



kHz RANGE CRYSTAL UNIT

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



Product Number (please contact us)

MC-306 : Q1xMC3062xxxx00

MC-405 : Q1xMC4052xxxx00

MC-406 : Q1xMC4062xxxx00



Actual size

MC-306



MC-405 / 406



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 ⁻⁶ , ±50 × 10 ⁻⁶	±50 × 10 ⁻⁶ , ±100 × 10 ⁻⁶	+25 °C, DL=0.1 μW
Turnover temperature	T _i	+25 °C ±5 °C		
Parabolic coefficient	B	-0.04 × 10 ⁻⁶ / °C ² Max.		
Load capacitance	CL	6 pF to ∞ (standard :12.5 pF)		Please specify
Motional resistance (ESR)	R ₁	50 kΩ Max.	As per table below	
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
Frequency aging	f _{age}	±3 × 10 ⁻⁶ / year Max.	±5 × 10 ⁻⁶ / year Max.	+25 °C, First year

Motional resistance (ESR)

Frequency	20 kHz ≤ f _{nom} < 31.2 kHz	31.2 kHz ≤ f _{nom} < 40 kHz	40 kHz ≤ f _{nom} < 90 kHz	90 kHz ≤ f _{nom} ≤ 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

②

③

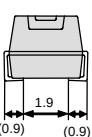
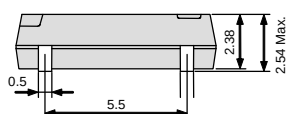
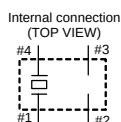
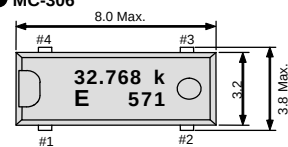
④

①Model ②Frequency ③Load capacitance(pF) ④Frequency tolerance(× 10⁻⁶, +25 °C)

External dimensions

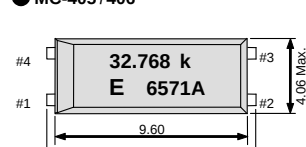
(Unit:mm)

● MC-306

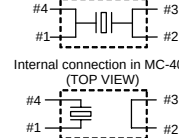


Do not connect #2 and #3 to external device.
The metal case inside of the molding compound may be exposed on the top or bottom of this product.
This purely cosmetic and does not have any effect on quality, reliability or electrical specs.

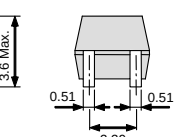
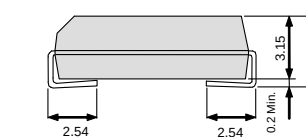
● MC-405 / 406



Internal connection in MC-405 (TOP VIEW)



Internal connection in MC-406 (TOP VIEW)



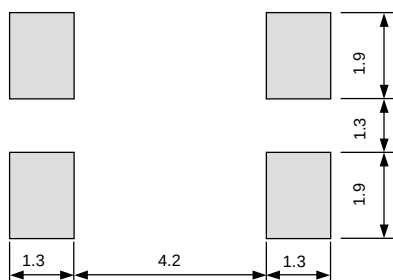
Do not connect #2 and #3 of MC-406 to external device.

The first digit of No. means: 5xxxx MC-405
6xxxx MC-406

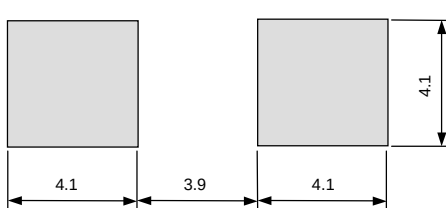
Footprint (Recommended)

(Unit:mm)

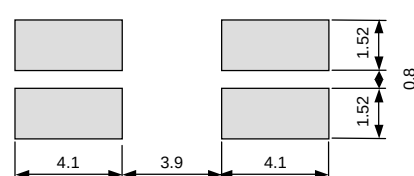
● MC-306



● MC-405



● MC-406



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	► Complies with EU RoHS directive. *About the products without the Pb-free mark. Contains Pb in products exempted by EU RoHS directive. (Contains Pb in sealing glass, high melting temperature type solder or other.)
	► Designed for automotive applications such as Car Multimedia, Body Electronics, Remote Keyless Entry etc.
	► Designed for automotive applications related to driving safety (Engine Control Unit, Air Bag, ESC etc).

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