



kHz RANGE CRYSTAL UNIT

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 (Please contact us for
except Smart card use.)...FC-12D
: Small devices...FC-12M



Product Number (please contact us)

FC-12D: X1A000111xxxx00

FC-12M: X1A0000x1xxxx00



Actual size



Specifications (characteristics)

Item	Symbol	Specifications			Conditions / Remarks
		FC-12D	FC-12M		
Nominal frequency range	f_nom	32.768 kHz	32.768 kHz	32 kHz to 77.5 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	0.25 μW Max.	0.5 μW Max.		
Frequency tolerance (standard)	f_tol	±20 × 10 ⁻⁶	±20 × 10 ⁻⁶ ±30 × 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 × 10 ⁻⁶ / °C ² Max.			
Load capacitance	CL	7 pF, 9pF, 12.5pF	12.5pF		Please specify
Motional resistance (ESR)	R1	75 kΩ Max.	90 kΩ Max.	90 kΩ to 65 kΩ	
Motional capacitance	C1	3.7 fF Typ.	6.4 fF Typ.	7.0 fF to 2.7 fF	
Shunt capacitance	C0	0.8 pF Typ.	1.3 pF Typ.	1.6 pF to 0.8pF	
Frequency aging	f_age	±3 × 10 ⁻⁶ / year Max.			+25 °C, First year

Product name FC-12D 32.768000kHz 12.5 +20.0-20.0

(Standard form)

①

②

③

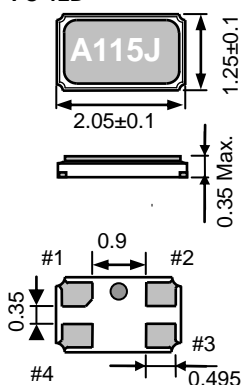
④

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

External dimensions

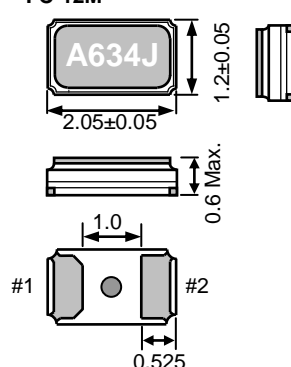
(Unit: mm)

FC-12D

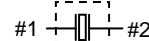


Pin #2 is connected to the device lid.
Please connect to GND.
Do not connect #4 externally.

FC-12M



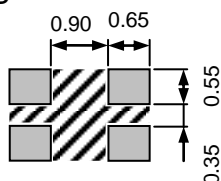
Internal connection (TOP VIEW)



Footprint (Recommended)

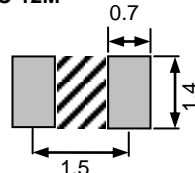
(Unit: mm)

FC-12D



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

FC-12M



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

Mouser Electronics

Authorized Distributor

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Epson:

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