



## KHz RANGE CRYSTAL UNIT LOW PROFILE SMD

# FC - 12D / FC - 12M

- Frequency range : 32.768 kHz (32 kHz to 77.5 kHz)
- External dimensions : 2.05 × 1.25 × 0.35 mm...FC-12D  
2.05 × 1.2 × 0.6 mm...FC-12M
- Overtone order : Fundamental
- Applications : Smart card, Small devices...FC-12D  
Small devices...FC-12M



Product Number (please contact us)

FC-12D: X1A00011xxxx00

FC-12M: X1A0000x1xxxx00



Actual size

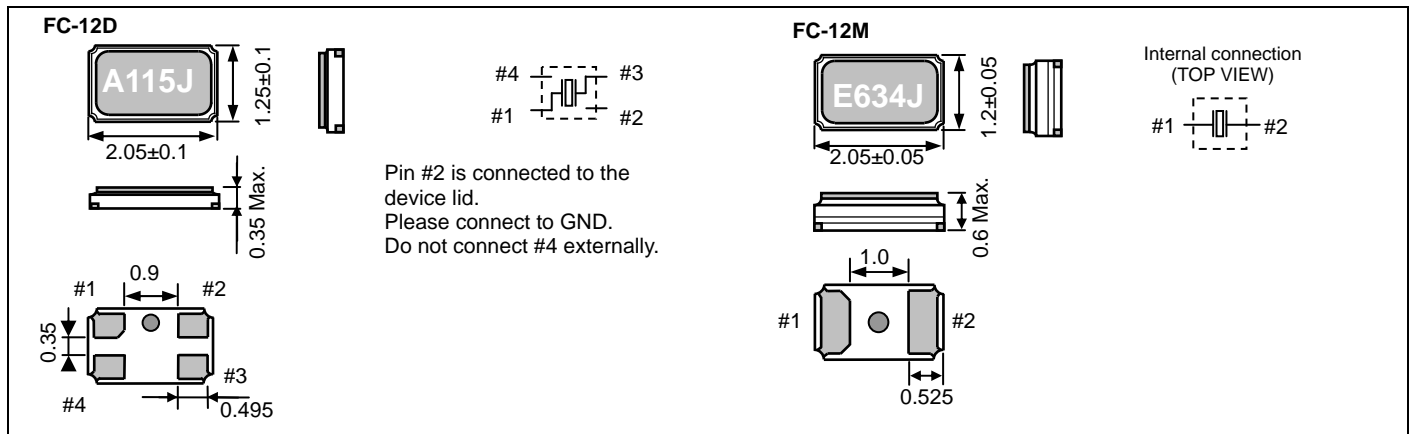


### Specifications (characteristics)

Item	Symbol	Specifications			Conditions / Remarks
		FC-12D	FC-12M		
Nominal frequency range	f <sub>nom</sub>	32.768 kHz	32.768 kHz	32 kHz to 77.5 kHz	Please contact us about available frequencies.
Storage temperature	T <sub>stg</sub>	-55 °C to +125 °C			Storage as single product.
Operating temperature	T <sub>use</sub>	-40 °C to +85 °C			
Level of drive	DL	0.25 μW Max.	0.5 μW Max.		
Frequency tolerance (standard)	f <sub>tol</sub>	±20 × 10 <sup>-6</sup>	±20 × 10 <sup>-6</sup> ±30 × 10 <sup>-6</sup>		+25 °C, DL=0.1 μW Please ask for tighter tolerance
Turnover temperature	T <sub>i</sub>	+25 °C ±5 °C			
Parabolic coefficient	B	-0.04 × 10 <sup>-6</sup> / °C <sup>2</sup> Max.			
Load capacitance	CL	7 pF, 9pF, 12.5pF	12.5pF		Please specify
Motional resistance (ESR)	R <sub>1</sub>	75 kΩ Max.	90 kΩ Max.	90 kΩ to 65 kΩ	
Motional capacitance	C <sub>1</sub>	3.7 fF Typ.	6.4 fF Typ.	7.0 fF to 2.7 fF	
Shunt capacitance	C <sub>0</sub>	0.8 pF Typ.	1.3 pF Typ.	1.6 pF to 0.8pF	
Frequency aging	f <sub>age</sub>	±3 × 10 <sup>-6</sup> / year Max.			+25 °C, First year

