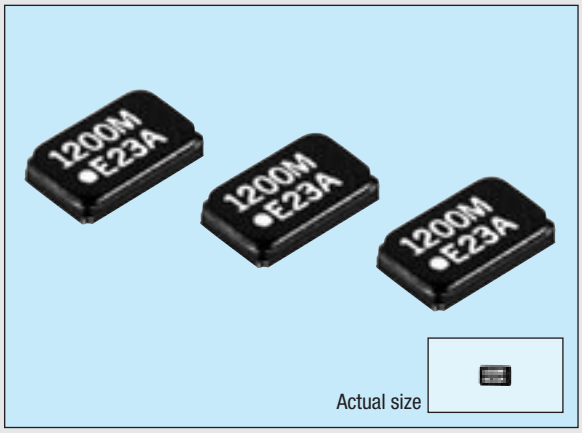
THIN SMD HIGH-FREQUENCY CRYSTAL UNIT

FA-248

Product number (please refer to page 1)

Q22FA248xxxxx00

- High-density mounting-type SMD.
- Excellent shock resistance.
- Capable of covering a wide frequency range. (from 12 MHz to 27 MHz)
- 0.9 mm Typ. thickness is equal to SMD-type IC.
- Most suitable for small communication devices.
- Available for lead (Pb)-free soldering.
- Lead (Pb)-free terminal product.



■ Specifications (characteristics)

Item		Symbol	Specifications	Remarks
Nominal frequency		f	12.000 MHz to 27.000 MHz	Fundamental mode 27 MHz < f ≤ 32 MHz Please contact us for inquiries.
Temperature range	Storage temperature	TSTG	-40 ˚C to +125 ˚C	Stored as bare product after unpacking
	Operating temperature	TOPR	-20 ˚C to +70 ˚C / -40 ˚C to +85 ˚C	Specified equivalent series must be satisfied.
	Operable temperature	TUSE	As per below table	Specified equivalent series and frequency temperature characteristics must be satisfied.
Recommended drive level		DL	10 µW to 100 µW	
Frequency tolerance		Δf/f	±10 x 10^{-6}, ±15 x 10^{-6}, ±20 x 10^{-6} ∗1	Ta = +25 ˚C ±3 ˚C
Frequency temperature characteristics			±15 x 10^{-6}, ±20 x 10^{-6} (Standard) ∗1 As per below table	-20 ˚C to +70 ˚C
Load capacitance		CL	10 pF to ∞	Please specify
Series resistance		R1	As per below table	Operable temperature range , DL = 100 µW
Shunt capacitance		C0	5.0 pF Max.	
Insulation resistance		IR	500 MΩ Min.	
Aging		fa	±2 x 10^{-6} / year Max.	Ta = +25 ˚C ±1 ˚C, first year
Shock resistance		S.R.	±5 x10^{-6} Max.	100 g dummy (Seiko Epson Standard) drop from 1500 mm height on to the concrete 3 directions 10 times.

∗1 Please ask tighter tolerance.

■ Frequency temperature characteristics

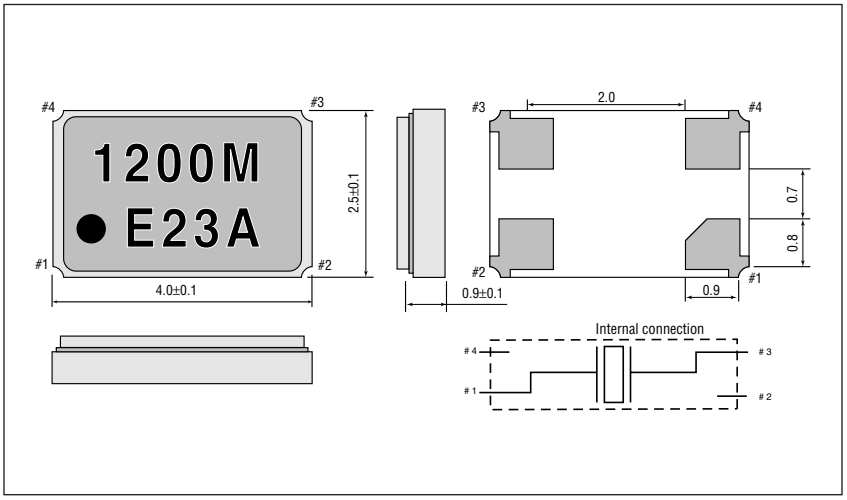
Operable temperature	Frequency tolerance
0 ˚C to +50 ˚C	±5 x 10^{-6} Min.
-10 ˚C to +60 ˚C	±7 x 10^{-6} Min.
-20 ˚C to +70 ˚C	±10 x 10^{-6} Min.
-30 ˚C to +80 ˚C	±15 x 10^{-6} Min.
-40 ˚C to +85 ˚C	±20 x 10^{-6} Min.

■ Series resistance (R1)

Frequency	Series resistance
12.0 MHz ≤ f < 13.0 MHz	70 Ω Max.
13.0 MHz ≤ f < 16.0 MHz	60 Ω Max.
16.0 MHz ≤ f < 20.0 MHz	50 Ω Max.
20.0 MHz ≤ f ≤ 27.0 MHz	40 Ω Max.

■ External dimensions

(Unit: mm)



■ Recommended soldering pattern

(Unit: mm)