

SMD LOW / MEDIUM-FREQUENCY CRYSTAL UNIT

MC - 306 / 405 / 406

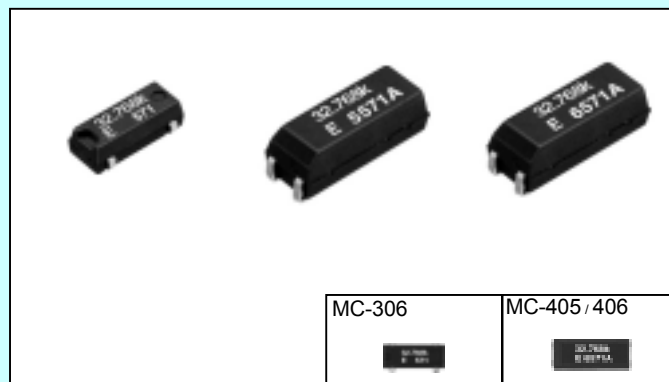
Product number (please contact us)

MC-306 : Q1xMC3061xxxx00

MC-405 : Q1xMC4051xxxx00

MC-406 : Q1xMC4061xxxx00

- Frequency range : 32.768 kHz (20 kHz to 165 kHz)
- Thickness : 2.54 mm Max.(MC-306)
3.60 mm Max.(MC-405/406)
- Overtone order : Fundamental
- Applications : Clock and Microcomputer
- Lead(Pb)-free : Complies with EU RoHS directive



Actual size

■ Specifications (characteristics)

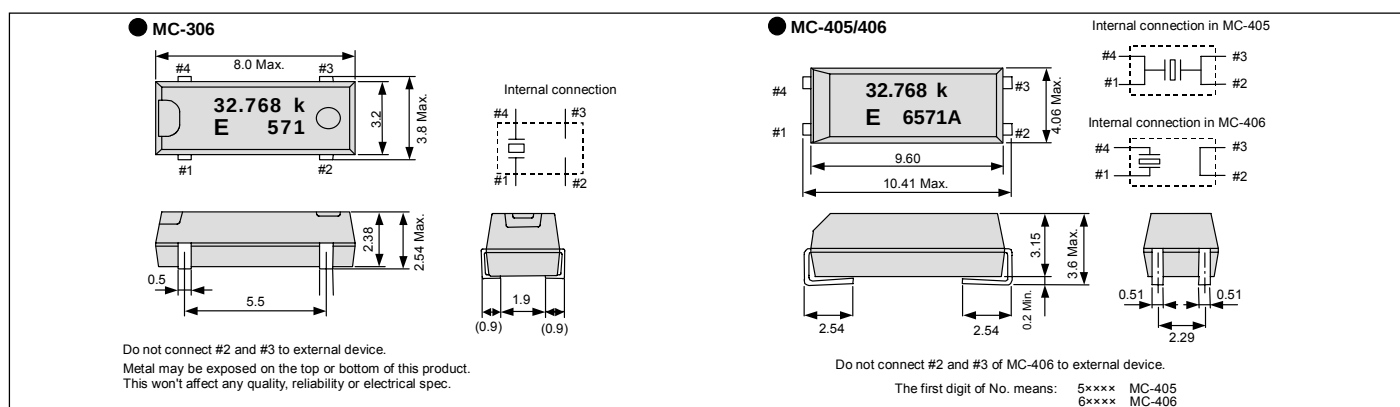
Item		Symbol	Specifications		Remarks
Nominal frequency range		f	32.768 kHz	20 kHz to 165 kHz	please contact us for inquiries about the available frequency
Temperature range	Storage temperature	T _{STG}	-55 °C to +125 °C		Stored as bare product after unpacking
	Operating temperature	T _{USE}	-40 °C to +85 °C		
Maximum drive level		GL	1.0 μW Max.		
Frequency tolerance (standard)		Δf/f	±20 × 10 ⁻⁶ , ±50 × 10 ⁻⁶	±50 × 10 ⁻⁶ , ±100 × 10 ⁻⁶	T _a =+25 °C, DL=0.1 μW
Peak temperature (frequency)		ΘT	+25 °C ±5 °C		
Temperature coefficient (frequency)		a	-0.04 × 10 ⁻⁶ / °C ² Max.		
Load capacitance		C _L	6 pF to ∞ (standard :12.5 pF)		Please specify
Series resistance		R ₁	50 kΩ Max.	55 kΩ to 10 kΩ	
Motional capacitance		C ₁	1.8 fF Typ.	4.0 fF to 0.6 fF	MC-306
			2.0 fF Typ.		MC-405/406
Shunt capacitance		C ₀	0.9 pF Typ.	2.0 pF to 0.6 pF	MC-306
			0.85 pF Typ.		MC-405/406
Insulation resistance		IR	500 MΩ Min.		
Aging		fa	±3 × 10 ⁻⁶ / year Max.	±5 × 10 ⁻⁶ / year Max.	T _a =+25 °C ±3 °C, first year
Shock resistance		S.R.	±5 × 10 ⁻⁶ Max.		Three drops on a hard board from 750 mm or excitation test with 29400 m/s ² x 0.3 ms x 1/2 sine wave x 3 directions

■ Series resistance

Frequency	20 kHz ≤ f < 31.2 kHz	31.2 kHz ≤ f < 40 kHz	40 kHz ≤ f < 90 kHz	90 kHz ≤ f < 130 kHz	130 kHz ≤ f ≤ 165 kHz
Series resistance	55 kΩ Max.	35 kΩ Max.	20 kΩ Max.	12 kΩ Max.	10 kΩ Max.

■ External dimensions

(Unit:mm)



■ Recommended soldering pattern

(Unit:mm)

