
M: -30 °C ~ +85 °C	○	○	○	○		

● standard ○ available

Note

- TCXO JT53L: pin #1 connected to ground
- VCTCXO JT53LV: pin #1 connected to control voltage
- external AC coupling for output recommended

Dimensions



TCXO JT53L	VCTCXO JT53LV
# 1: GND	# 1: Vcontrol
# 2: GND	# 2: GND
# 3: output	# 3: output
# 4: V_{DC}	# 4: V_{DC}

pin connection

in mm

Order Information

Oscillator

6.0 ~ 45.0 MHz

JT53L = TCXO
JT53LV = VCTCXO

A ~ Z
see table 1

A ~ K
see table 1

2.5 = 2.5 V ± 4%
2.8 = 2.8 V
3.0 = 3.0 V } ± 5%
3.3 = 3.3 V
5.0 = 5.0 V option

Example: O 13.0-JT53L-A-B-3.3 (Suffix LF = RoHS compliant / Pb free pads)

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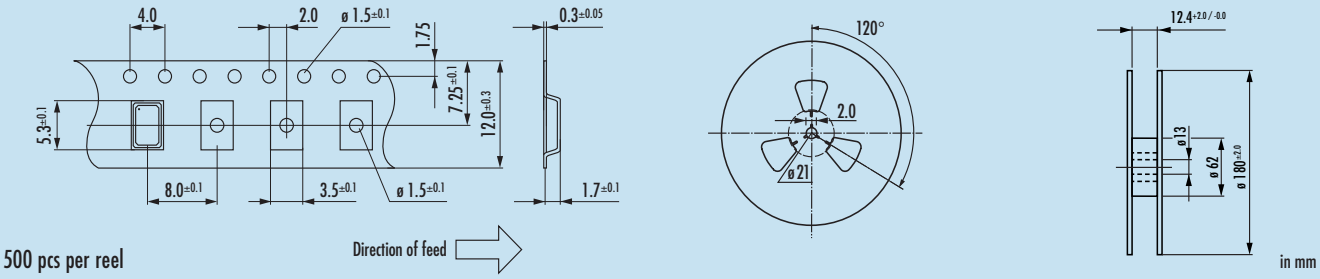
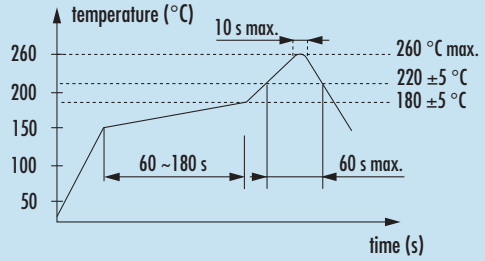
full data can be found under: www.jauch.de / www.jauch.fr / www.jauchusa.com

Oscillator · (VC-)TCXO · JT53L(V)

Taping Specification



Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

Marking

frequency

company code / date code

date code:

A ~ M: Jan.- Dec.

9: 2009

0: 2010

1: 2011

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

actual size

Oscillator · (VC)TCXO · JT75(V)

Temp. Compensated Crystal Oscillator · 7.0 x 5.0 mm

- low power VCTCXO or TCXO
- reflow soldering temperature: 260 °C max.
- ceramic/metal package

RoHS 2011/65/EC compliant

Pb free: pins / pads

General Data

type		JT75 / JT75V
frequency range		10.0 ~ 26.0 MHz
frequency stability	at +25 °C	± 0.5 ppm
	temperature	± 1 ppm ~ ± 2.5 ppm (table 1)
	aging first year	± 1 ppm
	supply voltage	± 0.2 ppm (at V_{DC} ± 5%)
	load change	± 0.2 ppm
current consumption max.		2.0 mA max.
supply voltage V_{DC}		2.8 / 3.0 / 3.3 / 5.0 V (± 5%)
temperature	operating	see table 1
	storage	-40 °C ~ +85 °C
output	load nom.	10 KΩ // 10 pF
	level min.	0.8 Vpp (clipped sine)
external tuning range JT75 V		± 8 ppm min.
external tuning voltage		1.5 V ± 1.0 V
start-up time max.		2.5 ms
phase noise	at 100Hz	-110 dBc/Hz
at *fo*	at 1KHz	-125 dBc/Hz
13 MHz	at 10KHz	-130 dBc/Hz

Table 1: Frequency Stability vs. Temperature

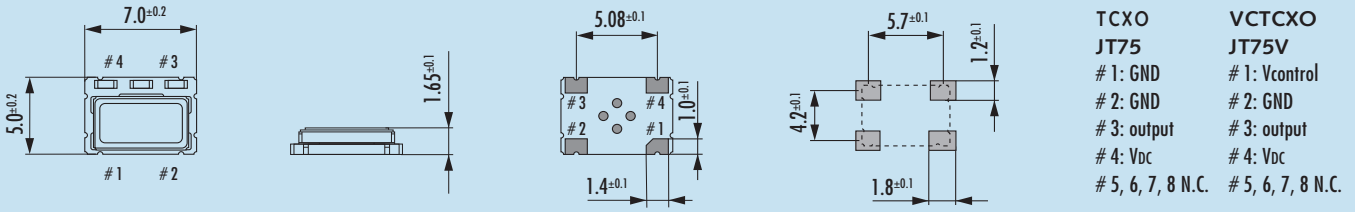
operating temperature code	frequency stability code A ± 2.5 ppm	B ± 2.0 ppm	C ± 1.5 ppm	D ± 1.0 ppm
A: -30 °C ~ +80 °C	○	○	○	
B: -20 °C ~ +70 °C	○	○	○	○
C: -10 °C ~ +60 °C	○	○	○	○
D: 0 °C ~ +85 °C	○	○		
E: 0 °C ~ +55 °C	○	○	○	○
F: -10 °C ~ +70 °C	○	○	○	○
G: -30 °C ~ +75 °C	○	○	○	○
H: -20 °C ~ +75 °C	○	○	○	○

● standard ○ on request

Note

- TCXO JT75: pin #1 connected to ground
- VCTCXO JT75V: pin #1 connected to control voltage
- internal AC coupling of output

Dimensions



top view | side view | bottom view | pad layout

TCXO JT75	VCTCXO JT75V
# 1: GND	# 1: Vcontrol
# 2: GND	# 2: GND
# 3: output	# 3: output
# 4: V_{DC}	# 4: V_{DC}
# 5, 6, 7, 8 N.C.	# 5, 6, 7, 8 N.C.

pin connection

in mm

Order Information

Oscillator	10.0 ~ 26.0 MHz	JT75 = TCXO JT75V = VCTCXO	A ~ D see table 1	A ~ H see table 1	2.8 = 2.8 V 3.0 = 3.0 V 3.3 = 3.3 V 5.0 = 5.0 V

Example: O 13.0-JT75-A-A-3.3-LF (Suffix LF = RoHS compliant / Pb free pads)

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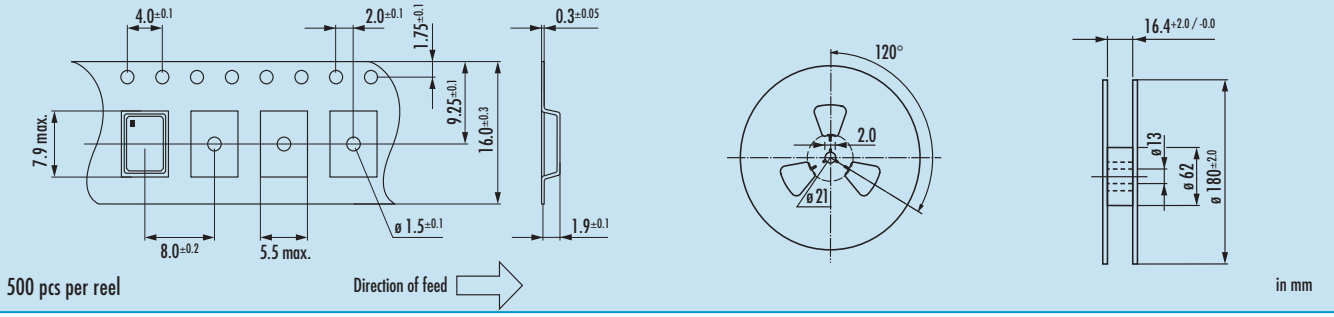
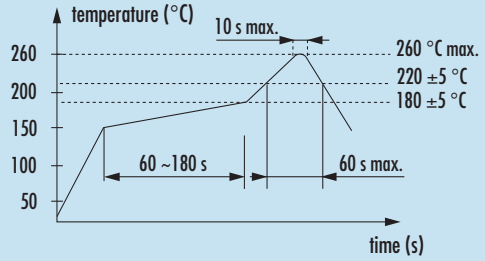
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Taping Specification



Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

Marking

frequency

company code / stability code / voltage code / date code

date code:

A ~ M: Jan. - Dec.

1: 2011 4: 2014

2: 2012 5: 2015

3: 2013 6: 2016

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

actual size

Oscillator · (VC)TCXO · JT33(V)

Temp. Compensated Crystal Oscillator · 3.2 x 2.5 mm

- low power VCTCXO or TCXO
- temperature range -40 °C ~ +85 °C available
- reflow soldering temperature: 260 °C max.
- ceramic/metal package

RoHS 2011/65/EC compliant

Pb free: pins / pads

General Data

type		JT33 / JT33V
frequency range		8.0 ~ 52.0 MHz
frequency tolerance/ stability	at +25 °C	± 1.5 ppm (incl. 2x reflow)
	temperature	± 1 ppm ~ ± 5 ppm (table 1)
	aging first year	± 1 ppm
	supply voltage	± 0.2 ppm (at V_{DC} ± 5%)
	load change	± 0.2 ppm
current consumption		2.5 mA max.
supply voltage V_{DC}		1.8 / 2.5 / 2.8 / 3.0 / 3.3 (± 5%)
temperature	operating	see table 1
	storage	-40 °C ~ +85 °C
output	load nom.	10 KΩ // 10 pF
	level min.	0.8 Vpp (clipped sine)
external tuning range JT33V		± 8 ppm min.
external tuning voltage JT33V		0.9 V ± 0.9 V at V_{DC} = 1.8 V (standard)
		1.5 V ± 1.0 V at V_{DC} ≥ 2.5 V (standard)
		1.4 V ± 1.0 V at V_{DC} ≥ 2.5 V (option)
start-up time max.		2.5 ms
phase noise	at 100 Hz	-109 dBc/Hz typ.
at f_0	at 1 KHz	-133 dBc/Hz typ.
26 MHz	at 10 KHz	-148 dBc/Hz typ.

Table 1: Frequency Stability vs. Temperature

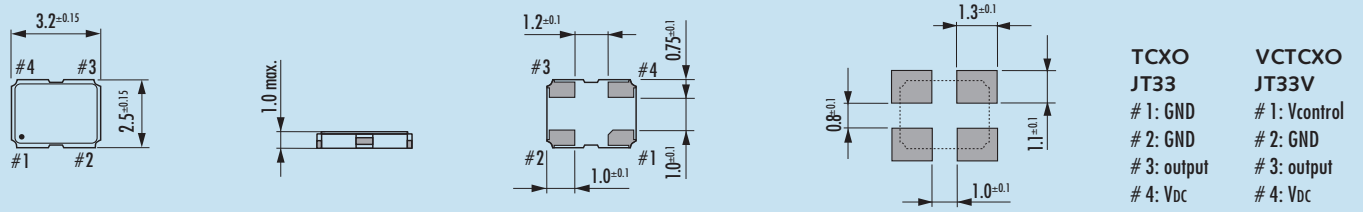
operating temperature code	frequency stability code Y ± 5.0 ppm	Z ± 3.0 ppm	A ± 2.5 ppm	B ± 2.0 ppm	C ± 1.5 ppm	D ± 1.0 ppm
A: -30 °C ~ +80 °C	○	○	○	○	○	○
B: -20 °C ~ +70 °C	○	○	○	○	○	○
C: -10 °C ~ +60 °C	○	○	○	○	○	○
D: 0 °C ~ +85 °C	○	○	○	○	○	○
E: 0 °C ~ +55 °C	○	○	○	○	○	○
F: -10 °C ~ +70 °C	○	○	○	○	○	○
G: -30 °C ~ +75 °C	○	○	○	○	○	○
H: -20 °C ~ +75 °C	○	○	○	○	○	○
K: -40 °C ~ +85 °C	○	○	○	○		
L: -20 °C ~ +85 °C	○	○	○	○	○	○
M: -30 °C ~ +85 °C	○	○	○	○		

● standard ○ on request

Note

- TCXO JT33: pin #1 connected to GND
- VCTCXO JT33V: pin #1 is control voltage Vc
- external AC coupling for output recommended

Dimensions



top view | side view | bottom view | pad layout

TCXO JT33	VCTCXO JT33V
# 1: GND	# 1: Vcontrol
# 2: GND	# 2: GND
# 3: output	# 3: output
# 4: V_{DC}	# 4: V_{DC}

pin connection

in mm

Order Information

0	frequency in MHz	type	frequency stability code	operating temp. code	supply voltage	control voltage (for JT33V only)
Oscillator	8.0 ~ 45.0 MHz	JT33 = TCXO JT33V = VCTCXO	A - Z see table 1	A - K see table 1	1.8 = 1.8 V 2.5 = 2.5 V 2.8 = 2.8 V 3.0 = 3.0 V 3.3 = 3.3 V	0.9 = V_C 0.9 V ± 0.9 V at V_{DC} = 1.8 V 1.5 = V_C 1.5 V ± 1.0 V at V_{DC} ≥ 2.5 V 1.4 = V_C 1.4 V ± 1.0 V at V_{DC} ≥ 2.5 V see General Data

Example: O 26.0-JT33V-A-G-3.3-1.5-LF (Suffix LF = RoHS compliant / Pb free pads)

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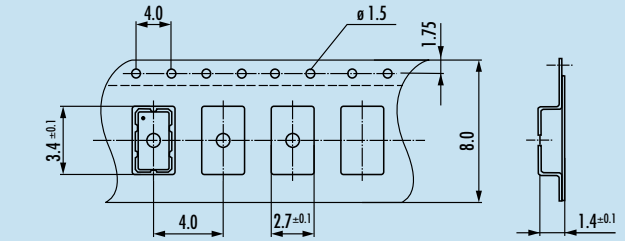
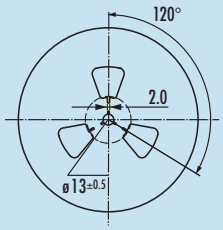
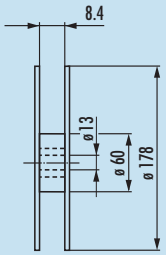
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Taping Specification





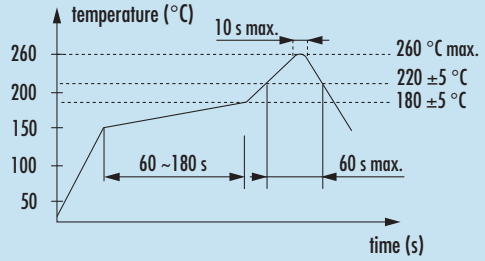


500 pcs per reel

Feeding

in mm

Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

Marking

type / frequency

company code / date code

date code:

A ~ M: Jan. - Dec.

