

**KHz RANGE CRYSTAL UNIT**



Product Number (please contact us)

MC-306 : Q1xMC3062xxxx00

MC-405 : Q1xMC4052xxxx00

MC-406 : Q1xMC4062xxxx00

**MC - 306**  
**MC - 405 / MC - 406**

- Frequency range : 32.768 kHz (20 kHz to 120 kHz)
- Thickness : 8.0 × 3.8 × 2.54 mm ...MC-306  
10.41 × 4.06 × 3.6 mm ...MC-405 / 406
- Overtone order : Fundamental
- Applications : Clock and Microcomputer



Actual size



**Specifications (characteristics)**

Item	Symbol	Specifications		Conditions / Remarks
Nominal frequency range	f_nom	32.768 kHz	20 kHz to 120 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.		
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	6 pF to ∞ (standard :12.5 pF)		Please specify
Motional resistance (ESR)	R <sub>1</sub>	50 kΩ Max.	As per table below	
Motional capacitance	C <sub>1</sub>	1.8 fF Typ.	4.0 fF to 0.6 fF	MC-306
		2.0 fF Typ.		MC-405 / 406
Shunt capacitance	C <sub>0</sub>	0.9 pF Typ.	2.0 pF to 0.6 pF	MC-306
		0.85 pF Typ.		MC-405 / 406
Frequency aging	f_age	±3 × 10 <sup>-6</sup> / year Max.	±5 × 10 <sup>-6</sup> / year Max.	+25 °C, First year

**Motional resistance (ESR)**

Frequency	20 kHz ≤ f <sub>nom</sub> < 31.2 kHz	31.2 kHz ≤ f <sub>nom</sub> < 40 kHz	40 kHz ≤ f <sub>nom</sub> < 90 kHz	90 kHz ≤ f <sub>nom</sub> ≤ 120 kHz
Motional resistance	55 kΩ Max.	35 kΩ Max.	20 kΩ Max.	12 kΩ Max.

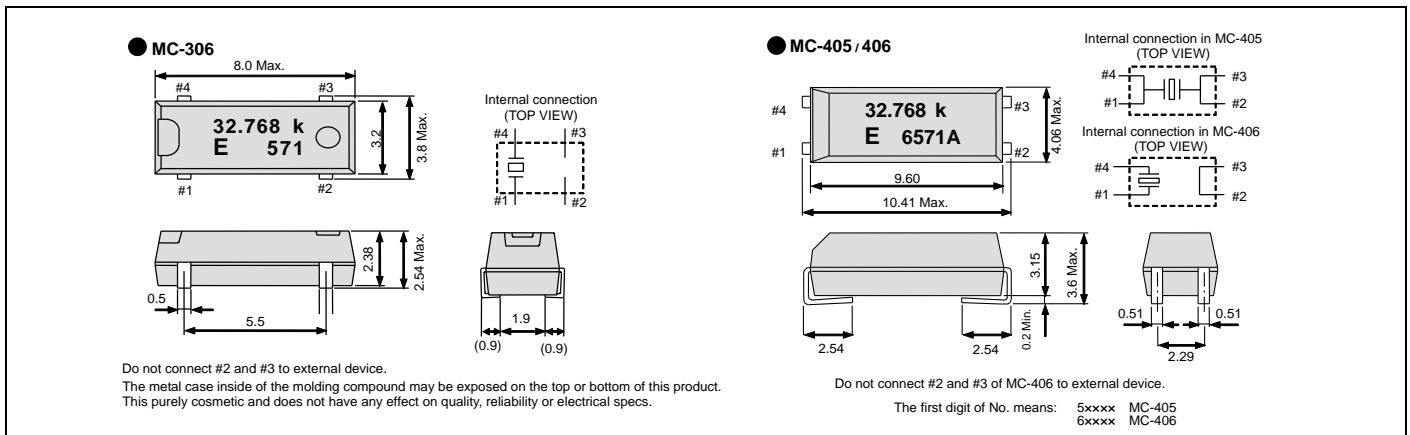
Product name MC-306 32.768000kHz 12.5 +20.0-20.0

(Standard form)

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

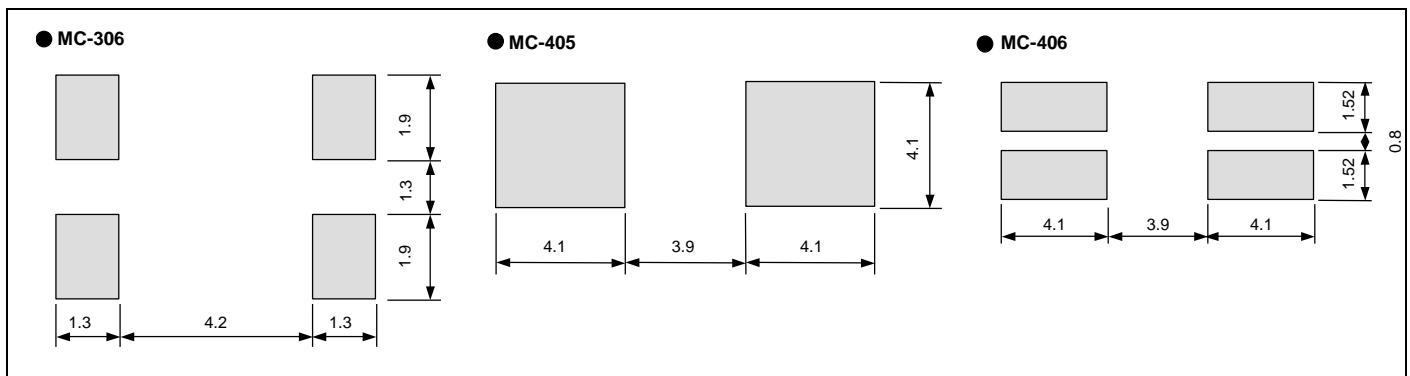
**External dimensions**

(Unit:mm)



**Footprint (Recommended)**

(Unit:mm)



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