HMI
Frequency Technology

ECO
European Crystal Organization
Frequency Technology

KLOVE
Frequency Technology

49SM | SURFACE-MOUNT CRYSTAL

FEATURES

11.4 x 4.7 x 4.2 MM

- SMD package, 2 pad version
- Low cost, short delivery.
- Wide Frequency Range
- Applications: Computers, Modem, Microprocessor Crystal,…

Item	Symbol	Specification
Frequency Range	Fo	3.2 MHz ~ 70.0 MHz
Operation Mode		3.2 MHz ~ 48.0 MHz Fundamental / AT-cut (see options) 27.0 MHz ~ 70.0 MHz 3rd-overtone / AT-cut (see options) 24.0 MHz ~ 54.0 MHz Fundamental / BT-cut (see options)
Operating temperature Range	To	-20° to +70°C (see options)
Frequency Tolerance at 25°C	$\Delta f/F$	± 50ppm max. (see options)
Temperature Stability	$\Delta f/F$	± 50ppm max. (see options)
Load Capacitance (CL)	CL	series or 8 pF to 50 pF (see options)
Equivalent Series Resistance	ESR	See Table 1
Shunt Capacitance (Co)	Co	7pF Max
Insulation Resistance	Ri	500 MΩ min. (at 100Vdc)
Drive Level	DL	100µW typical , 500µW max.
Aging	$\Delta f/F$	±5ppm max (at 25°C, first year)
Packing Unit		1000pcs / reel
Soldering Condition		260°C, 10 sec x2 max
		Customer specifications on request

TABLE 1: Standard ESR

Frequency (MHz)	ESR (Ω) max.	Frequency (MHz)	ESR (Ω) max.
3.2 - 4.499	150	13.0 - 48.0	40
4.5 - 6.9	100	27.0 - 31.99, 3rd overtone	100
7.0 - 9.9	80	32.0 - 70.0, 3rd overtone	80
10.0 - 12.99	50	24.0 - 54.0 , Fund. BT-cut	40

OPTIONS & ORDERING INFORMATION

49SM- .... MHz - ....

Freq. Tolerance	Freq. Stability*	Operating Temp.*	Load Capacitance	Mode	Frequency in MHz	ESR if other than STD
10 = ±10 ppm	**10** = ±10 ppm	**D** = -10° / +60°C	Please specify CL in **pF** or **S** for Series	**F** = Fundamental	Please specify the frequency in MHz	Specify a value in Ω
15 = ±15 ppm	**15** = ±15 ppm	**E** = 0° / +70°C		**D** = 3rd overtone		
20 = ±20 ppm	**20** = ±20 ppm	**F** = -20° / +70°C		**FB** = Fundamental, BT-cut		
25 = ±25 ppm	**25** = ±25 ppm	**G** = -30° / +75°C				
30 = ±30 ppm	**30** = ±30 ppm	**H** = -30° / +85°C				
50 = ±50 ppm	**50** = ±50 ppm	**K** = -40° / +85°C				

* Note : Not all combinations are possible, please consult us.

OUTLINE DIMENSIONS

49SM : H = 4.2mm max.

49SSM : H = 3.2mm max.

B.C.E. ELECTRONICS

Importation & Distribution
Electronic Components