



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 current consumption



RoHS compliant



Pb free



REACH compliant



Conflict mineral free

GENERAL DATA		JSO15B1TR
supply voltage V_{DC}	1.5 V ~ 3.63 V	
current consumption typ.	1.2 μ A (rail-to-rail mode, no load, VDC = 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 μ A
	rise & fall time	200 ns max. (15 pF, 10 \leftrightarrow 90 %)
		50 ns max. (5 pF, 10 \leftrightarrow 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 including frequency tolerance* excluding frequency tolerance**		D	K	F
		± 22 ppm ± 20 ppm	± 13 ppm ± 10 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				μ A
during temp. compensation*	6.0				μ A
$V_{RR} = 1.80$ V, compensation inactive	1.2	1.5	1.8	2.1	μ A
$V_{RR} = 2.50$ V, compensation inactive	1.3	1.7	2.0	2.5	μ A
$V_{RR} = 3.30$ V, compensation inactive	1.4	1.9	2.5	3.0	μ A

* repetitive temp. compensation consuming 6 μ A for 10 ms, repeating every 350 ms

DIMENSIONS

top view

side view

bottom view

pad layout

in mm

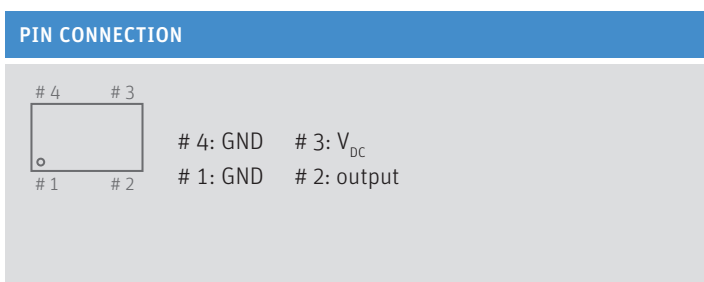
pin connection

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

(1) polymer coating thickness
(2) basic spacing between centers
(3) non-solder mask defined pads
(4) soldermask opening diameter

PACKAGING NOTE

QTY < 250 pcs. → cut tape
 QTY 250/500/1K/3K → tape and reel
 Marking: identifier for pin 1



B.C.E. S.r.l. - Via Regina Pacis, 54/c - Sassuolo (MO) - I 41049 - Italy
 Tel.: 0536 811616 - Fax: 0536 811500 - Web: www.bce.it - E-mail: bce@bce.it



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Jauch Quartz GmbH • e-mail: info@jauch.com • full data can be found under: www.jauch.com

All specifications are subject to change without notice

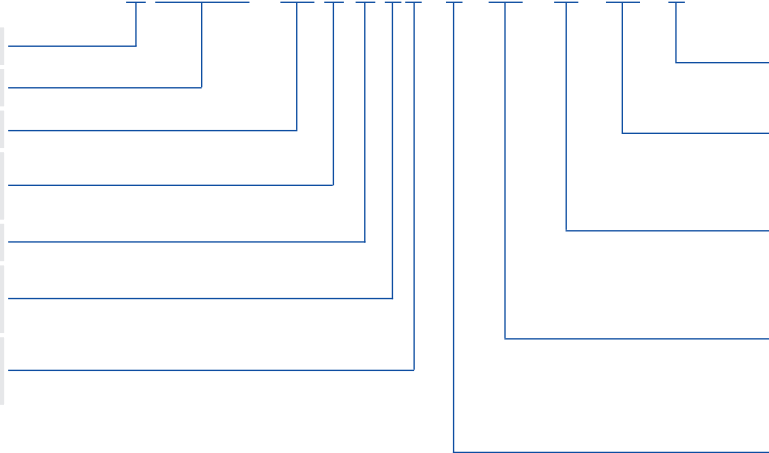
MEMS TCXO · JSO TR · 32.768kHz

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

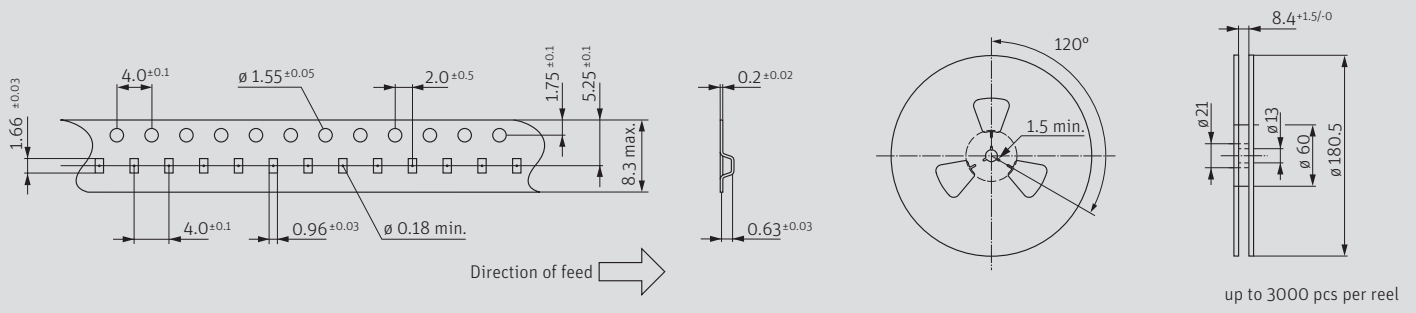
Standard type O 0.032768-JSO15B1TR-F-1V3-T1-RR-D typically available from stock.

Frequency stability (table 1): F = ±5 ppm

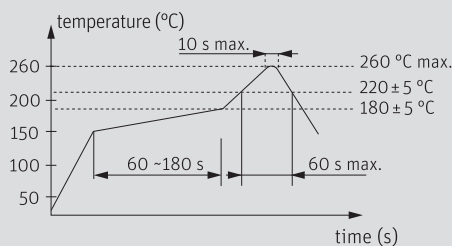
Operating temperature range: T1 = -40°C ~ +85°C

Supply voltage: 1V3 = 1.5 V ~ 3.63 V variable

TAPING SPECIFICATION



REFLOW SOLDERING PROFILE



note: parts are also suitable for soldering systems with lead (Pb) content.

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