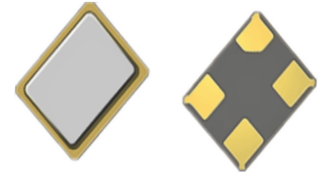


SMD2016-4 Crystal Resonator

7D032000Q01

1. Scope:

- 1.1 This specification applies to the RoHS compliance quartz crystal unit with a frequency of 32.000MHz which will be used in crystal oscillator applications.



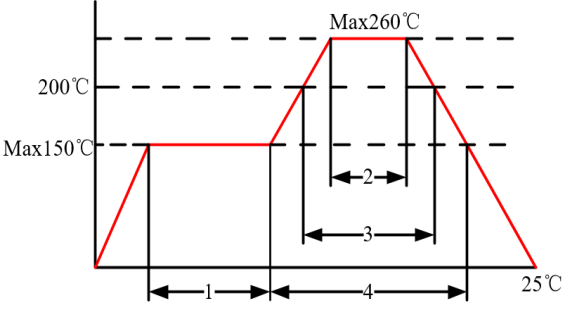
2. Construction:

- 2.1 Type of Quartz Resonator: SMD2016-4pads

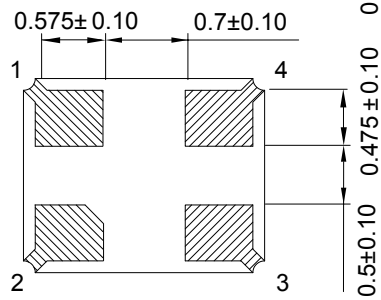
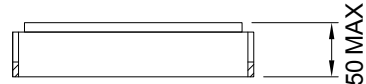
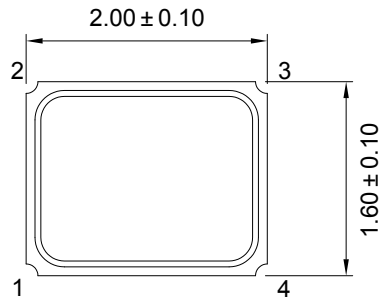
3. Electrical Characteristics

- | | |
|---|----------------------|
| 3.1 Nominal Frequency(f): | 32.000MHz |
| 3.2 Load Capacitance(C_L): | 18pF |
| 3.3 Frequency Tolerance($\Delta f/f$): | ± 10 ppm |
| 3.4 Frequency Temperature Stability: | ± 20 ppm |
| 3.5 Resonance Resistance(ohm): | 40 ohms Max |
| 3.6 Osc mode: | Fundamental mode |
| 3.7 Shunt Capacitance(C_0): | 2pF Max |
| 3.8 Drive Level(D_L): | 100 μ W Max |
| 3.9 Operating Temperature Range(T_{OPR}): | -20 to + 70°C |
| 3.10 Storage Temperature Range(T_{STG}): | -55 to + 125°C |
| 3.11 Insulation Resistance(IR): | > 500M ohms |
| 3.12 Aging(Δf_A): | ± 3 ppm/Year Max |

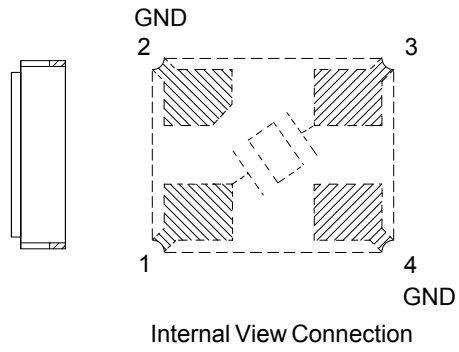
Reliability Specification

| | Item | Condition | Standard |
|----|----------------------------------|---|---|
| 1. | Drop characteristics | Free drop from 75cm height on a hard wooden board for 3 times. (Board is thickness more than 30 mm.) | Frequency change: $\leq \pm 5\text{ppm}$ Rr as specification |
| 2. | Mechanical shock | Device are shocked to half sine wave (1000g) three mutually perpendicular axes each 3 times | Frequency change: $\leq \pm 5\text{ppm}$ Rr as specification |
| 3. | Shake characteristics | Shake frequency 10~55Hz, cyc1~2 minutes, swing 1.5mm, direction x/y/z, all 30 minutes, test after 1 hours. | Frequency change: $\leq \pm 5\text{ppm}$ Rr as specification |
| 4. | Humidity characteristics | $+40 \pm 2^\circ\text{C}$ & 90%~95% R.H. 250 hours | Frequency change: $\leq \pm 5\text{ppm}$ Rr as specification |
| 5. | Low temperature characteristics | $-40 \pm 2^\circ\text{C}$, 250 hours, put in room temperature, test after 1 hours. | Frequency change: $\leq \pm 5\text{ppm}$ Rr as specification |
| 6. | High temperature characteristics | $+85 \pm 2^\circ\text{C}$, 250 hours, put in room temperature, test after 1 hours. | Frequency change: $\leq \pm 5\text{ppm}$ Rr as specification |
| 7. | Temperature cycling | $-30 \pm 3^\circ\text{C}/30 \pm 3 \text{ min} \sim +85 \pm 2^\circ\text{C}/30 \pm 3 \text{ min}$, 5 cycles | Frequency change: $\leq \pm 5\text{ppm}$ Rr as specification |
| 8. | Refluence examination |  <p>1. Max 180sec 2. Max 10 sec 3. Max 80 sec 4. Max 90 sec</p> | Frequency change: $\leq \pm 5\text{ppm}$ Rr as specification |

Package Outline Dimensions



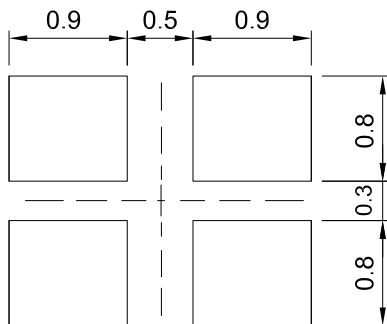
Bottom View



| 引脚 | 功能 |
|----|---------|
| #1 | CRYSTAL |
| #2 | GND |
| #3 | CRYSTAL |
| #4 | GND |

Units:mm

Suggested Pad Layout



Units:mm

Packing Specification