1: 2011 4: 2014

2: 2012 5: 2015

3: 2013 6: 2016

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

actual size

Oscillator · (VC)TCXO · JT53L(V)

Temp. Compensated Crystal Oscillator · 5.0 x 3.2 mm

- low power VCTCXO or TCXO
- temperature range -40 °C ~ +85 °C available
- reflow soldering temperature: 260 °C max.
- ceramic/metal package

RoHS 2002/95/EC — RoHS compliant

Pb free: pins / pads

General Data

type		JT53L / JT53LV
frequency range		6.0 ~ 45.0 MHz
frequency stability	at +25 °C	± 0.5ppm
	temperature	± 1ppm ~ ± 5ppm (table 1)
	aging first year	± 1ppm
	supply voltage	± 0.2ppm (at V_{DC} ± 5%)
	load change	± 0.2ppm
current consumption max.		2.5mA max.
supply voltage V_{DC}		2.5 V (± 4%) and 2.8 V / 3.0 V / 3.3 V / 5.0 V (± 5%)
temperature	operating	see table 1
	storage	-45 °C ~ +85 °C
output	load nom.	10KΩ // 10pF
	level min.	0.8Vpp (clipped sine)
external tuning range JT53LV		± 8ppm min.
external tuning voltage		1.5 V ± 1.0 V
start-up time max.		2.5 ms
phase noise	at 100Hz	-113 dBc/Hz
at *fo*	at 1KHz	-135 dBc/Hz
13 MHz	at 10KHz	-140 dBc/Hz

Table 1: Frequency Stability vs. Temperature

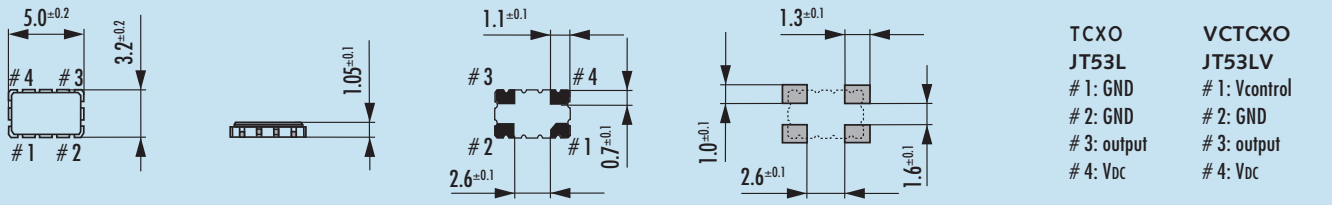
operating temperature code	frequency stability code Y ± 5.0 ppm	Z ± 3.0 ppm	A ± 2.5 ppm	B ± 2.0 ppm	C ± 1.5 ppm	D ± 1.0 ppm
A: -30 °C ~ +80 °C	○	○	○	○	○	○
B: -20 °C ~ +70 °C	○	○	○	○	○	○
C: -10 °C ~ +60 °C	○	○	○	○	○	○
D: 0 °C ~ +85 °C	○	○	○	○	○	○
E: 0 °C ~ +55 °C	○	○	○	○	○	○
F: -10 °C ~ +70 °C	○	○	○	○	○	○
G: -30 °C ~ +75 °C	○	○	○	○	○	○
H: -20 °C ~ +75 °C	○	○	○	○	○	○
K: -40 °C ~ +85 °C	○	○	○	○		
L: -20 °C ~ +85 °C	○	○	○	○	○	○
M: -30 °C ~ +85 °C	○	○	○	○		

● standard ○ available

Note

- TCXO JT53L: pin #1 connected to ground
- VCTCXO JT53LV: pin #1 connected to control voltage
- external AC coupling for output recommended

Dimensions



TCXO JT53L	VCTCXO JT53LV
# 1: GND	# 1: Vcontrol
# 2: GND	# 2: GND
# 3: output	# 3: output
# 4: V_{DC}	# 4: V_{DC}

pin connection

in mm

Order Information

0	frequency in MHz	type	frequency stability code	operating temp. code	supply voltage
Oscillator	6.0 ~ 45.0 MHz	JT53L = TCXO JT53LV = VCTCXO	A ~ Z see table 1	A ~ K see table 1	2.5 = 2.5 V ± 4% 2.8 = 2.8 V 3.0 = 3.0 V ± 5% 3.3 = 3.3 V 5.0 = 5.0 V option

Example: O 13.0-JT53L-A-B-3.3 (Suffix LF = RoHS compliant / Pb free pads)

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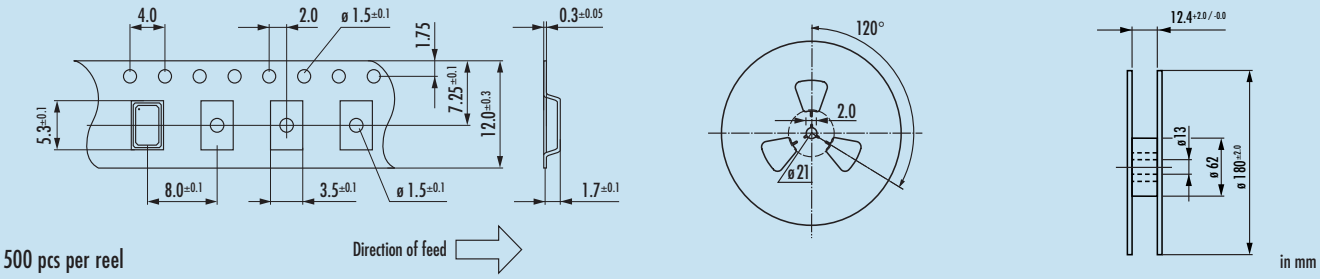
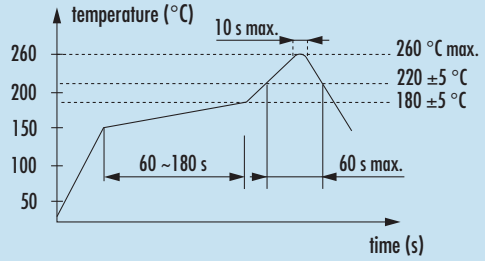
full data can be found under: www.jauch.de / www.jauch.fr / www.jauchusa.com

Oscillator · (VC-)TCXO · JT53L(V)

Taping Specification



Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

Marking

frequency

company code / date code

date code:

A ~ M: Jan.- Dec.

9: 2009

0: 2010

1: 2011

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

actual size

Oscillator · (VC)TCXO · JT75(V)

Temp. Compensated Crystal Oscillator · 7.0 x 5.0 mm

- low power VCTCXO or TCXO
- reflow soldering temperature: 260 °C max.
- ceramic/metal package

RoHS 2011/65/EC compliant

Pb free: pins / pads

General Data

type		JT75 / JT75V
frequency range		10.0 ~ 26.0 MHz
frequency stability	at +25 °C	± 0.5 ppm
	temperature	± 1 ppm ~ ± 2.5 ppm (table 1)
	aging first year	± 1 ppm
	supply voltage	± 0.2 ppm (at V_{DC} ± 5%)
	load change	± 0.2 ppm
current consumption max.		2.0 mA max.
supply voltage V_{DC}		2.8 / 3.0 / 3.3 / 5.0 V (± 5%)
temperature	operating	see table 1
	storage	-40 °C ~ +85 °C
output	load nom.	10 KΩ // 10 pF
	level min.	0.8 Vpp (clipped sine)
external tuning range JT75 V		± 8 ppm min.
external tuning voltage		1.5 V ± 1.0 V
start-up time max.		2.5 ms
phase noise	at 100Hz	-110 dBc/Hz
at *fo*	at 1KHz	-125 dBc/Hz
13 MHz	at 10KHz	-130 dBc/Hz

Table 1: Frequency Stability vs. Temperature

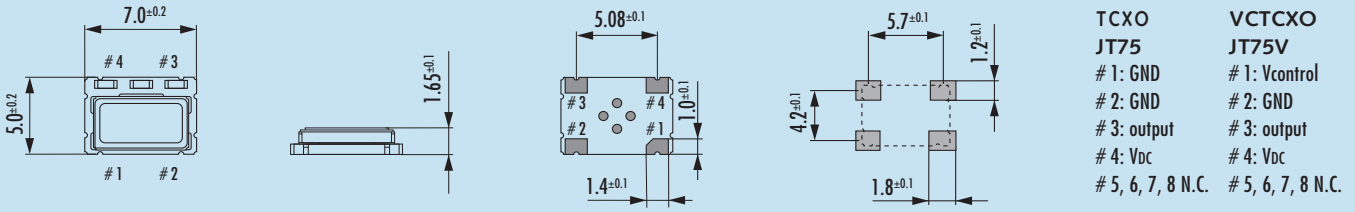
operating temperature code	frequency stability code A ± 2.5 ppm	B ± 2.0 ppm	C ± 1.5 ppm	D ± 1.0 ppm
A: -30 °C ~ +80 °C	○	○	○	
B: -20 °C ~ +70 °C	○	○	○	○
C: -10 °C ~ +60 °C	○	○	○	○
D: 0 °C ~ +85 °C	○	○		
E: 0 °C ~ +55 °C	○	○	○	○
F: -10 °C ~ +70 °C	○	○	○	○
G: -30 °C ~ +75 °C	○	○	○	○
H: -20 °C ~ +75 °C	○	○	○	○

● standard ○ on request

Note

- TCXO JT75: pin #1 connected to ground
- VCTCXO JT75V: pin #1 connected to control voltage
- internal AC coupling of output

Dimensions



top view | side view | bottom view | pad layout

TCXO JT75	VCTCXO JT75V
# 1: GND	# 1: Vcontrol
# 2: GND	# 2: GND
# 3: output	# 3: output
# 4: V_{DC}	# 4: V_{DC}
# 5, 6, 7, 8 N.C.	# 5, 6, 7, 8 N.C.

pin connection

in mm

Order Information

Oscillator	10.0 ~ 26.0 MHz	JT75 = TCXO JT75V = VCTCXO	A ~ D see table 1	A ~ H see table 1	2.8 = 2.8 V 3.0 = 3.0 V 3.3 = 3.3 V 5.0 = 5.0 V

Example: O 13.0-JT75-A-A-3.3-LF (Suffix LF = RoHS compliant / Pb free pads)

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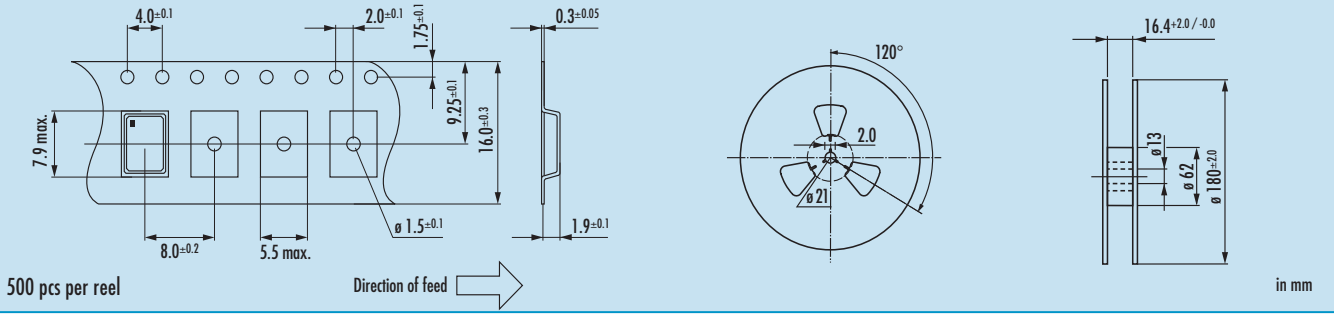
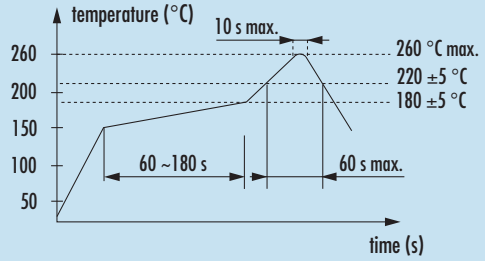
Taping Specification



Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

Marking

frequency

company code / stability code / voltage code / date code

date code:

A ~ M: Jan. - Dec.

