

**kHz RANGE CRYSTAL UNIT**
LOW PROFILE SMD**MC - 146 / MC - 156**

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



Product Number (please contact us)

MC-146 : Q14MC146xxxxx00

MC-156 : Q14MC156xxxxx00



Actual size

MC-146



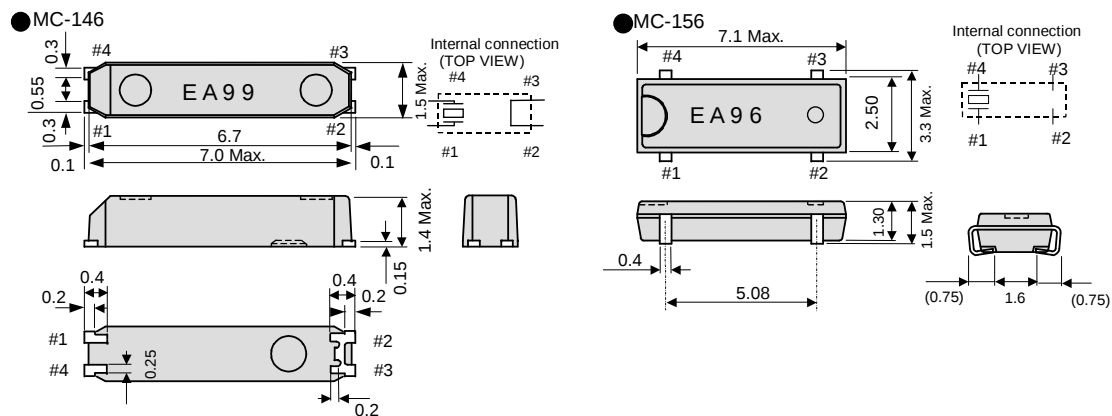
MC-156

**Specifications (characteristics)**

Item		Symbol	Specifications		Remarks
Nominal frequency range		f_nom	32.768 kHz	32 kHz to 100 kHz	Please contact us for inquiries regarding available frequencies
Temperature range	Storage temperature	T_stg	-55 °C to +125 °C		Store as bare product after unpacking
	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 ⁻⁶ , ± 50 × 10 ⁻⁶	± 50 × 10 ⁻⁶ , ± 100 × 10 ⁻⁶	+25 °C, DL=0.1 μW
Turnover temperature		Ti	+25 °C ± 5 °C		
Parabolic coefficient		B	-0.04 × 10 ⁻⁶ / °C ² 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 ⁻⁶ / year Max.	±5 × 10 ⁻⁶ / year Max.	+25 °C, First year

External dimensions

(Unit:mm)



Do not connect #2 and #3 to external device.

Metal may be exposed on the top or bottom of this product. This will not affect any quality, reliability or electrical spec.

Footprint (Recommended)

(Unit:mm)

