

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

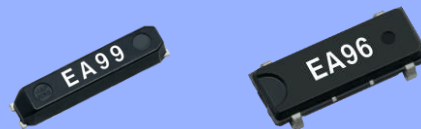
- Frequency range : 32.768 kHz (32 kHz to 100 kHz)
- External dimension : 7.0 × 1.5 × 1.4 mm ...MC-146
7.1 × 3.3 × 1.5 mm ...MC-156
- Overtone order : Fundamental
- Applications : Small communications devices



Product Number (please contact us)

MC-146 : Q1xMC146xxxxx00

MC-156 : Q1xMC156xxxxx00



Actual size

MC-146

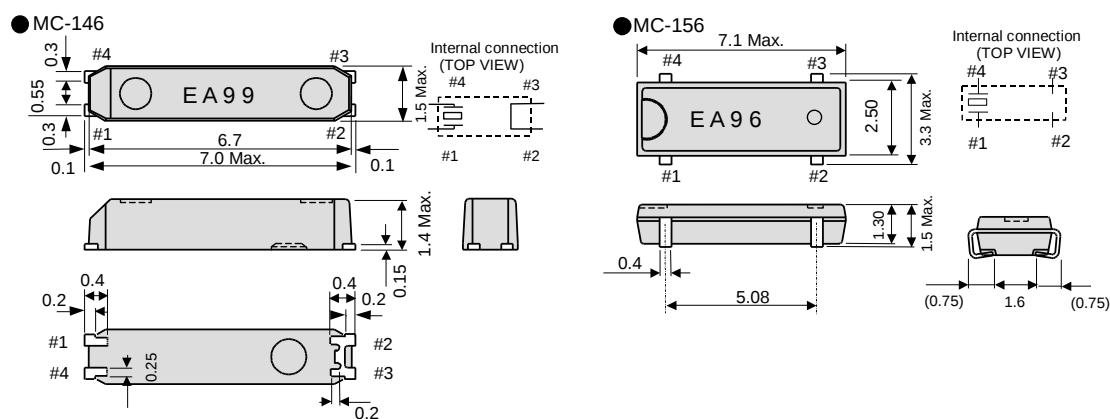
MC-156

Specifications (characteristics)

Item	Symbol	Specifications		Conditions / Remarks
Nominal frequency range	f_nom	32.768 kHz	32 kHz to 100 kHz	Please contact us for inquiries regarding available frequencies
Storage temperature	T_stg	-55 °C to +125 °C		Store as bare 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 ⁻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)

