

**KHz RANGE CRYSTAL UNIT**



Product Number (please contact us)

MC-146 : Q1xMC1462xxxx00

MC-156 : Q1xMC1562xxxx00

**MC-146 / MC-156**

- Frequency range : 32.768 kHz (32 kHz to 100 kHz)
- External dimension : 7.0 × 1.5 × 1.4 mm ...MC-146  
7.1 × 3.3 × 1.5 mm ...MC-156
- Overtone order : Fundamental
- Applications : Small communications devices



Actual size

MC-146

MC-156

**Specifications (characteristics)**

Item	Symbol	Specifications		Conditions / Remarks
Nominal frequency range	f_nom	32.768 kHz	32 kHz to 100 kHz	Please contact us about available frequencies.
Storage temperature	T_stg	-55 °C to +125 °C		Storage as single product.
Operating temperature	T_use	-40 °C to +85 °C		
Level of drive	DL	1.0 μW Max.		Operating Drive level 0.5 μW Max.
Frequency tolerance (standard)	f_tol	± 20 × 10 <sup>-6</sup> , ± 50 × 10 <sup>-6</sup>	± 50 × 10 <sup>-6</sup> , ± 100 × 10 <sup>-6</sup>	+25 °C, DL=0.1 μW
Turnover temperature	Ti	+25 °C ± 5 °C		
Parabolic coefficient	B	-0.04 × 10 <sup>-6</sup> / °C <sup>2</sup> Max.		
Load capacitance	CL	7 pF, 9 pF, 12.5 pF		Please specify
Motional resistance (ESR)	R1	65 kΩ Max.	65 kΩ to 25 kΩ	
Motional capacitance	C1	1.9 fF Typ.	2.5 fF to 0.6 fF	
Shunt capacitance	C0	0.8 pF Typ.	1.2 pF to 0.5 pF	
Frequency aging	f_age	±3 × 10 <sup>-6</sup> / year Max.	±5 × 10 <sup>-6</sup> / year Max.	+25 °C, First year

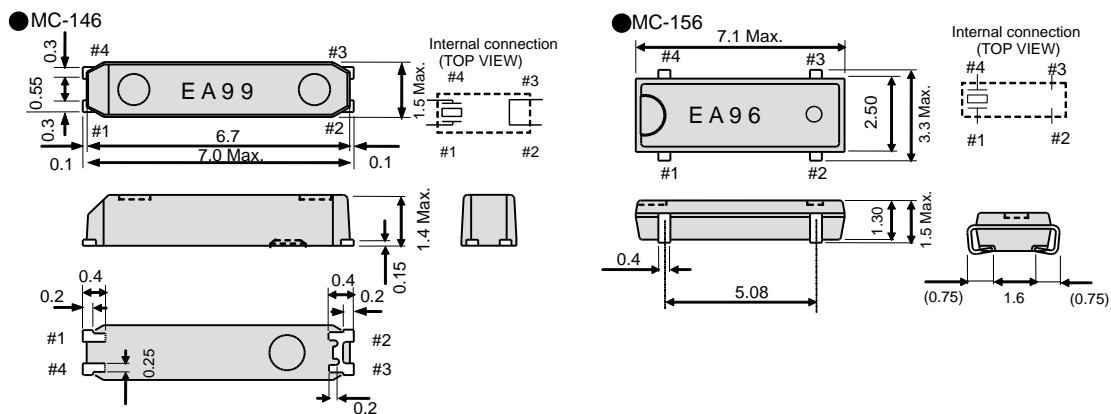
Product name MC-146 32.768000kHz 12.5 +20.0-20.0

(Standard form)

- ① Model    ② Frequency    ③ Load capacitance(pF)    ④ Frequency tolerance(x 10<sup>-6</sup>, +25 °C)

**External dimensions**

(Unit:mm)



**Footprint (Recommended)**

(Unit:mm)