1: 2011 4: 2014

2: 2012 5: 2015

3: 2013 6: 2016

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

actual size

Oscillator · PECL · JOE75 · 3.3 V

SMD Oscillator Low Voltage PECL · 7.5 x 5.2 mm

- drives fast PECL logic
- complementary output, low EMI
- reflow soldering temperature: 260 °C max.
- ceramic/metal package

RoHS 2002/95/EC — RoHS compliant

Pb free: pins / pads

General Data

type		JOE75 3.3 V
frequency range		40.0 ~ 170.0 MHz
higher frequencies on request		170.0 ~ 270.0 MHz
frequency stability over all*		± 25ppm / ± 50ppm /± 100ppm
		see table 1
current consumption		see table 2
supply voltage V_{DC}		3.3 V ± 5%
temperature	operating	-10 °C ~ +70 °C / -40 °C ~ +85 °C
	storage	-55 °C ~ +125 °C
output	rise & fall time	1ns (20% ~ 80% of Vpp)
	load nom.	50Ω at 1.3 V
	low level max.	1.7 V
	high level min.	2.2 V
output enable time max.		10ms
output disable time max.		200ns
start-up time max.		10ms
standby function		stop
standby current max.		30µA
phase jitter 12 kHz ~ 20.0 MHz		< 1.0ps RMS
period jitter		< 5.0ps RMS
symmetry at 50% of Vpp		45% ~ 55% max.

Table 1: Frequency Stability Code

stability code	A ± 100 ppm	B ± 50 ppm	C ± 25 ppm			
-10 °C ~ +70 °C	○	○	▲			
-40 °C ~ +85 °C	○	○				

● standard ○ available ▲ excludes shock & vibration

* includes stability at 25 °C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption max.

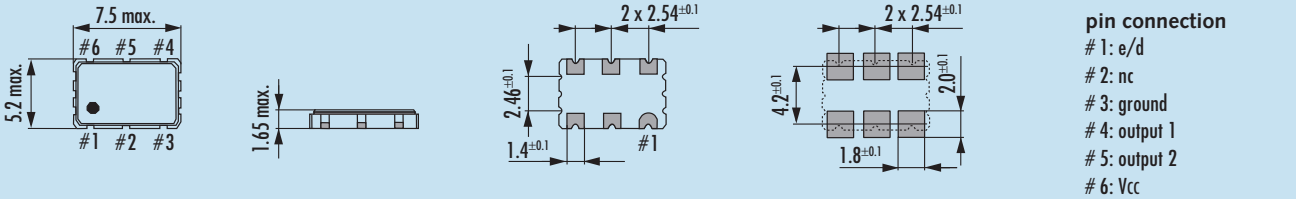
Current consumption at nominal load:

40.0 ~ 170.0 MHz	60 mA
170.0 ~ 270.0 MHz	88 mA

Enable / Disable Function

pin #1 (e/d control)	pin #4 / #5 (outputs)	
open or ≥ 0.7 V_{CC}	enable	
gnd or ≤ 0.3 V_{CC}	high impedance	

Dimensions



top view — side view — bottom view — pad layout

pin connection
1: e/d
2: nc
3: ground
4: output 1
5: output 2
6: Vcc

in mm

Order Information

0 — Oscillator

frequency in MHz — 40.0 ~ 170.0 MHz, > 170 MHz on request

type — JOE75

frequency stability code — see table 1

supply voltage in Volt — 3.3 = 3.3 V

option — blank = -10 °C ~ +70 °C; T1 = -40 °C ~ +85 °C

Example: O 155.520-JOE75-B-3.3-T1-LF (Suffix LF = RoHS compliant / Pb free pins or pads)

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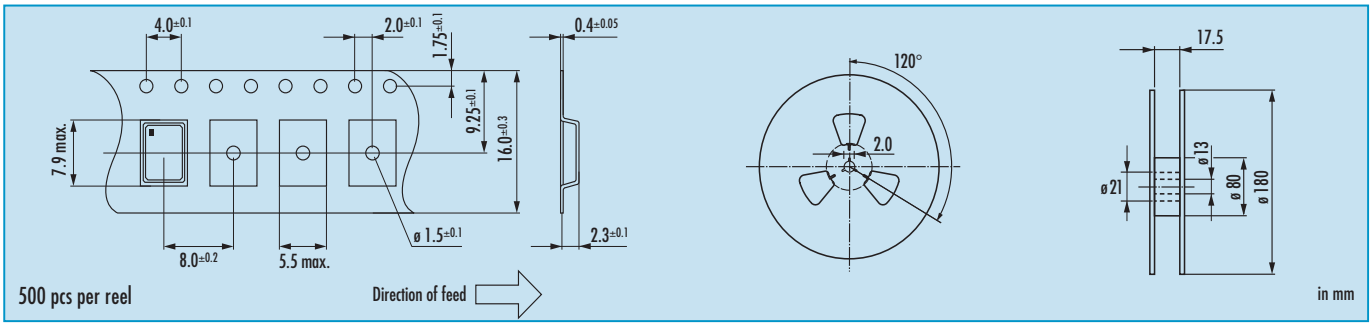
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Oscillator · PECL · JOE75 · 3.3 V

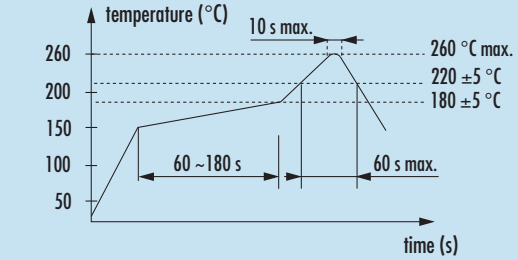
Taping Specification



Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

Marking

type / stability code / voltage code
frequency
company code / date code

date code:
A ~ M: Jan.- Dec.
9: 2009
0: 2010
1: 2011

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

actual size

Oscillator · PECL · JOE75 · 2.5 V

SMD Oscillator Low Voltage PECL · 7.5 x 5.2 mm

- drives fast PECL logic
- complementary output, low EMI
- reflow soldering temperature: 260 °C max.
- ceramic/metal package

RoHS 2002/95/EC — RoHS compliant

Pb free: pins / pads

General Data

type		JOE75 2.5 V
frequency range		40.0 ~ 170.0 MHz
higher frequencies on request		170.0 – 270.0 MHz
frequency stability over all*		± 25 ppm / ± 50 ppm / ± 100 ppm
		see table 1
current consumption		see table 2
supply voltage V_{DC}		2.5 V ± 5%
temperature	operating	-10 °C ~ +70 °C / -40 °C ~ +85 °C
	storage	-55 °C ~ +125 °C
output	rise & fall time	0.7 ns (20% ~ 80% of Vpp)
	load nom.	50Ω at 0.5 V
	low level max.	1.195 V
	high level min.	1.415 V
output enable time max.		10 ms
output disable time max.		200 ns
start-up time max.		10 ms
standby function		stop
standby current max.		30 µA
phase jitter 12 kHz ~ 20.0 MHz		< 1.0 ps RMS
period jitter		< 5.0 ps RMS
symmetry at 50% of Vpp		45% ~ 55% max.

Table 1: Frequency Stability Code

stability code	A ± 100 ppm	B ± 50 ppm	C ± 25 ppm			
-10 °C ~ +70 °C	○	○	▲			
-40 °C ~ +85 °C	○	○				

● standard ○ available ▲ excludes shock & vibration

* includes stability at 25 °C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Table 2: Current Consumption max.

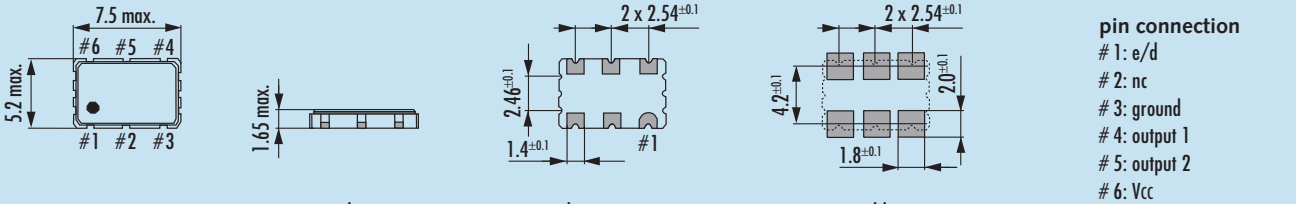
Current consumption at nominal load:

40.0 ~ 170.0 MHz	60 mA
170.0 ~ 270.0 MHz	88 mA

Enable / Disable Function

pin #1 (e/d control)	pin #4 / #5 (outputs)	
open or ≥ 0.7 V_{CC}	enable	
gnd or ≤ 0.3 V_{CC}	high impedance	

Dimensions



top view — side view — bottom view — pad layout

pin connection
1: e/d
2: nc
3: ground
4: output 1
5: output 2
6: Vcc

in mm

Order Information

0	frequency in MHz	–	type	–	frequency stability code	–	supply voltage in Volt	–	option
Oscillator	40.0 ~ 170.0 MHz > 170 MHz on request		JOE75		see table 1		2.5 = 2.5 V		blank = -10 °C ~ +70 °C T 1 = -40 °C ~ +85 °C on request

Example: O 155.520-JOE75-B-2.5-T1-LF (Suffix LF = RoHS compliant / Pb free pins or pads)

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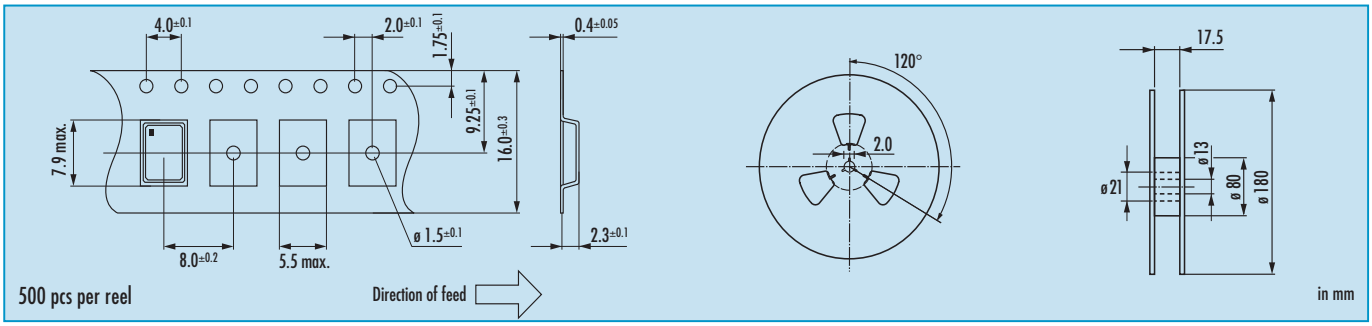
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Oscillator · PECL · JOE75 · 2.5 V

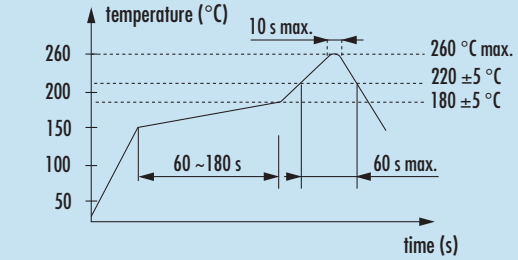
Taping Specification



Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

Marking

type / frequency

company code / date code

date code:

A ~ M: Jan.- Dec.

9: 2009

0: 2010

1: 2011

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

actual size

Oscillator · PECL · VCXO

SMD PECL VCXO · 7.5 x 5.2 mm

- uses quartz crystal in MESA technology
- low phase noise + jitter
- complementary PECL output, low EMI
- ceramic/metal package

RoHS 2002/95/EC
RoHS compliant

Pb free: pins / pads

General Data

type		JVE75A
frequency range		50.0 ~ 700.0 MHz
frequency stability over all*		± 25ppm / ± 50ppm (see table 1)
frequency pulling range min.		± 80ppm
pulling control voltage		1.65 V ± 1.5 V▪
pulling control input imped. min.		60 kΩ
current consumption		120mA max.
supply voltage V_{DC}		3.3 V ± 5%
temperature	operating	-10 °C ~ +70 °C / -40 °C ~ +85 °C
	storage	-40 °C ~ +85 °C
output	rise & fall time	0.5ns (20% ~ 80% of Vpp)
	load nom.	50Ω at 1.3 V
	low level max.	1.7 V
	high level min.	2.2 V
standby function		yes
output enable time max.		10ms
output disable time max.		50ns
start-up time max.		10ms
phase jitter 12 kHz ~ 20.0 MHz		< 1.0ps RMS
symmetry at 50% of Vpp		45% ~ 55% typ. (40% ± 60% max.)

