

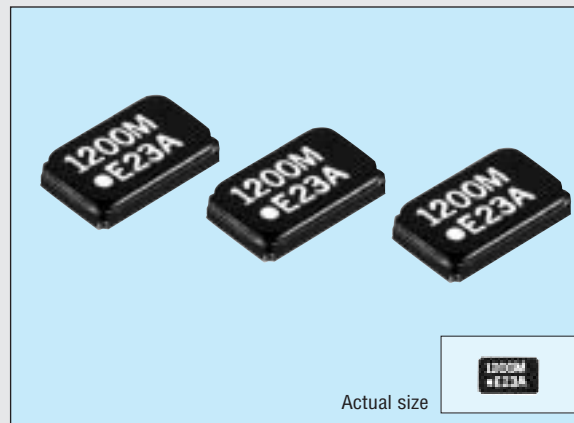
THIN SMD HIGH-FREQUENCY CRYSTAL UNIT

FA-248

Product number (please refer to page 1)

Q22FA248xxx00

- High-density mounting-type SMD.
- Excellent shock resistance.
- Capable of covering a wide frequency range. (from 12 MHz to 27 MHz)
- 1.0 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 | 12.000 MHz to 27.000 MHz | Fundamental mode 27 MHz < f ≤ 32 MHz Please contact us for inquiries. | |
| Temperature range | Storage temperature | T _{STG} | -40 °C to +125 °C | Stored as bare product after unpacking |
| | Operating temperature | T _{OPR} | -20 °C to +70 °C / -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 | ±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 | C _L | 10 pF to ∞ | 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 | ±2 x 10 ⁻⁶ /year Max. | Ta=+25 °C ±1 °C, first year | |
| Shock resistance | S. R. | ±5 x 10 ⁻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.

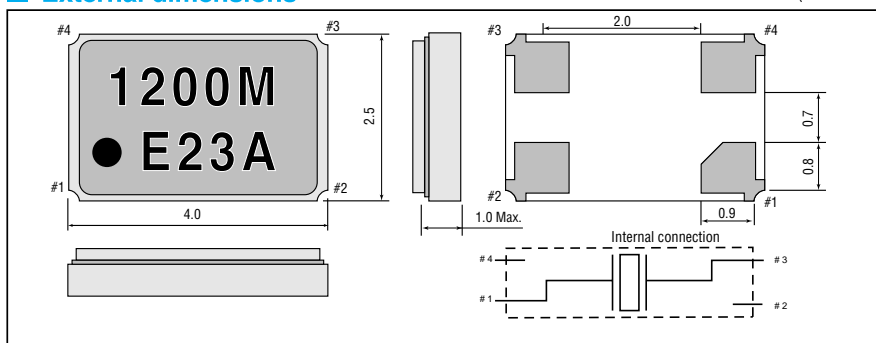
■ Frequency temperature characteristics

| 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



■ Recommended soldering pattern (Unit: mm)

