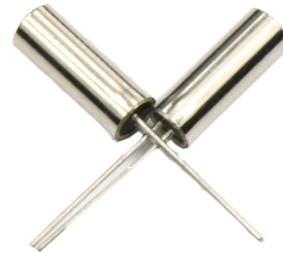


**HD308 Quartz Crystal**

**7Q032768NW2**

**1. Scope:**

- 1.1 This specification applies to the RoHS compliance quartz crystal unit with a frequency of 32.768KHz which will be used in crystal oscillator applications.



**2. Construction:**

- 2.1 Type of Quartz Resonator: HD308

**3. Electrical Characteristics**

- |  |   |
|--|---|
| 3.1 Mode of Vibration :                                  | +2°X-cut , Fundamental                      |
| 3.2 Nominal frequency(F):                                | 32.768KHz                                   |
| 3.3 Load Capacitance(C <sub>L</sub> ):                   | 12.5pF                                      |
| 3.4 Frequency Tolerance at 25℃                           | ±20ppm                                      |
| 3.5 Frequency Temperature Stability:                     | -0.04* 10 <sup>-6</sup> /℃ <sup>2</sup> Max |
| 3.6 Series Resistance(R <sub>r</sub> ):                  | 50 KΩ Max                                   |
| 3.7 Quality Factor(Q):                                   | 60K TYP                                     |
| 3.8 Turnover Temperature(T <sub>o</sub> ):               | 25 ℃ ± 5 ℃                                  |
| 3.9 Operation Temperature:                               | -20 ℃ ~ +70 ℃                               |
| 3.10 Preservation Temperature:                           | -40 ℃ ~ +85 ℃                               |
| 3.11 Shunt Capacitance(C <sub>0</sub> ):                 | 0.8PF Typical                               |
| 3.12 Capacitance Ratio(C <sub>0</sub> /C <sub>1</sub> ): | 500 Typical                                 |
| 3.13 Insulation Resistance:                              | 500MΩ at DC 100V±10V                        |
| 3.14 Drive Level:  | 1μW   |

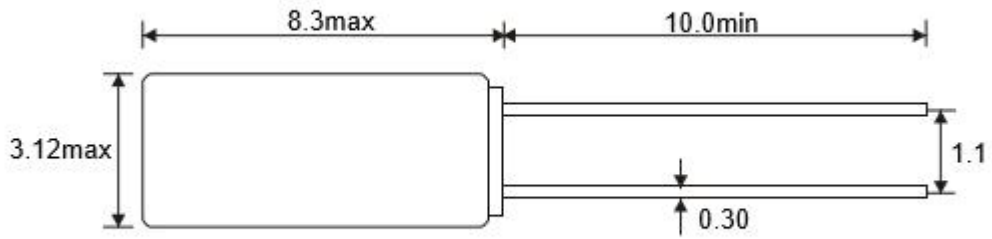
# Reliability Specification

	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

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## Package Outline Dimensions

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## Packing Specificatio

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