



## KHz RANGE CRYSTAL UNIT LOW PROFILE SMD

# FC-13F / FC-135

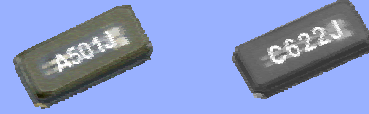
- Frequency range : 32.768 kHz (32 kHz to 77.5 kHz)
- External dimensions : 3.2 × 1.5 × 0.55 t (mm) ...FC-13F  
: 3.2 × 1.5 × 0.80 t (mm) ...FC-135
- Overtone order : Fundamental
- Applications : Small communications devices



Product Number (please contact us)

FC-13F : Q13FC13F0xxx00

FC-135 : Q1xFC1350xxx00



Actual size

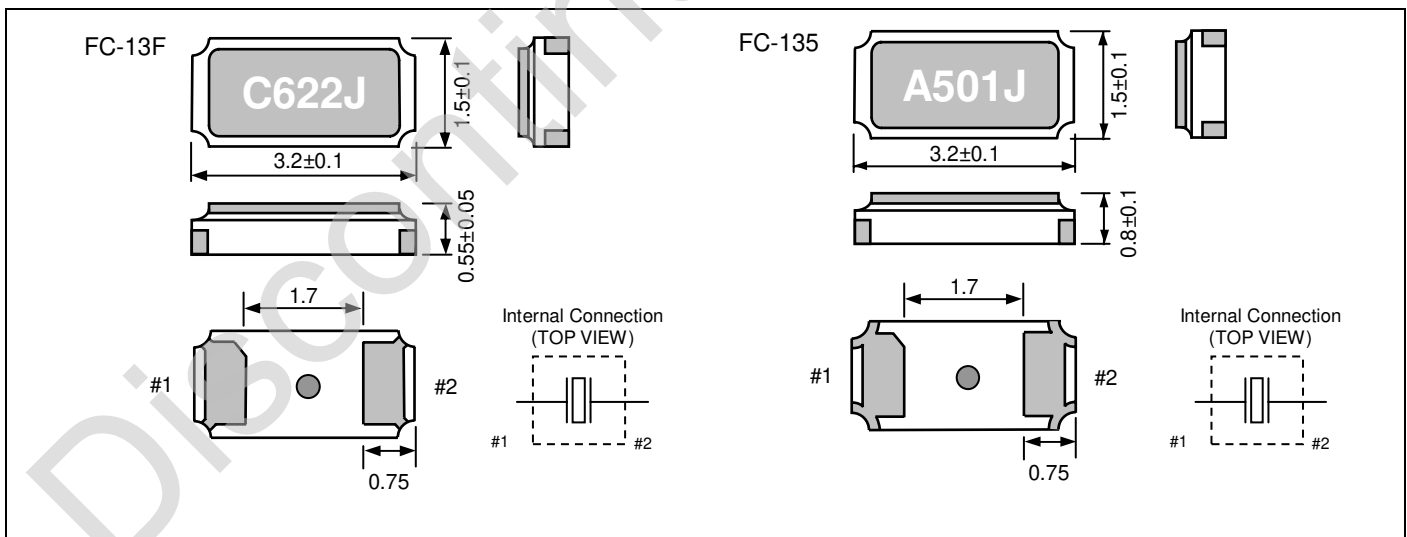


### Specifications (characteristics)

Item	Symbol	Specifications			Remarks
		FC-13F	FC-135	FC-135	
Nominal frequency range	f_nom	32.768 kHz		32 kHz to 77.5 kHz	Please contact us for inquiries regarding available frequencies.
Temperature range	Storage temperature T_stg	-55 °C to +125 °C			Store as bare product after unpacking
	Operating temperature T_use	-40 °C to +85 °C			
Level of drive	DL	0.5 μW 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, 9 pF, 12.5 pF	Please specify
Motional resistance (ESR)	R <sub>1</sub>	80 kΩ Max.	70 kΩ Max.	70 kΩ to 45 kΩ	
Motional capacitance	C <sub>1</sub>	3.3 fF Typ.	3.4 fF Typ.	3.7 fF to 1.6 fF	
Shunt capacitance	C <sub>0</sub>	1.0 pF Typ.	1.0 pF Typ.	1.3 pF to 0.5 pF	
Frequency aging	f_age	±3 × 10 <sup>-6</sup> / year Max.			+25 °C, First year

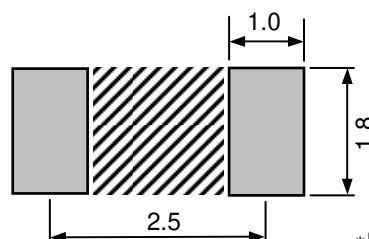
### External dimensions

(Unit:mm)



### Footprint (Recommended)

(Unit:mm)φ



\*Do not design any patterns on shaded area.