Table 1: Frequency Stability Code

stability code	B ± 50 ppm	C ± 25 ppm				
-10 °C ~ +70 °C	○	○				
-40 °C ~ +85 °C	○					

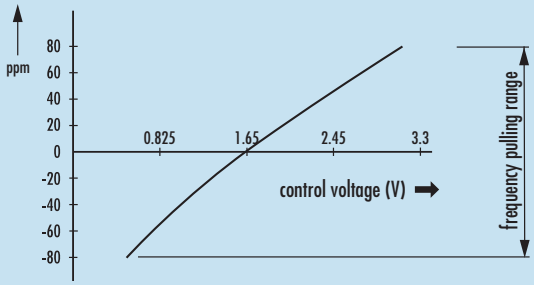
● standard ○ available

* includes stability at 25 °C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Enable / Disable Function

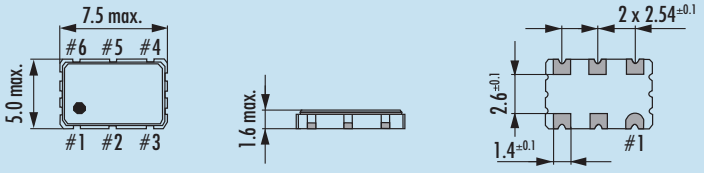
pin #2 (e/d control)	pin #4 / #5 (outputs)	
open or ≥ 2.4 V	active	
gnd or ≤ 0.4 V	high impedance	

Control Voltage Characteristic



▪To avoid phase noise or FM modulation in the output frequency spectrum, we recommend to feed the Vcontrol input pin by a low source impedance.

Dimensions



top view | side view | bottom view | pad layout

pin connection
1: Vcontrol
2: e/d
3: ground
4: output 1
5: output 2
6: Vcc

in mm

Order Information

0	frequency	–	type	–	stability at 25 °C in ppm	–	supply voltage	–	pulling range in ppm	–	option
Oscillator	50.0 ~ 700.0 MHz		JVE75A		B = ± 50 ppm C = ± 25 ppm		3.3 = 3.3 V		08 = ± 80 ppm		blank = -10 °C ~ +70 °C T1 = -40 °C ~ +85 °C

Example: O 155.520-JVE75A-B-3.3-08 (Suffix LF = RoHS compliant / Pb free pins or pads)

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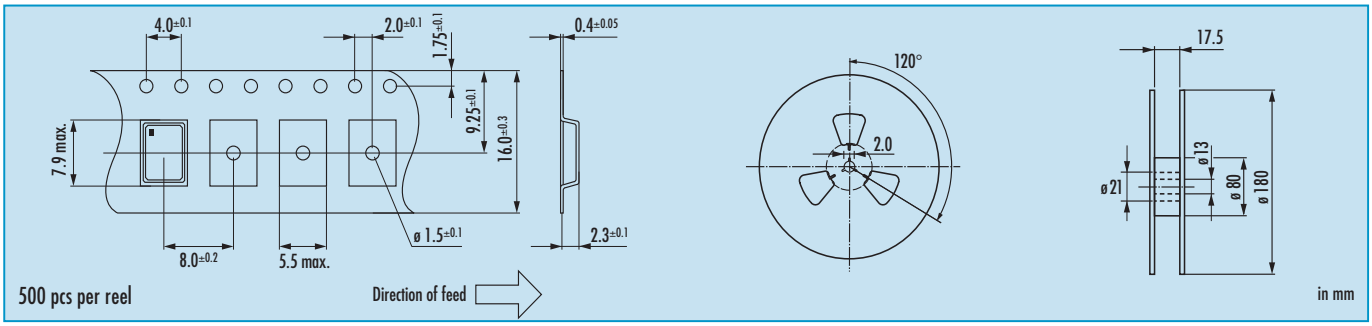
full data can be found under: www.jauch.de / www.jauch.fr / www.jauchusa.com

Oscillator · PECL · VCXO · JVE75A

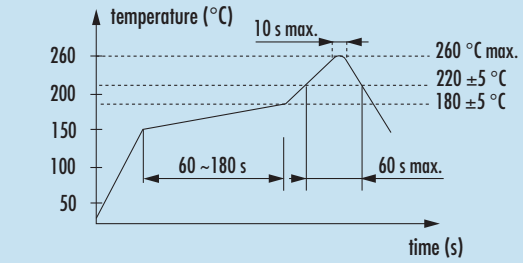
Taping Specification



Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

Marking

type / frequency / date code

date code:
A ~ M: Jan.- Dec.
9: 2009
0: 2010
1: 2011

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

actual size

Oscillator · PECL · VCXO

SMD PECL VCXO · 7.5 x 5.2 mm

- uses quartz crystal at fundamental mode and PLL
- high pulling range ± 150 ppm
- complementary PECL output, low EMI
- ceramic/metal package

RoHS 2002/95/EC compliant

Pb free: pins / pads

General Data

type		JVE75B
frequency range		12.0 ~ 800.0 MHz
frequency stability over all*		± 25ppm / ± 50ppm (see table 1)
frequency pulling range min.		± 150ppm
pulling control voltage		1.65 V ± 1.5 V▪
pulling control input imped. min.		60 kΩ
current consumption		120mA max.
supply voltage V_{DC}		3.3 V ± 5%
temperature	operating	-10 °C ~ +70 °C / -40 °C ~ +85 °C
	storage	-40 °C ~ +85 °C
output	rise & fall time	1.0ns (20% ~ 80% of Vpp)*
	load nom.	50Ω at 1.3 V
	low level max.	1.7 V
	high level min.	2.2 V
standby function		yes
output enable time max.		10ms
output disable time max.		50ns
start-up time max.		10ms
phase jitter 12 kHz ~ 20.0 MHz		< 5.0ps RMS
Osymmetry at 50% of Vpp		45% ~ 55% typ. (40% ± 60% max.)

* 0.5ns, if >100.0 MHz

Table 1: Frequency Stability Code

stability code	B ± 50 ppm	C ± 25 ppm				
-10 °C ~ +70 °C	○	○				
-40 °C ~ +85 °C	○					

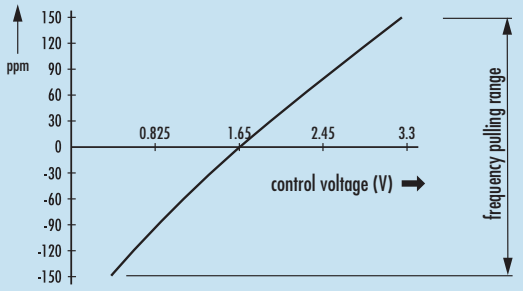
● standard ○ available

* includes stability at 25 °C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Enable / Disable Function

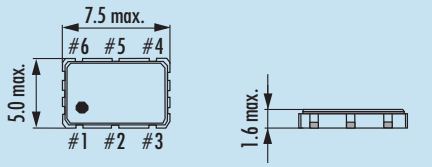
pin #2 (e/d control)	pin #4 / #5 (outputs)	
open or ≥ 2.4 V	active	
gnd or ≤ 0.4 V	high impedance	

Control Voltage Characteristic



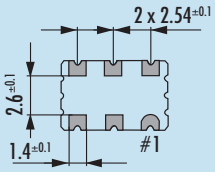
▪To avoid phase noise or FM modulation in the output frequency spectrum, we recommend to feed the Vcontrol input pin by a low source impedance.

Dimensions

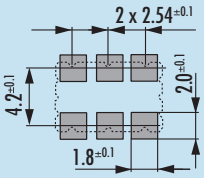


top view

side view



bottom view



pad layout

pin connection
1: Vcontrol
2: e/d
3: ground
4: output 1
5: output 2
6: Vcc

in mm

Order Information

0	frequency	type	stability at 25 °C in ppm	supply voltage	pulling range in ppm	option
Oscillator	12.0 ~ 800.0 MHz	JVE75B	B = ± 50 ppm C = ± 25 ppm	3.3 = 3.3 V	15 = ± 150 ppm	blank = -10 °C ~ +70 °C T1 = -40 °C ~ +85 °C

Example: O 155.520-JVE75B-B-3.3-15-T1 (Suffix LF = RoHS compliant / Pb free pins or pads)

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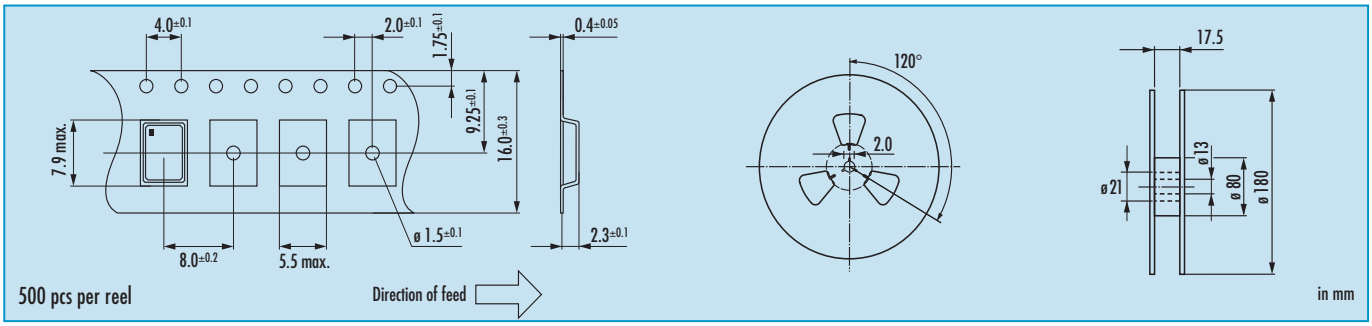
full data can be found under: www.jauch.de / www.jauch.fr / www.jauchusa.com

Oscillator · PECL · VCXO · JVE75B

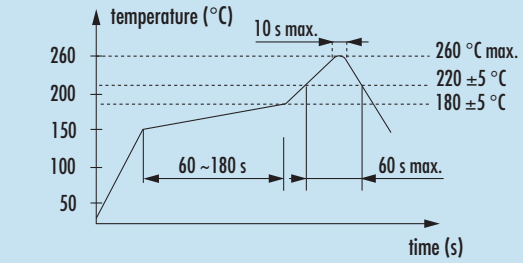
Taping Specification



Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

Marking

type / frequency / date code

date code:
A ~ M: Jan.- Dec.
9: 2009
0: 2010
1: 2011

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

actual size

Oscillator · LVDS · JOD75

SMD Low Voltage LVDS Oscillator · 7.5 x 5.2 mm

- drives fast LVDS logic
- complementary output, low EMI
- reflow soldering temperature: 260 °C max.
- ceramic/metal package

RoHS 2002/95/EC
RoHS compliant

Pb free: pins / pads

General Data

type		JOD75 3.3 V & 2.5 V
frequency range		75.0 ~ 170.0 MHz
higher frequencies on request		170.0 ~ 270.0 MHz
frequency stability over all*		± 25 ppm ~ ± 100 ppm
		see table 1
current consumption		66mA max.
supply voltage V_{DC}		3.3 V ± 5% / 2.5 V ± 5%
temperature	operating	-10 °C ~ +70 °C / -40 °C ~ +85 °C
	storage	-55 °C ~ +125 °C
output	rise & fall time	0.7ns (20% ~ 80% of Vpp)
	load nom.	100Ω differential
	swing	0.35Vp-p typ. / 0.25Vp-p min.
	offset voltage	1.25V ± 0.125V
output enable time max.		10ms
output disable time max.		200ns
start-up time max.		10ms
standby function		stop
standby current max.		30µA
phase jitter 12 kHz ~ 20.0 MHz		< 1.0ps RMS
period jitter		< 5.0ps RMS
symmetry at 50% of Vpp		45% ~ 55% max.

