



江苏海德频率科技有限公司
JIANGSU HD-CRYSTAL TECHNOLOGY CO., LTD

Specifications For Product

TYPE : Quartz Crystal Resonator
SPEC : 3225/12M/12PF
P/N : 7B012000M01
VER : A/1

R&D APPR. SIGNATURED			DEPT. 
ISSUE	CHECK	APPROVAL	
吴佳斌	程心婷	王秋贞	

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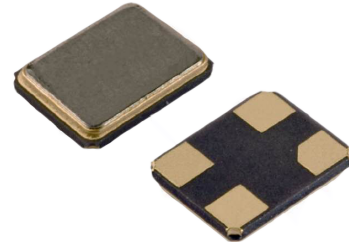
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7B012000M01

1. Scope:

- 1.1 This specification applies to the RoHS compliance quartz crystal unit with a frequency of 12.000MHz which will be used in crystal oscillator applications.



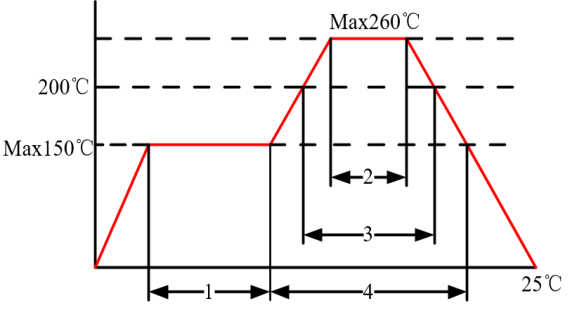
2. Construction:

- 2.1 Type of Quartz Resonator: SMD3225-4pads

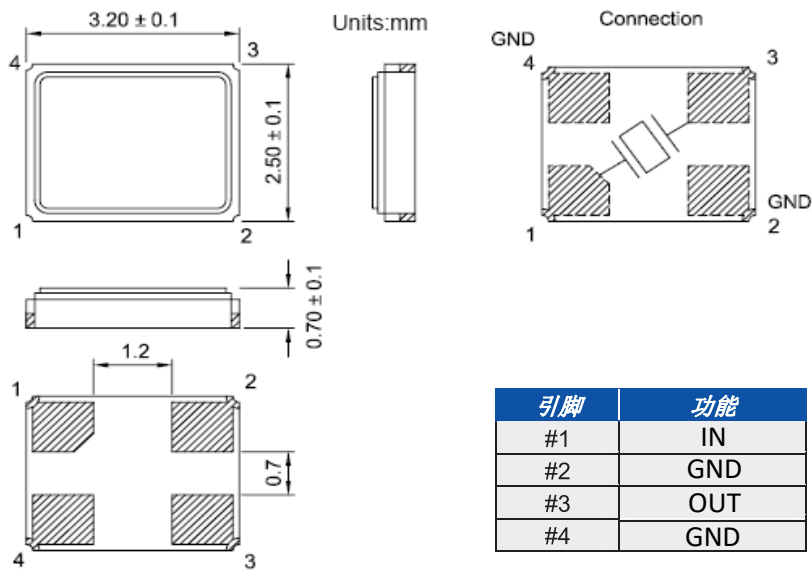
3. Electrical Characteristics

- | | |
|---|----------------------|
| 3.1 Nominal Frequency(f): | 12.000MHz |
| 3.2 Load Capacitance(C_L): | 12pF |
| 3.3 Frequency Tolerance($\Delta f/f$): | ± 10 ppm |
| 3.4 Frequency Temperature Stability: | ± 20 ppm |
| 3.5 Resonance Resistance(ohm): | 70 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 |

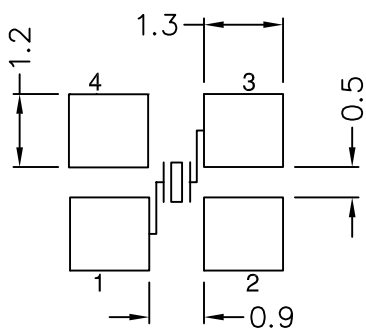
Reliability Specification

	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 style="text-align: center;"> 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



Suggested Pad Layout



Packing Specification

