

**KHz RANGE CRYSTAL UNIT  
LOW PROFILE SMD**

**FC - 135 / FC - 255**

- Frequency range : 32.768 kHz (32 kHz to 100 kHz)
- External dimensions : 3.2 × 1.5 × 0.80 mm ...FC-135  
: 4.9 × 1.8 × 0.80 mm ...FC-255
- Overtone order : Fundamental
- Applications : Small communications devices



Product Number (please contact us)  
 FC-135 : Q1xFC1350xxxx00  
 FC-255 : Q1xFC2550xxxx00



Actual size

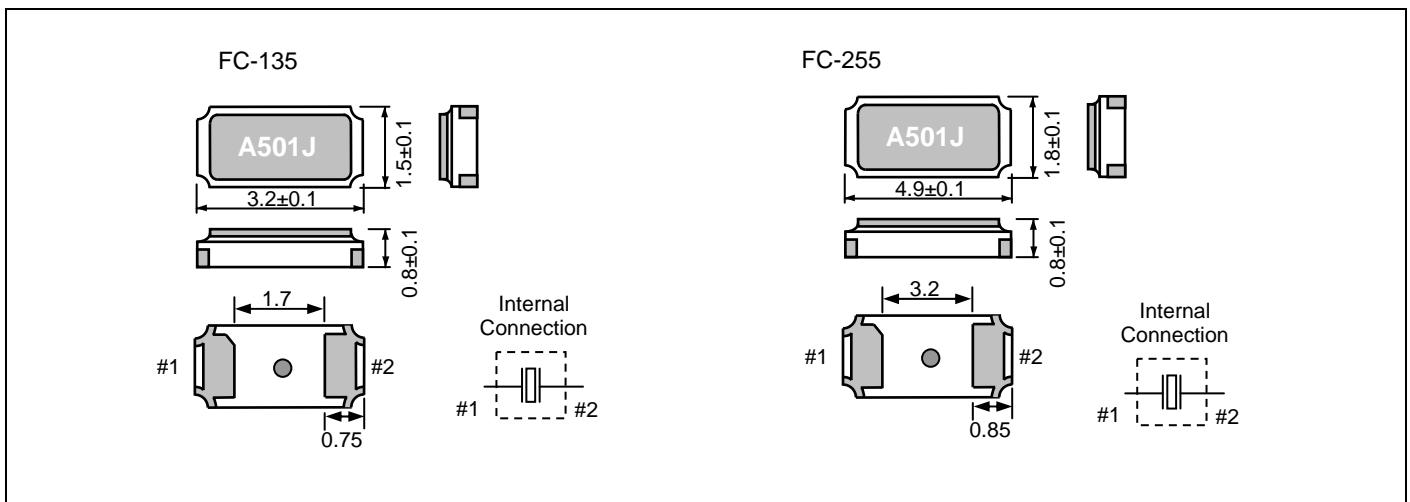


**Specifications (characteristics)**

Item	Symbol	Specifications				Conditions / Remarks
		FC-135	FC-135	FC-255	FC-255	
Nominal frequency range	f_nom	32.768 kHz	32 kHz to 77.5 kHz	32.768 kHz	32 kHz to 100 kHz	Please contact us for inquiries regarding available frequencies.
Storage temperature	T_stg	-55 °C to +125 °C				Store as bare product.
Operating temperature	T_use	-40 °C to +85 °C				
Level of drive	DL	0.5 μW (1.0 μW Max.)		0.5 μW Max.		Please contact us if you require 1.0μW Max.
Frequency tolerance (standard)	f_tol	±20 × 10 <sup>-6</sup>				+25 °C, DL=0.1 μW Please ask for tighter tolerance
Turnover temperature	Ti	+25 °C ±5 °C				
Parabolic coefficient	B	-0.04 × 10 <sup>-6</sup> / °C <sup>2</sup> Max.				
Load capacitance	CL	7 pF, 9 pF, 12.5 pF		7 pF, 12.5 pF		Please specify
Motional resistance (ESR)	R1	70 kΩ Max.	70 kΩ to 45 kΩ	65 kΩ Max.	70 kΩ to 30 kΩ	
Motional capacitance	C1	3.4 fF Typ.	3.7 fF to 1.6 fF	2.0 fF Typ.	2.3 fF to 0.6 fF	
Shunt capacitance	C0	1.0 pF Typ.	1.3 pF to 0.5 pF	1.3 pF Typ.	1.7 pF to 0.9 pF	
Frequency aging	f_age	±3 × 10 <sup>-6</sup> / year Max.				+25 °C, First year

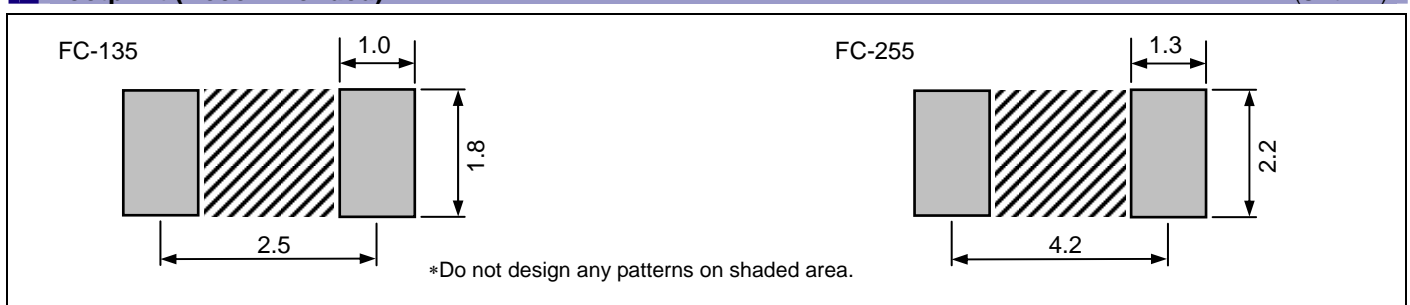
**External dimensions**

(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.

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