Table 1: Frequency Stability Code

stability code	A ± 100 ppm	B ± 50 ppm	C ± 25 ppm			
-10 °C ~ +70 °C	○	○	▲			
-40 °C ~ +85 °C	○	○				

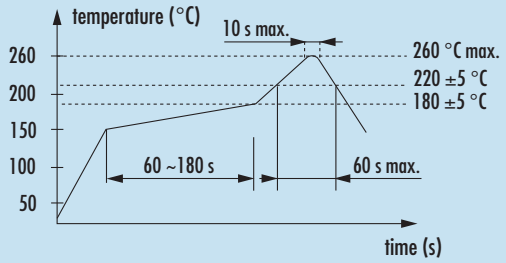
● standard ○ available ▲ excludes shock & vibration

* includes stability at 25 °C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Enable / Disable Function

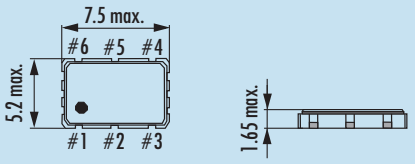
pin #1 (e/d control)	pin #4 / #5 (outputs)	
open or ≥ 0.7 V_{CC}	enable	
gnd or ≤ 0.3 V_{CC}	high impedance	

Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

Dimensions



top view | side view | bottom view | pad layout

pin connection
1: e/d
2: nc
3: ground
4: output 1
5: output 2
6: Vcc

in mm

Order Information

0	frequency in MHz	–	type	–	frequency stability code	–	supply voltage in Volt	–	option
Oscillator	75.0 ~ 170.0 MHz >170.0 MHz on request		JOD75		see table 1		3.3 = 3.3 V 2.5 = 2.5 V		blank = -10 °C ~ +70 °C T1 = -40 °C ~ +85 °C on request

Example: O 155.520-JOD75-B-3.3-T1 (Suffix LF = RoHS compliant / Pb free pins or pads)

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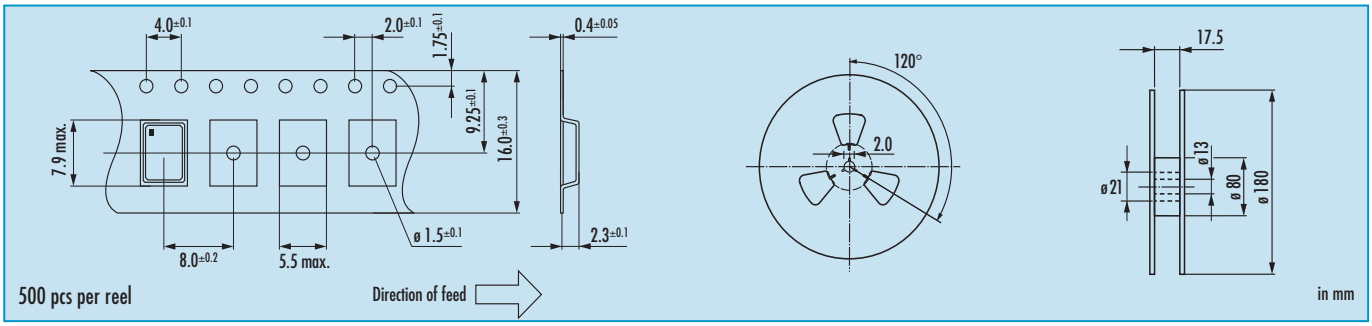
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

Oscillator · LVDS · JOD75

Taping Specification



Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

Marking

type / stability code / voltage code
frequency
company code / date code

date code:
A ~ M: Jan.- Dec.
9: 2009
0: 2010
1: 2011

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

actual size

Oscillator · LVDS · VCXO

SMD LVDS VCXO · 7.5 x 5.0 mm

- uses quartz crystal in MESA technology
- low phase noise + jitter
- complementary LVDS output, low EMI
- ceramic/metal package

RoHS 2002/95/EC
RoHS compliant

Pb free: pins / pads

General Data

type		JVD75A
frequency range		50.0 ~ 700.0 MHz
frequency stability over all*		± 25ppm / ± 50ppm (see table 1)
frequency pulling range min.		± 80ppm
pulling control voltage		1.65 V ± 1.5 V▪
pulling control input imped. min.		60 kΩ
current consumption		80mA max.
supply voltage V_{DC}		3.3 V ± 5%
temperature	operating	-10 °C ~ +70 °C / -40 °C ~ +85 °C
	storage	-40 °C ~ +85 °C
output	rise & fall time	1.0ns (20% ~ 80% of Vpp)
	load nom.	100Ω differential
	swing min.	0.35Vp-p
	offset voltage	1.25 V ± 0.125V
standby function		yes
output enable time max.		10ms
output disable time max.		150ns
start-up time max.		10ms
phase jitter 12 kHz ~ 20.0 MHz		< 1.0ps RMS
symmetry at 50% of Vpp		45% ~ 55% typ. (40% ± 60% max.)

Table 1: Frequency Stability Code

stability code	B ± 50 ppm	C ± 25 ppm				
-10 °C ~ +70 °C	○	○				
-40 °C ~ +85 °C	○					

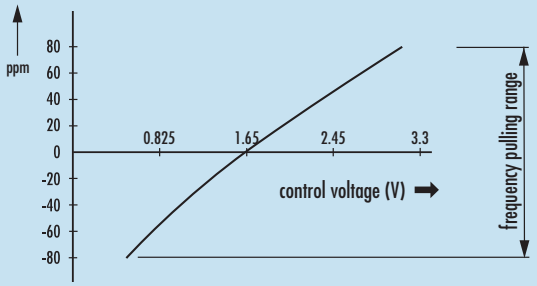
● standard ○ available

* includes stability at 25 °C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Enable / Disable Function

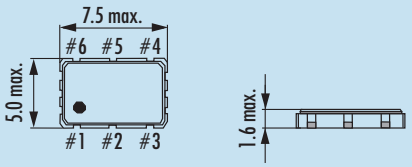
pin #2 (e/d control)	pin #4 / #5 (outputs)	
open or ≥ 2.4 V	active	
gnd or ≤ 0.4 V	high impedance	

Control Voltage Characteristic



▪To avoid phase noise or FM modulation in the output frequency spectrum, we recommend to feed the Vcontrol input pin by a low source impedance.

Dimensions



pin connection
1: Vcontrol
2: e/d
3: ground
4: output 1
5: output 2
6: Vcc

in mm

Order Information

0	frequency	–	type	–	stability at 25 °C in ppm	–	supply voltage	–	pulling range in ppm	–	option
Oscillator	50.0 ~ 700.0 MHz		JVD75A		B = ± 50 ppm C = ± 25 ppm		3.3 = 3.3 V		08 = ± 80 ppm		blank = -10 °C ~ +70 °C T1 = -40 °C ~ +85 °C

Example: O 155.520-JVD75A-B-3.3-08 (Suffix LF = RoHS compliant / Pb free pins or pads)

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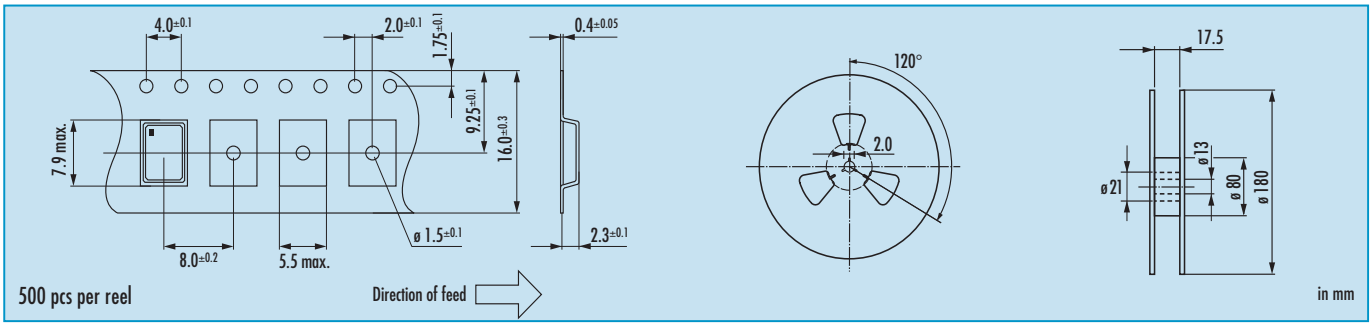
full data can be found under: www.jauch.de / www.jauch.fr / www.jauchusa.com

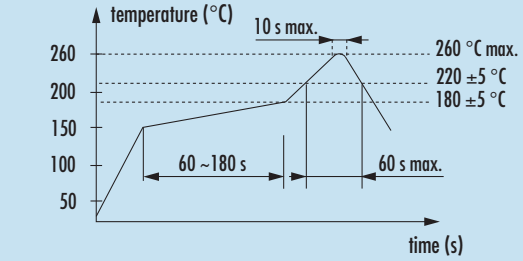
Taping Specification



Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

Marking

type / frequency / date code

date code:
A ~ M: Jan.- Dec.
9: 2009
0: 2010
1: 2011

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

actual size

Oscillator · LVDS · VCXO

SMD LVDS VCXO · 7.5 x 5.0 mm

- uses quartz crystal at fundamental mode and PLL
- high pulling range ± 150 ppm
- complementary LVDS output, low EMI
- ceramic/metal package

RoHS 2002/95/EC compliant

Pb free: pins / pads

General Data

type		JVD75B
frequency range		12.0 ~ 800.0 MHz
frequency stability over all*		± 25ppm / ± 50ppm (see table 1)
frequency pulling range min.		± 150ppm
pulling control voltage		1.65 V ± 1.5 V▪
pulling control input imped. min.		60 kΩ
current consumption		80mA max.
supply voltage V_{DC}		3.3 V ± 5%
temperature	operating	-10 °C ~ +70 °C / -40 °C ~ +85 °C
	storage	-40 °C ~ +85 °C
output	rise & fall time	1.0ns (20% ~ 80% of Vpp)
	load nom.	100Ω differential
	swing min.	0.35Vp-p
	offset voltage	1.25 V ± 0.125V
standby function		yes
output enable time max.		10ms
output disable time max.		150ns
start-up time max.		10ms
phase jitter 12 kHz ~ 20.0 MHz		< 5.0ps RMS
symmetry at 50% of Vpp		45% ~ 55% typ. (40% ± 60% max.)

Table 1: Frequency Stability Code

stability code	B ± 50 ppm	C ± 25 ppm				
-10 °C ~ +70 °C	○	○				
-40 °C ~ +85 °C	○					

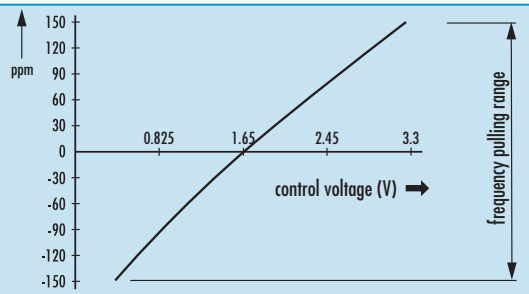
● standard ○ available

* includes stability at 25 °C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

Enable / Disable Function

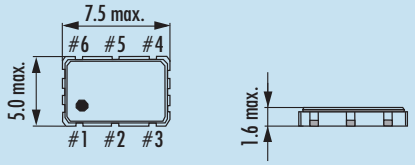
pin #2 (e/d control)	pin #4 / #5 (outputs)	
open or ≥ 2.4 V	active	
gnd or ≤ 0.4 V	high impedance	

Control Voltage Characteristic



▪To avoid phase noise or FM modulation in the output frequency spectrum, we recommend to feed the Vcontrol input pin by a low source impedance.

Dimensions



top view | side view | bottom view | pad layout

pin connection
1: Vcontrol
2: e/d
3: ground
4: output 1
5: output 2
6: Vcc

in mm

Order Information

0	frequency	–	type	–	stability at 25 °C in ppm	–	supply voltage	–	pulling range in ppm	–	option
Oscillator	12.0 ~ 800.0 MHz		JVD75B		B = ± 50 ppm C = ± 25 ppm		3.3 = 3.3 V		15 = ± 150 ppm		blank = -10 °C ~ +70 °C T1 = -40 °C ~ +85 °C

Example: O 155.520-JVD75B-B-3.3-15-T1 (Suffix LF = RoHS compliant / Pb free pins or pads)

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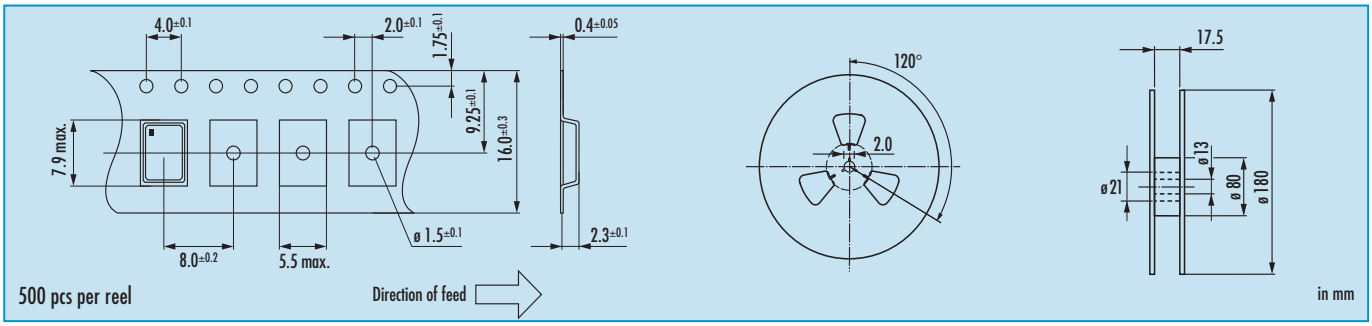
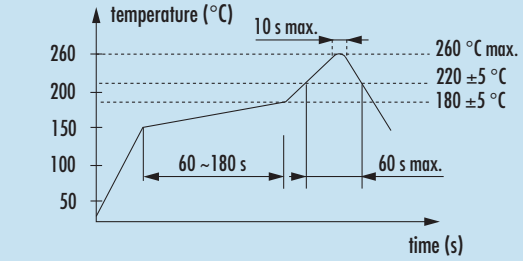
Taping Specification



Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

Reflow Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

Marking

type / frequency / date code

date code:
A ~ M: Jan.- Dec.
9: 2009
0: 2010
1: 2011

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

actual size

Oscillator · JRO32

Low Power/Low Frequency Oscillator

- low power type for Real Time Clocks (RTC)
- uses tuning fork crystal
- RoHS compliant, ceramic/metal package
- reflow soldering temperature: 260 °C max.

