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Crystal unit

SEIKO EPSON CORPORATION

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

RoHS Compliant

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	$\pm20 \times 10^{-6}$, $\pm50 \times 10^{-6}$	$\pm50 \times 10^{-6}$, $\pm100 \times 10^{-6}$	+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	6 pF to ∞ (standard :12.5 pF)		Please specify
Motional resistance (ESR)	R1	50 kΩ Max.	As per table below	
Motional capacitance	C1	1.8 fF Typ.	4.0 fF to 0.6 fF	MC-306
		2.0 fF Typ.		MC-405 / 406
Shunt capacitance	C0	0.9 pF Typ.	2.0 pF to 0.6 pF	MC-306
		0.85 pF Typ.		MC-405 / 406
Frequency aging	f_age	$\pm3 \times 10^{-6}$ / year Max.	$\pm5 \times 10^{-6}$ / year Max.	+25 °C, First year

Motional resistance (ESR)

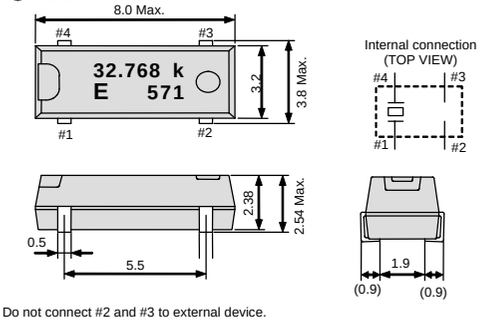
Frequency	20 kHz≤f_nom< 31.2 kHz	31.2 kHz≤f_nom< 40 kHz	40 kHz≤f_nom< 90 kHz	90 kHz≤f_nom≤120 kHz
Motional resistance	55 kΩ Max.	35 kΩ Max.	20 kΩ Max.	12 kΩ Max.

Product name (Standard form): MC-306 ① 32.768000kHz ② 12.5 ③ +20.0-20.0 ④

①Model ②Frequency ③Load capacitance(pF) ④Frequency tolerance($\times 10^{-6}$, +25 °C)

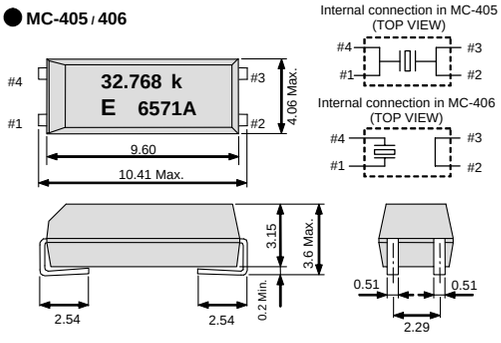
External dimensions (Unit:mm)

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

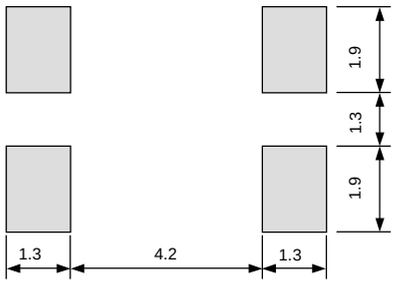


Do not connect #2 and #3 of MC-406 to external device.

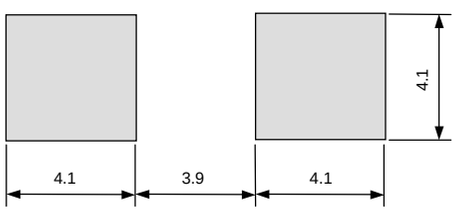
The first digit of No. means: 5×××× MC-405
6×××× MC-406

Footprint (Recommended) (Unit:mm)

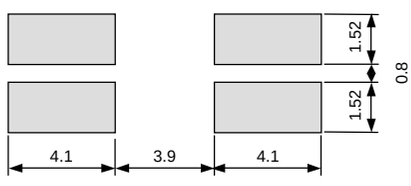
MC-306



MC-405



MC-406



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PROMOTION OF ENVIRONMENTAL MANAGEMENT SYSTEM CONFORMING TO INTERNATIONAL STANDARDS

At Seiko Epson, all environmental initiatives operate under the Plan-Do-Check-Action (PDCA) cycle designed to achieve continuous improvements. The environmental management system (EMS) operates under the ISO 14001 environmental management standard.

All of our major manufacturing and non-manufacturing sites, in Japan and overseas, completed the acquisition of ISO 14001 certification.

ISO 14000 is an international standard for environmental management that was established by the International Standards Organization in 1996 against the background of growing concern regarding global warming, destruction of the ozone layer, and global deforestation.

WORKING FOR HIGH QUALITY

In order provide high quality and reliable products and services than meet customer needs,

Seiko Epson made early efforts towards obtaining ISO9000 series certification and has acquired ISO9001 for all business establishments in Japan and abroad. We have also acquired ISO/TS 16949 certification that is requested strongly by major automotive manufacturers as standard.

ISO/TS16949 is the international standard that added the sector-specific supplemental requirements for automotive industry based on ISO9001.

►Explanation of the mark that are using it for the catalog

Pb Free	►Pb free.
RoHS Compliant	►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.)
For Automotive	►Designed for automotive applications such as Car Multimedia, Body Electronics, Remote Keyless Entry etc.
Automotive Safety	►Designed for automotive applications related to driving safety (Engine Control Unit, Air Bag, ESC etc).

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