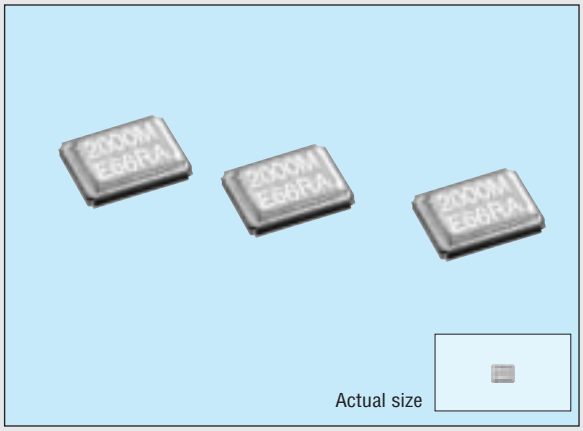
THIN SMD HIGH-FREQUENCY CRYSTAL UNIT

FA-238

Product number (please refer to page 1)
Q22FA238xxxxx00

- High-density mounting-type SMD.
- Excellent shock resistance.
- Capable of covering a wide frequency range. (from 16 MHz to 50 MHz)
- 0.7 mm Max. thickness is equal to SMD-type IC.
- Most suitable for small communication devices.



Specifications (characteristics)

Item		Symbol	Specifications	Remarks
Nominal frequency range		f	16.000 MHz to 50.000 MHz	Fundamental mode ∗1
Temperature range	Storage temperature	T_{STG}	-40 °C to +125 °C	Stored as bare product after unpacking
	Operating temperature	T_{OPR}	-40 °C to +85 °C	Specified equivalent series must be satisfied.
	Operable temperature	T_{USE}	As per below table	Specified equivalent series and frequency temperature characteristics must be satisfied.
Drive level	Maximum drive level	GL	2 mW Max.	Only crystal oscillation is guaranteed
	Recommended drive level	DL	10 µW to 100 µW	
Frequency tolerance		Δf/f	±50 x 10^{-6}(standard) (±15 x 10^{-6} to ±50 x 10^{-6} is available)	Ta=+25 °C±3 °C For the out of standard specifications, please contact us for inquiries. ∗1
Frequency temperature characteristics			±30 x 10^{-6}(standard) As per below table	-20 °C to +70 °C For the out of standard specifications, please contact us for inquiries. ∗1
Load capacitance		C_L	7 pF to ∞ (standard:12 pF)	Please specify
Series resistance		R_1	As per below table	Operable temperature range , DL=100 µW
Shunt capacitance		C_0	5.0 pF Max.	
Insulation resistance		IR	500 M Ω Min.	
Aging		fa	±5 x 10^{-6}/year Max.	Ta=+25 °C ±3 °C, first year
Shock resistance		S. R.	±10 x 10^{-6} Max.	100 g dummy (Seiko Epson Standard) drop from 1500 mm height on to the concrete 3 directions 10 times.

∗1 f > 40 MHz : Only standard specifications

Frequency temperature characteristics

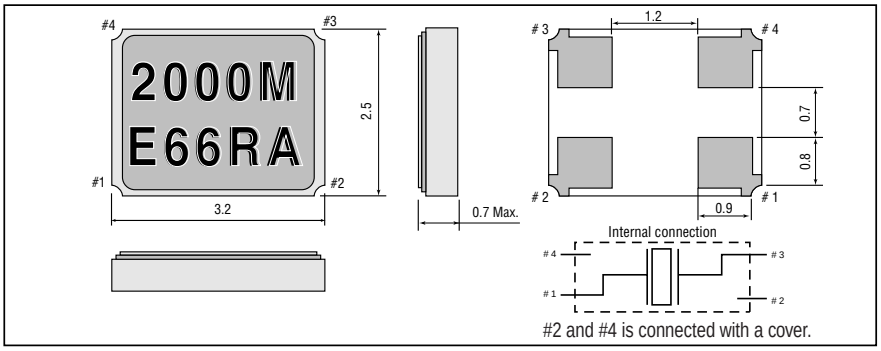
Operable temperature	Frequency tolerance
0 °C to +50 °C	± 8 × 10^{-6} Min.
-10 °C to +60 °C	± 12 × 10^{-6} Min.
-20 °C to +70 °C	± 15 × 10^{-6} Min.
-30 °C to +80 °C	± 20 × 10^{-6} Min.
-40 °C to +85 °C	± 30 × 10^{-6} Min.

Series resistance (R1)

Frequency	Series resistance
16.0 MHz ≤ f < 20.0 MHz	80 Ω Max.
20.0 MHz ≤ f < 25.0 MHz	60 Ω Max.
25.0 MHz ≤ f < 30.0 MHz	50 Ω Max.
30.0 MHz ≤ f ≤ 50.0 MHz	40 Ω Max.

External dimensions

(Unit: mm)



Recommended soldering pattern

(Unit: mm)