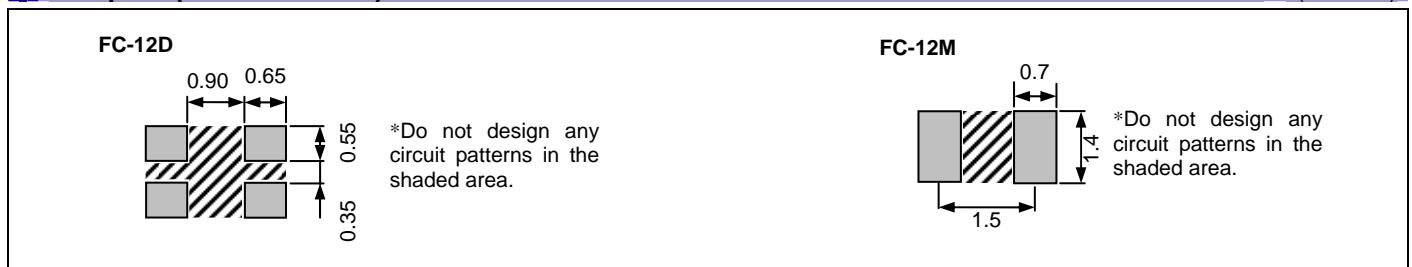
### External dimensions

(Unit: mm)



### Footprint (Recommended)

(Unit: mm)



## 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.
	► 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.)
	► The products have been designed for high reliability applications such as Automotive.

## Notice

- This material is subject to change without notice.
- Any part of this material may not be reproduced or duplicated in any form or any means without the written permission of Seiko Epson.
- The information about applied circuitry, software, usage, etc. written in this material is intended for reference only. Seiko Epson does not assume any liability for the occurrence of infringing on any patent or copyright of a third party. This material does not authorize the licensing for any patent or intellectual copyrights.
- When exporting the products or technology described in this material, you should comply with the applicable export control laws and regulations and follow the procedures required by such laws and regulations.
- You are requested not to use the products (and any technical information furnished, if any) for the development and/or manufacture of weapon of mass destruction or for other military purposes. You are also requested that you would not make the products available to any third party who may use the products for such prohibited purposes.
- These products are intended for general use in electronic equipment. When using them in specific applications that require extremely high reliability, such as the applications stated below, you must obtain permission from Seiko Epson in advance.  
/ Space equipment (artificial satellites, rockets, etc.) / Transportation vehicles and related (automobiles, aircraft, trains, vessels, etc.) / Medical instruments to sustain life / Submarine transmitters / Power stations and related / Fire work equipment and security equipment / traffic control equipment / and others requiring equivalent reliability.
- All brands or product names mentioned herein are trademarks and/or registered trademarks of their respective.

## X-ON Electronics

Largest Supplier of Electrical and Electronic Components

*Click to view similar products for [epson manufacturer](#):*

Other Similar products are found below :

[MA-505 24.0000M-C3 ROHS](#) [MC-405 32.7680K-G3: ROHS](#) [S5U13L02P00C100](#) [S5U13U11P00C100](#) [SG5032CAN 10.000000M-TJGA3](#)  
[SG5032VAN 200.000000M-KEGA3](#) [SG-210STF 2.0480ML3](#) [SG-531P 7.3728MC:ROHS](#) [X1G0044810005](#) [SG7050CAN 10 MHZ](#) [SG-](#)  
[Writer-II](#) [S5U1C31W74T1300](#) [S5U1C17W04T2100](#) [IC Socket for 7050 case](#) [SG-210STF 40.0000ML](#) [TSX-3225 26.0000MF10Z-B6](#) [EG-](#)  
[2121CA 200.0000M-LGPNB](#) [RTC-72423A](#) [S5U13513P00C100](#) [SG-210STF 13.5600ML3](#) [Q3851CA000055](#) [XG-1000CA 50 MHZ](#) [EG-](#)  
[2121CA 644.53125MLGPA](#) [RX-8564LC:B3 PURE SN](#) [M160](#) [MA-506 4.0000M-C3 ROHS](#) [EG-2121CA2000000M-LGPAL3](#)  
[S5U13U00P00C100](#) [FA-118T 52.0000ME12Z-AC3](#) [S5U1C17001H3100](#) [S5U13513R00C100](#) [IC Socket for 5032 case](#) [FC-13A 32.7680KA-A](#)  
[SG-210STF 4.0960ML](#) [S5U13517P00C200](#) [S5U13748P00C100](#) [S5U1C17W18T2100](#) [SG-310SCF 20.0000MM](#) [S5U13781R01C100](#) [MA-506](#)  
[25.0000M-C3:ROHS](#) [S5U1C17M13T2100](#) [S5U1C17M13T1100](#) [FA-238 25.0000MB50X-C3](#) [RX-8803LC:UB3 PURE SN](#) [SG-3030LC](#)  
[32.7680KB3, PURE SN](#) [SG-615P 8.0000MC3: ROHS](#) [Q3102JF010001](#) [SG-3030JF 32.768KHZ B](#) [M150](#) [S5U1C17W15T2100](#) [FC-135](#)  
[32.7680KA-K0](#) [XG-2121CA 156.2500M-PGSNB](#) [FA-128 25.0000MF20X-WX](#)