

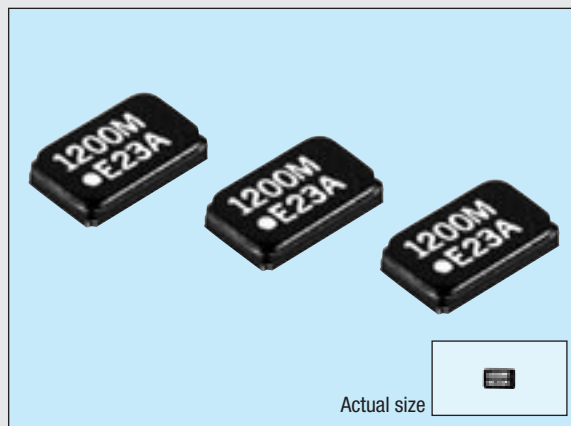
THIN SMD HIGH-FREQUENCY CRYSTAL UNIT

# 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	T <sub>STG</sub>	-40 °C to +125 °C
	Operating temperature	T <sub>OPR</sub>	-20 °C to +70 °C / -40 °C to +85 °C
	Operable temperature	T <sub>USE</sub>	As per below table
Recommended drive level	DL	10 μW to 100 μW	
Frequency tolerance	Δf/f	±10 x 10 <sup>-6</sup> , ±15 x 10 <sup>-6</sup> , ±20 x 10 <sup>-6</sup> *1	T <sub>a</sub> = +25 °C ±3 °C
Frequency temperature characteristics		±15 x 10 <sup>-6</sup> , ±20 x 10 <sup>-6</sup> (Standard) *1 As per below table	-20 °C to +70 °C
Load capacitance	C <sub>L</sub>	10 pF to ∞	Please specify
Series resistance	R <sub>i</sub>	As per below table	Operable temperature range , DL = 100 μW
Shunt capacitance	C <sub>0</sub>	5.0 pF Max.	
Insulation resistance	IR	500 MΩ Min.	
Aging	f <sub>a</sub>	±2 x 10 <sup>-6</sup> / year Max.	T <sub>a</sub> = +25 °C ±1 °C, first year
Shock resistance	S.R.	±5 x 10 <sup>-6</sup> 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

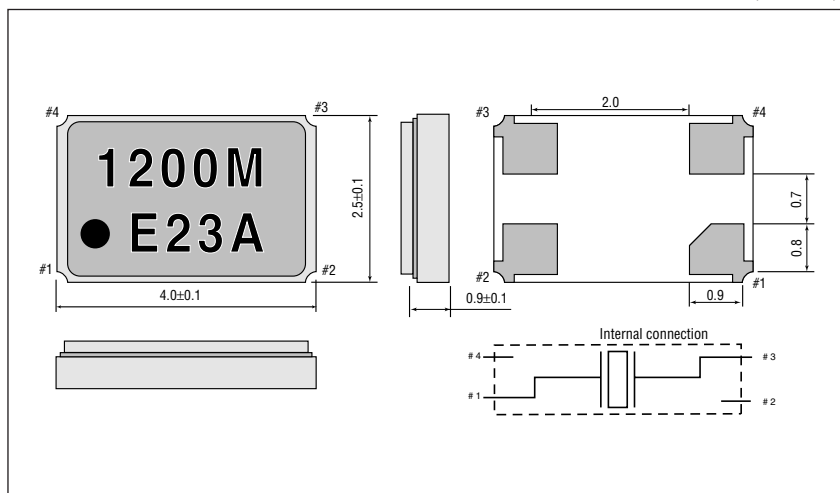
Operable temperature	Frequency tolerance
0 °C to +50 °C	±5 x 10 <sup>-6</sup> Min.
-10 °C to +60 °C	±7 x 10 <sup>-6</sup> Min.
-20 °C to +70 °C	±10 x 10 <sup>-6</sup> Min.
-30 °C to +80 °C	±15 x 10 <sup>-6</sup> Min.
-40 °C to +85 °C	±20 x 10 <sup>-6</sup> Min.

## 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)

