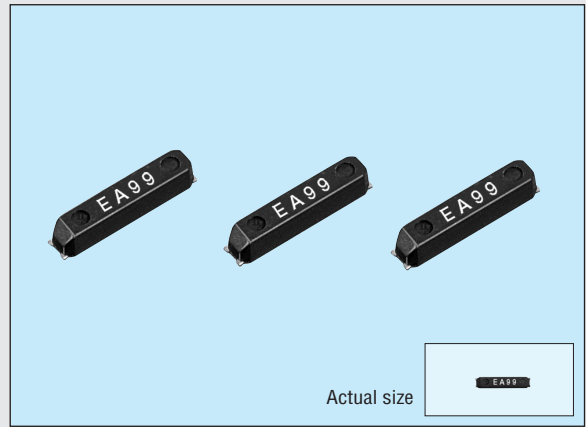


## THIN SMD LOW/MEDIUM-FREQUENCY CRYSTAL UNIT

## MC-146

- High-density mounting-type SMD of 1.4 mm thickness.
- Small packaging area and light weight.
- Excellent shock resistance and environmental capability.
- Most suitable for small communications devices.



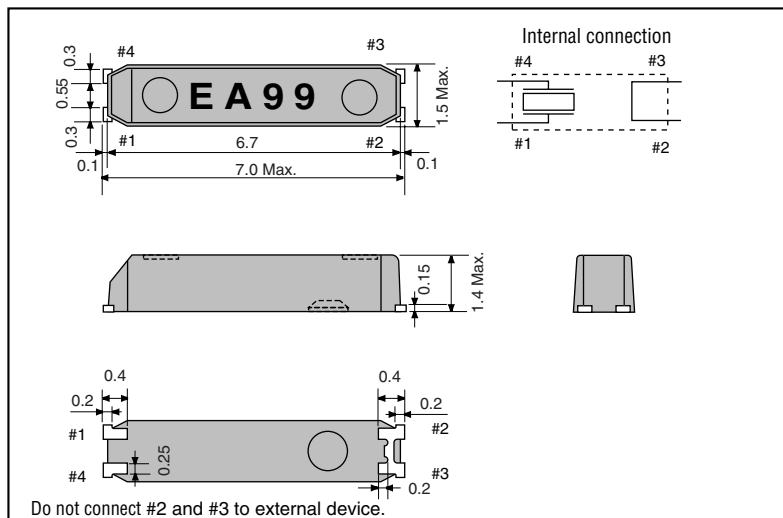
## ■ Specifications (characteristics)

Item	Symbol	Specifications		Remarks
Nominal frequency	f	32.768 kHz	75.000 kHz	please contact us for inquiries about usable frequencies
Temperature range	Storage temperature	T <sub>STG</sub> -55 °C to +125 °C		
	Operating temperature	T <sub>OPR</sub> -40 °C to +85 °C		
Maximum drive level	GL	1.0 μW Max.		Operating drive level 0.5 μW Max.
Soldering condition	T <sub>sol</sub>	Twice at under +260 °C within 10 s or under +230 °C within 3 min.		
Frequency tolerance(standard)	Δf/f	±20 × 10 <sup>-6</sup> , ±50 × 10 <sup>-6</sup>		T <sub>a</sub> =+25 °C, DL=0.1 μW
Peak temperature(frequency)	θT	+25 °C ±5 °C		
Temperature coefficient(frequency)	a	-0.04 × 10 <sup>-6</sup> /°C <sup>2</sup> Max.		
Load capacitance	C <sub>L</sub>	7 pF, 12.5 pF		Please specify
Series resistance	R <sub>1</sub>	65 kΩ Max.	30 kΩ Max.	
Motional capacitance	C <sub>1</sub>	1.9 fF Typ.		
Shunt capacitance	C <sub>0</sub>	0.8 pF Typ.		
Insulation resistance	IR	500 MΩ Min.		
Aging	fa	±3 × 10 <sup>-6</sup> /year Max.		T <sub>a</sub> =+25 °C ±3 °C, first year
Shock resistance	S.R.	±5 × 10 <sup>6</sup> Max.		Three drops on a hard board from 750 mm or excitation test with 29400 m/s <sup>2</sup> × 0.3 ms × 1/2 sine wave × 3 directions

Metal may be exposed on the top of this product. This won't affect any quality, reliability or electrical spec.

## ■ External dimensions

(Unit: mm)



## ■ Recommended soldering pattern

(Unit: mm)