RoHS 2002/95/EC
RoHS compliant

Pb free

General Data

type		JRO32 for Real Time Clock
frequency		32.768 kHz
frequency tolerance at 25°C		+5 ±20 ppm
frequency stability over temp.		-90 ppm ~ +10 ppm for -20 °C ~ +70 °C
(ref to frequ. at +25°C)		-140 ppm ~ +10 ppm for -40 °C ~ +85 °C
current consumption (no load)		2.5 µA (5.0 V), 1.5 µA (3.3 V)
supply voltage range V_{DC}		1.5 V ±10% ~ 5.0 V ±10%
temperature	operating	-10 °C ~ +70 °C / -40 °C ~ +85 °C
	storage	-55 °C ~ +125 °C
output	rise & fall time	200 ns
	load max.	15 pF
	current max.	400 µA
	low level max.	0.4 V
	high level min.	V_{DC} -0.4 V
output enable time		0.15 s/typ. 0.5 s/max.
output disable time max.		150 ns
start-up time max.		1 s
standby function		tristate
standby current max.		1 µA
symmetry at 0.5 x V_{DC}		40% ~ 60% max.

Enable / Disable Function

pin #1 (e/d control)	pin #3 (output)
open	undefined
high "1" ($V_{IH} \geq 0.8\ V_{DC}$)	active
low "0" ($V_{IL} \leq 0.2\ V_{DC}$)	high impedance

disabled conditions:
- internal oscillator active
- output disabled, high impedance

enable condition:
- pull the e/d pin to „H" if the oscillator should always be enabled

Current Consumption

V_{DC}	at 15 pF
5.0 V	7.0 µA
3.3 V	5.5 µA
2.8 V	5.0 µA
2.5 V	4.5 µA
1.8 V	3.5 µA
1.5 V	3.0 µA

Marking

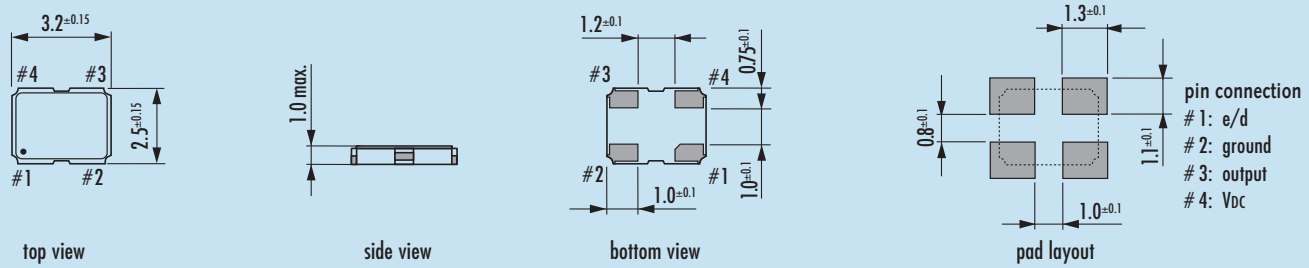
frequency / date code

date code:
A ~ M: Jan.- Dec.
0: 2010 3: 2013
1: 2011 4: 2014
2: 2012 5: 2015

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F

July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

Dimensions



Order Information

0	frequency	type	frequency stability code	supply voltage code	output load code	option
Oscillator	0.032768 MHz	JRO32	TF = tuning fork characteristics	V = variable supply voltage	1 = 15 pF	blank = -20 °C ~ +70 °C T1 = -40 °C ~ +85 °C

Example: O 0.032768-JRO32-TF-V-1-T1-LF (LF = RoHS compliant / Pb free pads)

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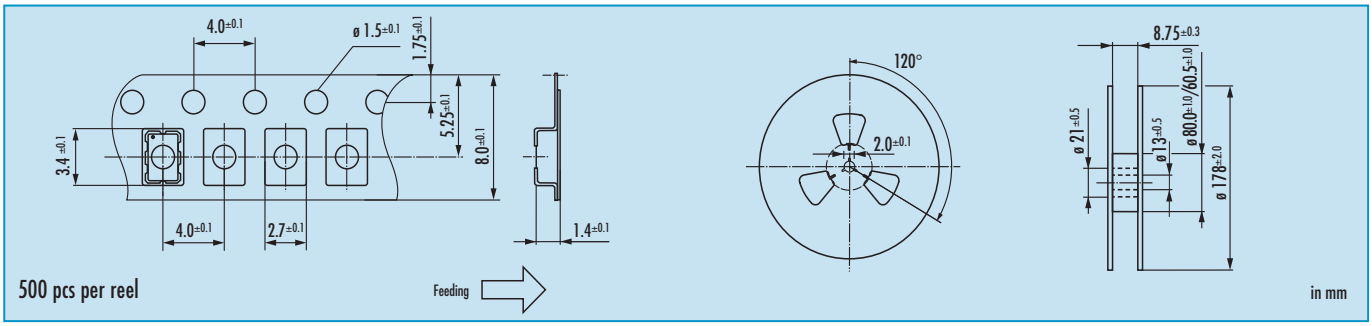
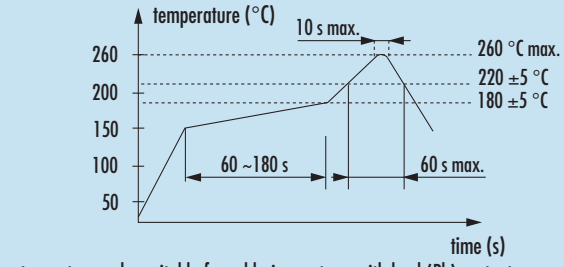
full data can be found under: www.jauch.de / www.jauch.co.uk / www.jauch.fr / www.jauchusa.com

JRO32 · Low Power / Low Frequency Oscillator

Taping Specification



Reflow Soldering Profile

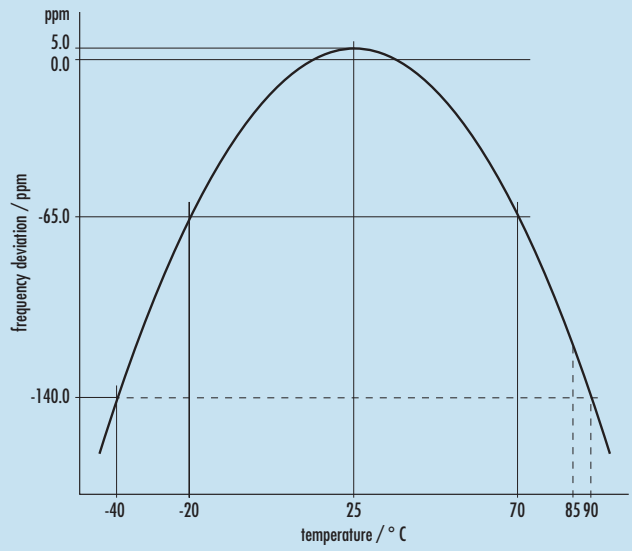


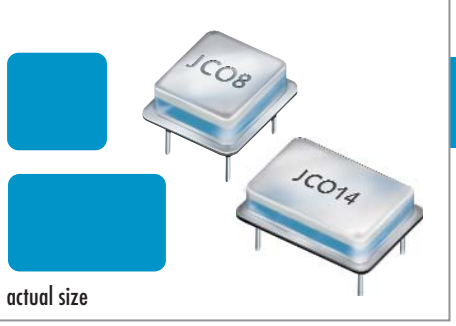
note: parts are also suitable for soldering systems with lead (Pb) content

Packing Note

- standard packing units are 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

Nominal Temperature Characteristic





actual size

Oscillator · JCO · 3.3 V

Pin Type Oscillator

- soldering temperature: 260 °C max.
- metal package

RoHS 2002/95/EC compliant

Pb free: pins / pads

General Data

type		JCO8 / JCO14 3.3 V
frequency range		1.0 ~ 160.0 MHz (15pF max.)
		1.0 ~ 50.00 MHz (15pF~30pF max.)
frequency stability over all		± 15ppm ~ ± 100ppm (table 1)
current consumption		see table 2
supply voltage V_{DC}		3.3 V ± 10%
temperature	operating	-10 °C ~ +70 °C / -40 °C ~ +85 °C
	storage	-55 °C ~ +125 °C
output	rise & fall time	see table 3
	load max	15pF / 30pF
	current max.	8mA
	low level max.	+0.5 V
	high level min.	V_{DC} -0.5 V
output enable time max.		10ms
output disable time max.		100ns
start-up time max.		10ms
standby function		optional
phase jitter 12 kHz ~ 20.0 MHz		< 1.0ps RMS
symmetry at 0.5 x V_{DC}		45% ~ 55% typ. (40% ~ 60% max.)

Table 1: Frequency Stability Code

stability code	A	B	G	C	D	E
	± 100 ppm	± 50 ppm	± 30 ppm	± 25 ppm	± 20 ppm	± 15 ppm
-10 °C ~ +70 °C	○	●	○	○	○	○
-40 °C ~ +85 °C	●	○	○	○		

● standard ○ on request

Table 2: Current Consumption max.

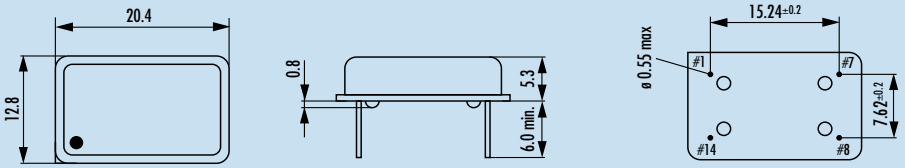
Current at 15pF load:		Current at 30pF load:	
1.0 ~ 29.9 MHz	10 mA	1.0 ~ 29.9 MHz	20 mA
30.0 ~ 49.9 MHz	15 mA	30.0 ~ 50.0 MHz	35 mA
50.0 ~ 89.9 MHz	30 mA		
90.0 ~ 124.9 MHz	45 mA		
125.0 ~ 160.0 MHz	60 mA		

Table 3: Rise & Fall Time max.

6.0 ns: 1.0 ~ 49.9 MHz	**note:**
5.0 ns: 50.0 ~ 79.9 MHz	- specific data on request
4.0 ns: 80.0 ~ 99.9 MHz	- rise time: 0.1 V_{DC} ~ 0.9 V_{DC}
3.0 ns: 100.0 ~ 160.0 MHz	- fall time: 0.9 V_{DC} ~ 0.1 V_{DC}

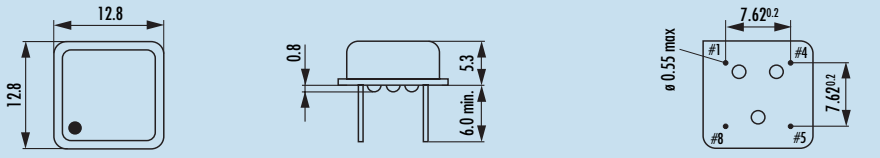
Dimensions JCO14 / JCO8

JCO14



pin connection
1: not connected or e/d
7: ground
8: output
#14: supply voltage

JCO8



top view side view bottom view

pin connection
1: not connected or e/d
4: ground
5: output
8: supply voltage

in mm

Order Information

0	frequency	type	e/d function	frequency stability	supply voltage code	option
Oscillator	1.0 ~ 160.0 MHz	JCO8 JCO14	2 = no 3 = yes/tristate	see table 1	3.3 V = 3.3 Volt	blank = -10 °C ~ +70 °C T1 = -40 °C ~ +85 °C

Example: O 20.0-JCO8-3-A-3.3V-T1 (LF = RoHS compliant / Pb free pins or pads)

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full data can be found under: www.jauch.de / www.jauch.fr / www.jauchusa.com

Oscillator · JCO · 3.3 V

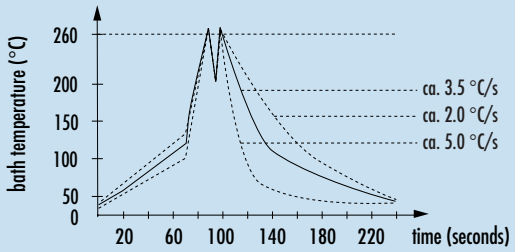
Enable / Disable Function

pin #1	pin #3
open or high	oscillation
gnd or low	high impedance

Marking

type
frequency
company code / date code

Wave Soldering Profile



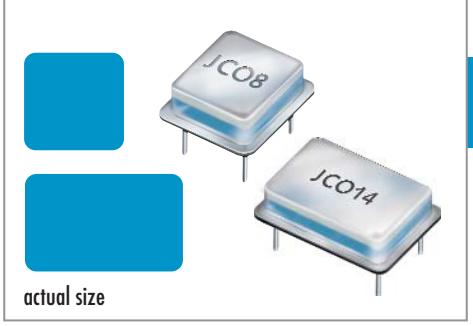
note: parts are also suitable for soldering systems with lead (Pb) content

Preferred Type

JCO8-3-B-3.3
JCO14-3-B-3.3

Packaging

JCO8-3-B	packed in antistatic plastic tubes, 40 pcs
JCO14-3-B	packed in antistatic plastic tubes, 25 pcs



actual size

Oscillator · JCO · 5.0 V

Pin Type Oscillator

- soldering temperature: 260 °C max.
- metal package

RoHS 2002/95/EC compliant

Pb free: pins / pads

General Data

type		JCO8 / JCO14 5.0 V
frequency range		1.0 ~ 160.0 MHz (15pF max.)
		1.0 ~ 40.00 MHz (15pF~50pF max.)
frequency stability over all		± 15ppm ~ ± 100ppm (table 1)
current consumption		see table 2
supply voltage V_{DC}		5.0 V ± 10%
temperature	operating	-10 °C ~ +70 °C / -40 °C ~ +85 °C
	storage	-55 °C ~ +125 °C
output	rise & fall time	see table 3
	load max	15pF / 50pF
	current max.	16mA
	low level max.	+0.5 V
	high level min.	V_{DC} -0.5 V
output enable time max.		10ms
output disable time max.		100ns
start-up time max.		10ms
standby function		optional
phase jitter 12 kHz ~ 20.0 MHz		< 1.0ps RMS
symmetry at 0.5 x V_{DC}		45% ~ 55% typ. (40% ~ 60% max.)

