kHz RANGE CRYSTAL UNIT

FC-12M / FC-12M TYPE

Pb Free
RoHS Compliant

Product Number
FC-12M : X1A000061xxxx00
FC-12M TYPE : X1A000021xxxx00

- Frequency range : FC-12M···32.768 kHz
  : FC-12M TYPE···32 kHz to 77.5 kHz
- External dimensions : 2.05 x 1.2 x 0.6 mm
- Overtone order : Fundamental
- Applications : Small communications devices





Specifications (characteristics)

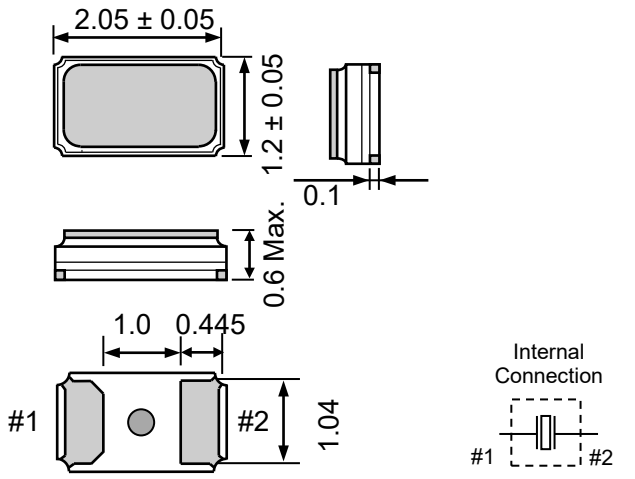
Item	Symbol	Specifications		Conditions / Remarks
		FC-12M	FC-12M TYPE	
Nominal frequency range	f_nom	32.768 kHz	32 kHz to 77.5 kHz	Please contact us about available frequencies.
Storage temperature range	T_stg	-55 °C to +125 °C		Storage as single product.
Operating temperature range	T_use	-40 °C to +85 °C		
Level of drive	DL	0.5 μW Max.		
Frequency tolerance (standard)	f_tol	±20 x 10^{-6} ±30 x 10^{-6}		+25 °C, DL = 0.1 μW Please ask for tighter tolerance
Turnover temperature	Ti	+25 °C ± 5 °C		
Parabolic coefficient	B	-0.04 x 10^{-6} / °C^2 Max.		
Load capacitance	CL	12.5 pF		Please specify
Motional resistance (ESR)	R1	90 kΩ Max.	90 kΩ to 65 kΩ	
Motional capacitance	C1	6.4 fF Typ.	7.0 fF to 2.7 fF	
Shunt capacitance	C0	1.3 pF Typ.	1.6 pF to 0.8 pF	
Frequency aging	f_age	±3 x 10^{-6} / year Max.		+25 °C, First year

Product name

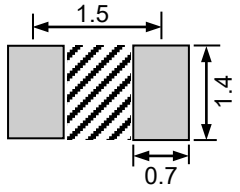
Product name (Standard form) FC-12M ① 32.768000kHz ② 12.5 ③ +20.0-20.0 ④

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

External dimensions (Unit:mm)



Footprint (Recommended) (Unit:mm)



∗Do not design any circuit patterns in the shaded area.

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 IATF 16949 certification that is requested strongly by major automotive manufacturers as standard.

IATF 16949 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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