Table 1: Frequency Stability Code

stability code	A ± 100 ppm	B ± 50 ppm	G ± 30 ppm	C ± 25 ppm	D ± 20 ppm	E ± 15 ppm
-10 °C ~ +70 °C	○	●	○	○	○	○
-40 °C ~ +85 °C	●	○	○	○		

● standard ○ on request

Table 2: Current Consumption max.

Current at 15pF load:		Current at 50pF load:	
1.0 ~ 29.9 MHz	15 mA	1.0 ~ 19.9 MHz	20 mA
30.0 ~ 49.9 MHz	25 mA	20.0 ~ 40.0 MHz	35 mA
50.0 ~ 89.9 MHz	40 mA		
90.0 ~ 124.9 MHz	50 mA		
125.0 ~ 160.0 MHz	60 mA		

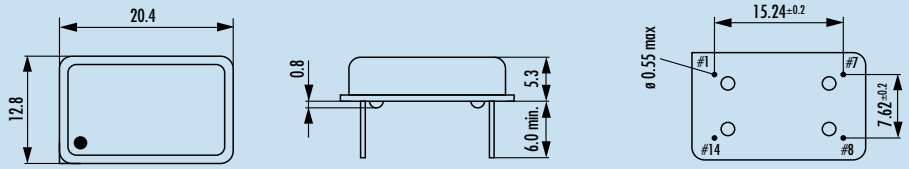
Table 3: Rise & Fall Time max.

6.0 ns:	1.0 ~ 49.9 MHz
5.0 ns:	50.0 ~ 79.9 MHz
4.0 ns:	80.0 ~ 99.9 MHz
3.0 ns:	100.0 ~ 160.0 MHz

note:
- specific data on request
- rise time: 0.1 V_{DC} ~ 0.9 V_{DC}
- fall time: 0.9 V_{DC} ~ 0.1 V_{DC}

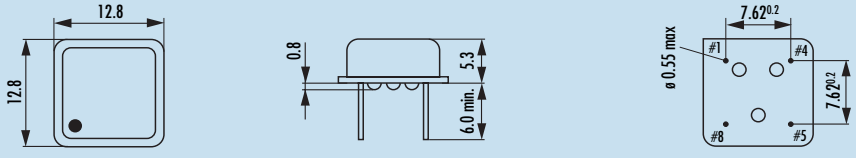
Dimensions JCO14 / JCO8

JCO14



pin connection
1: not connected or e/d
7: ground
8: output
#14: supply voltage

JCO8



top view side view bottom view

pin connection
1: not connected or e/d
4: ground
5: output
8: supply voltage

in mm

Order Information

0	frequency	–	type	–	e/d function	–	frequency stability	–	supply voltage code	–	option
Oscillator	1.0 ~ 160.0 MHz		JCO8 JCO14		2 = no 3 = yes/tristate		see table 1		blank = 5.0 Volt		blank = -10 °C ~ +70 °C T1 = -40 °C ~ +85 °C

Example: O 20.0-JCO8-3-A-T1 (LF = RoHS compliant / Pb free pins or pads)

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full data can be found under: www.jauch.de / www.jauch.fr / www.jauchusa.com

Oscillator · JCO · 5.0 V

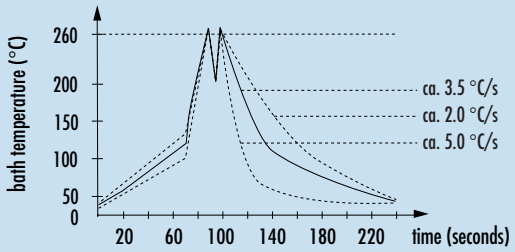
Enable / Disable Function

pin #1	pin #3
open or high	oscillation
gnd or low	high impedance

Marking

type
frequency
company code / date code

Wave Soldering Profile



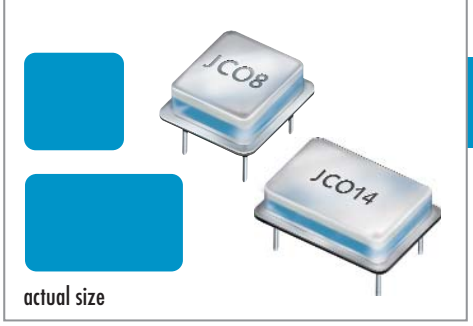
note: parts are also suitable for soldering systems with lead (Pb) content

Preferred Type

JCO8-3-B
JCO14-3-B

Packaging

JCO8-3-B	packed in antistatic plastic tubes, 40 pcs
JCO14-3-B	packed in antistatic plastic tubes, 25 pcs



actual size

Oscillator · JCO · 5.0 V

Pin Type Oscillator

- soldering temperature: 260 °C max.
- metal package

RoHS 2002/95/EC compliant

Pb free: pins / pads

General Data

type		JCO8 / JCO14 5.0 V
frequency range		1.0 ~ 160.0 MHz (15pF max.)
		1.0 ~ 40.00 MHz (15pF~50pF max.)
frequency stability over all		± 15ppm ~ ± 100ppm (table 1)
current consumption		see table 2
supply voltage V_{DC}		5.0 V ± 10%
temperature	operating	-10 °C ~ +70 °C / -40 °C ~ +85 °C
	storage	-55 °C ~ +125 °C
output	rise & fall time	see table 3
	load max	15pF / 50pF
	current max.	16mA
	low level max.	+0.5 V
	high level min.	V_{DC} -0.5 V
output enable time max.		10ms
output disable time max.		100ns
start-up time max.		10ms
standby function		optional
phase jitter 12 kHz ~ 20.0 MHz		< 1.0ps RMS
symmetry at 0.5 x V_{DC}		45% ~ 55% typ. (40% ~ 60% max.)

Table 1: Frequency Stability Code

stability code	A ± 100 ppm	B ± 50 ppm	G ± 30 ppm	C ± 25 ppm	D ± 20 ppm	E ± 15 ppm
-10 °C ~ +70 °C	○	●	○	○	○	○
-40 °C ~ +85 °C	●	○	○	○		

● standard ○ on request

Table 2: Current Consumption max.

Current at 15pF load:		Current at 50pF load:	
1.0 ~ 29.9 MHz	15 mA	1.0 ~ 19.9 MHz	20 mA
30.0 ~ 49.9 MHz	25 mA	20.0 ~ 40.0 MHz	35 mA
50.0 ~ 89.9 MHz	40 mA		
90.0 ~ 124.9 MHz	50 mA		
125.0 ~ 160.0 MHz	60 mA		

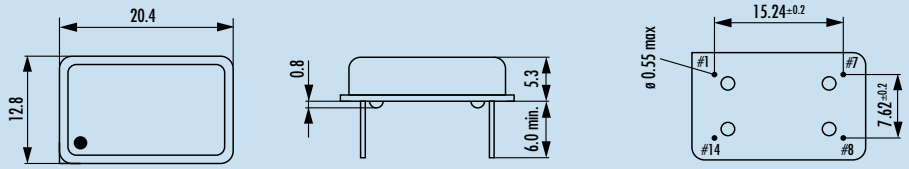
Table 3: Rise & Fall Time max.

6.0 ns:	1.0 ~ 49.9 MHz
5.0 ns:	50.0 ~ 79.9 MHz
4.0 ns:	80.0 ~ 99.9 MHz
3.0 ns:	100.0 ~ 160.0 MHz

note:
- specific data on request
- rise time: 0.1 V_{DC} ~ 0.9 V_{DC}
- fall time: 0.9 V_{DC} ~ 0.1 V_{DC}

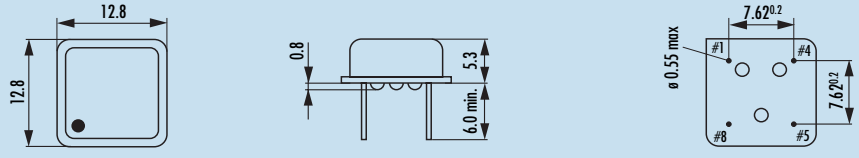
Dimensions JCO14 / JCO8

JCO14



pin connection
1: not connected or e/d
7: ground
8: output
#14: supply voltage

JCO8



top view side view bottom view

pin connection
1: not connected or e/d
4: ground
5: output
8: supply voltage

in mm

Order Information

0	frequency	–	type	–	e/d function	–	frequency stability	–	supply voltage code	–	option
Oscillator	1.0 ~ 160.0 MHz		JCO8 JCO14		2 = no 3 = yes/tristate		see table 1		blank = 5.0 Volt		blank = -10 °C ~ +70 °C T1 = -40 °C ~ +85 °C

Example: O 20.0-JCO8-3-A-T1 (LF = RoHS compliant / Pb free pins or pads)

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full data can be found under: www.jauch.de / www.jauch.fr / www.jauchusa.com

Oscillator · JCO · 5.0 V

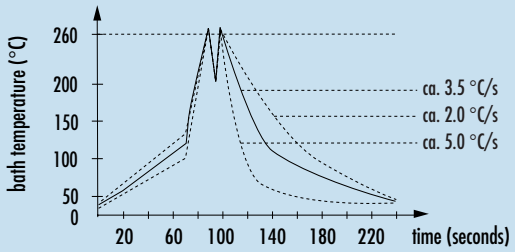
Enable / Disable Function

pin #1	pin #3
open or high	oscillation
gnd or low	high impedance

Marking

type
frequency
company code / date code

Wave Soldering Profile



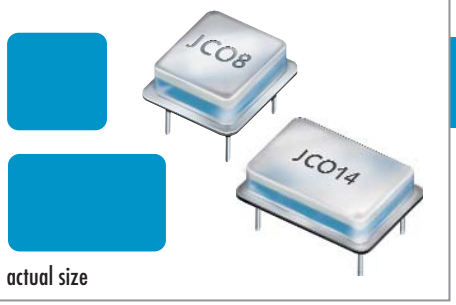
note: parts are also suitable for soldering systems with lead (Pb) content

Preferred Type

JCO8-3-B
JCO14-3-B

Packaging

JCO8-3-B	packed in antistatic plastic tubes, 40 pcs
JCO14-3-B	packed in antistatic plastic tubes, 25 pcs



actual size

Oscillator · JCO · 3.3 V

Pin Type Oscillator

- soldering temperature: 260 °C max.
- metal package

RoHS 2002/95/EC
RoHS compliant

Pb free: pins / pads

General Data

type		JCO8 / JCO14 3.3 V
frequency range		1.0 ~ 160.0 MHz (15pF max.)
		1.0 ~ 50.00 MHz (15pF~30pF max.)
frequency stability over all		± 15ppm ~ ± 100ppm (table 1)
current consumption		see table 2
supply voltage V_{DC}		3.3 V ± 10%
temperature	operating	-10 °C ~ +70 °C / -40 °C ~ +85 °C
	storage	-55 °C ~ +125 °C
output	rise & fall time	see table 3
	load max	15pF / 30pF
	current max.	8mA
	low level max.	+0.5 V
	high level min.	V_{DC} -0.5 V
output enable time max.		10ms
output disable time max.		100ns
start-up time max.		10ms
standby function		optional
phase jitter 12 kHz ~ 20.0 MHz		< 1.0ps RMS
symmetry at 0.5 x V_{DC}		45% ~ 55% typ. (40% ~ 60% max.)

Table 1: Frequency Stability Code

stability code	A ± 100 ppm	B ± 50 ppm	G ± 30 ppm	C ± 25 ppm	D ± 20 ppm	E ± 15 ppm
-10 °C ~ +70 °C	○	●	○	○	○	○
-40 °C ~ +85 °C	●	○	○	○		

● standard ○ on request

Table 2: Current Consumption max.

Current at 15pF load:		Current at 30pF load:	
1.0 ~ 29.9 MHz	10 mA	1.0 ~ 29.9 MHz	20 mA
30.0 ~ 49.9 MHz	15 mA	30.0 ~ 50.0 MHz	35 mA
50.0 ~ 89.9 MHz	30 mA		
90.0 ~ 124.9 MHz	45 mA		
125.0 ~ 160.0 MHz	60 mA		

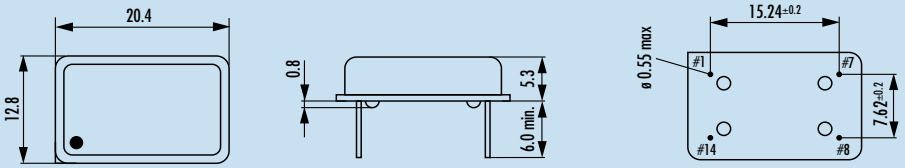
Table 3: Rise & Fall Time max.

6.0 ns:	1.0 ~ 49.9 MHz
5.0 ns:	50.0 ~ 79.9 MHz
4.0 ns:	80.0 ~ 99.9 MHz
3.0 ns:	100.0 ~ 160.0 MHz

note:
- specific data on request
- rise time: 0.1 V_{DC} ~ 0.9 V_{DC}
- fall time: 0.9 V_{DC} ~ 0.1 V_{DC}

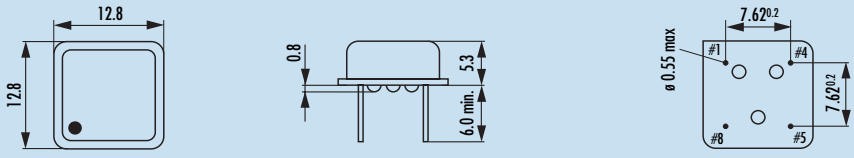
Dimensions JCO14 / JCO8

JCO14



pin connection
1: not connected or e/d
7: ground
8: output
#14: supply voltage

JCO8



top view side view bottom view

pin connection
1: not connected or e/d
4: ground
5: output
8: supply voltage

in mm

Order Information

0	frequency	type	e/d function	frequency stability	supply voltage code	option
Oscillator	1.0 ~ 160.0 MHz	JCO8 JCO14	2 = no 3 = yes/tristate	see table 1	3.3 V = 3.3 Volt	blank = -10 °C ~ +70 °C T1 = -40 °C ~ +85 °C

Example: O 20.0-JCO8-3-A-3.3V-T1 (LF = RoHS compliant / Pb free pins or pads)

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full data can be found under: www.jauch.de / www.jauch.fr / www.jauchusa.com

Oscillator · JCO · 3.3 V

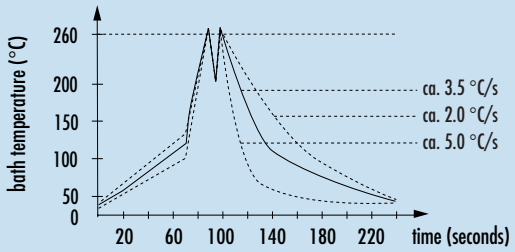
Enable / Disable Function

pin #1	pin #3
open or high	oscillation
gnd or low	high impedance

Marking

type
frequency
company code / date code

Wave Soldering Profile



note: parts are also suitable for soldering systems with lead (Pb) content

Preferred Type

JCO8-3-B-3.3
JCO14-3-B-3.3

Packaging

JCO8-3-B	packed in antistatic plastic tubes, 40 pcs
JCO14-3-B	packed in antistatic plastic tubes, 25 pcs

Jauch
THE PULSE OF PROGRESS

THE SPECIALIST FOR FREQUENCY CONTROL PRODUCTS

JAUCH QUARTZ...

...A COMPANY ON THE PULSE OF PROGRESS

Quartz – a material with fascinating properties. The most important one is piezoelectricity. What began at Jauch decades ago with the first quartz crystals for electronic clockworks has until today remained the core competence and most important product of our globally active, independent technology firm.

Availability – in today's production world it's a key concept that cannot be overstated. Products not only have to be manufactured but also available 'just in time' – in every corner of the world. And at Jauch Quartz we do a lot to make sure that happens.

In Europe, with Jauch Quartz Germany and Jauch Quartz France, we have our own distribution centers for important markets. And in the US, Jauch Quartz America maintains our continuous presence in the North and South American markets.

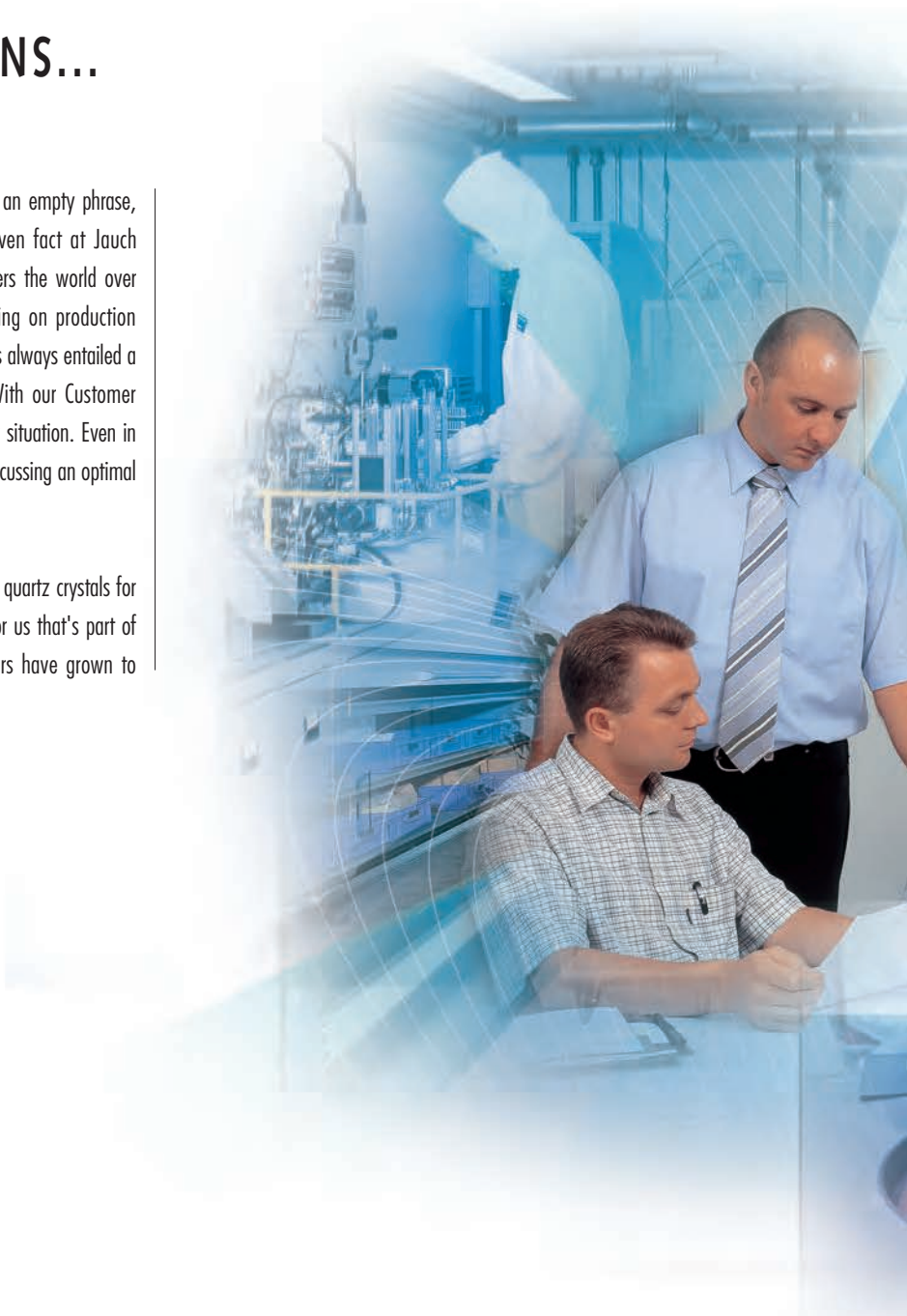
A comprehensive network of distribution bases all over the world is ready to supply customers worldwide with Jauch-quality quartz crystals. Because we don't regard our products as mere components that are bought and forgotten: what's important to us is a sustainable relationship with the customer, from careful consulting before a decision to order processing, logistics and long-term field observation. We've noticed again and again that Jauch Quartz customers are customers who stay with us. Because they know what they're getting – wherever they happen to be.

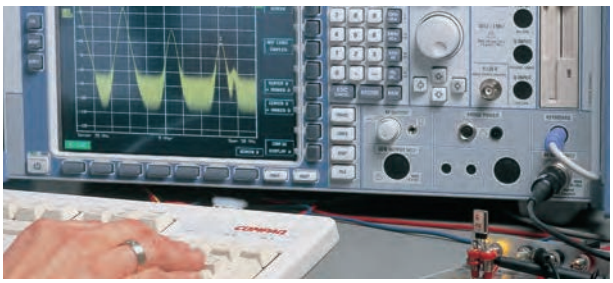
FINDING SOLUTIONS...

...AND IMPLEMENTING THEM

At Jauch Quartz, customer satisfaction is not just an empty phrase, but a living reality. Delivery reliability is a proven fact at Jauch Quartz. Constant deliveries to renowned customers the world over prove that relying on Jauch Quartz means relying on production security. Because for us, overall product quality has always entailed a great deal more than just the product alone. With our Customer Support Center we offer active cooperation in any situation. Even in the concept phase of a development, it's worth discussing an optimal solution with us.

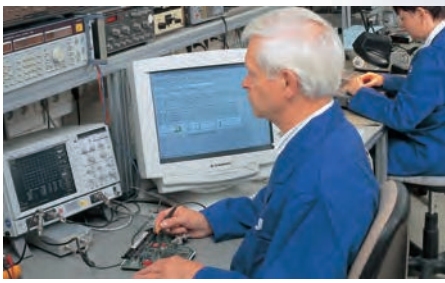
Or do you need a few hundred or a few thousand quartz crystals for your pilot run? We're the quartz specialists, so for us that's part of customer care. It's something that our customers have grown to appreciate.





Safety from high-quality measuring technology:
Special measuring systems, e.g. for analyzing the frequency spectrum and noise conditions, guarantee that our customers can rely one hundred percent on the parameters set.

Application service via know-how:
Our development and service department supports our customers in all questions of circuit design and – on request – takes a closer look at application scenarios.

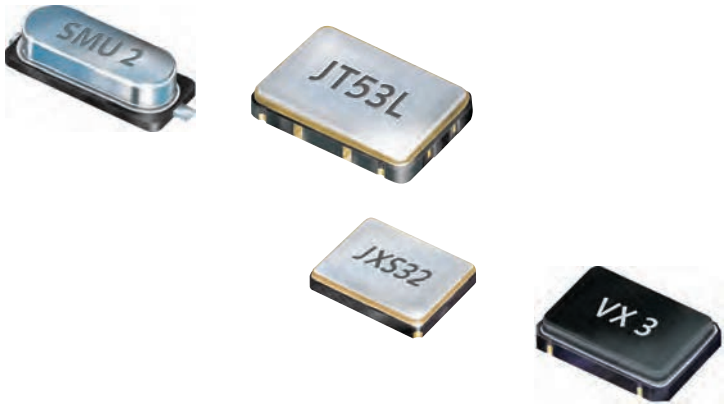


Technical service from specialists:
At Jauch, developers find competent contacts who support them in switch design just as much as with special measuring technology requirements.

- Our own quartz product **development center**
- **Consulting and care** by specialists for quartz products
- **Check-up service:** switching tests with special test devices
- **Fast service** with programmable oscillators for pilot runs and with quartz products in standard frequencies

THE SPECIALIST FOR FREQUENCY CONTROL PRODUCTS

- **Worldwide presence**
- **High availability** for standard frequencies, with over 20 million components off the shelf



PRODUCTION WORLDWIDE...

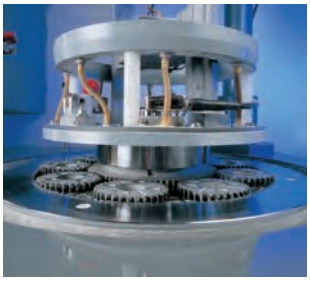
...FOR WORLD-FAMOUS BRANDS

Jauch – the world brand for quartz technology. With our own production facilities, we're present in important electronics centers all over the globe. And everywhere we are bound to the same basic principles: high efficiency, reliable delivery, value for money, and highest quality. Because we know how exacting our customers are. And we also know why.

International production, guaranteed by universal quality standards

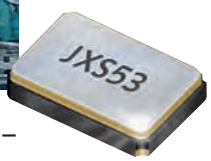
From raw quartz crystal production to special short runs to mass production in the millions in ever-constant quality, Jauch Quartz has a lot of performance to offer – and that applies just as much to large groups of companies as to smaller specialists. High flexibility in product design and production amounts enables us to cover a broad customer and business spectrum and thus maintain our independence.

Technology that makes quality possible: Ultrasound purification of quartz blanks for perfect surfaces.



Grinding of quartz blanks: The right surface for the right clock rate.

Jauch has production facilities at many locations around the world – from Europe to Asia. However different the people at these sites are, they all have one thing in common: they all work according to the same system of values. They all belong to the same corporate culture. That is the only way to produce on different continents and retain a uniform standard. Because wherever Jauch products are on the pulse of progress, the rhythm has to be just right.



The entire quartz crystal processing chain: from raw quartz production...

...component production using semi- or fully-automatic production technology depending on the run size...

...to series-oriented quality assurance and automated 100-percent testing.

Certificate DIN EN ISO 9001:2008

SGS

Certificate DE05/53347

The management system of

JAUCH QUARTZ GmbH

In der Lache 24
DE-78056 VS-Schwenningen

has been assessed and certified as meeting the requirements of

ISO 9001:2008

For the following activities

Design, production and sale of freyuency control products, battery technology and electronic components

Further clarifications regarding the scope of this certificate and the applicability of ISO 9001:2008 requirements may be obtained by consulting the organization

This certificate is valid from 22/04/2014 until 21/04/2017
Issue 6. Certified since 02/11/1998

Authorised by

Mark Piekereit
Managing Director

Christian Rathje
Head Of Certification Body

DAkkS
Deutsche Akkreditierungsstelle
D-ZM-16090-01-00

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