



江苏浩都频率科技有限公司
JIANGSU HD-CRYSTAL TECHNOLOGY CO., LTD

Specifications For Product

TYPE : Quartz Crystal Resonator
SPEC : 2016/20.000M/12PF
P/N : 7D020000M12
VER : A/2

R&D APPR. SIGNATURED			DEPT. 
ISSUE	CHECK	APPROVAL	
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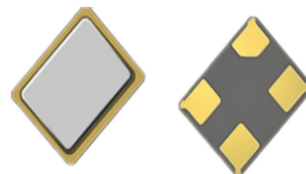
Specification Revision Record Sheet

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7D020000M12

1. Scope:

- 1.1 This specification applies to the RoHS compliance quartz crystal unit with a frequency of 20.000MHz which will be used in crystal oscillator applications.



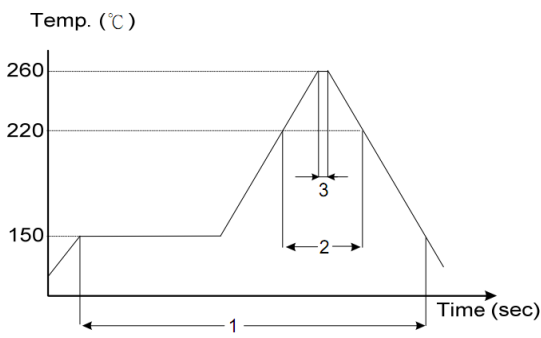
2. Construction:

- 2.1 Type of Quartz Resonator: SMD2016-4pads

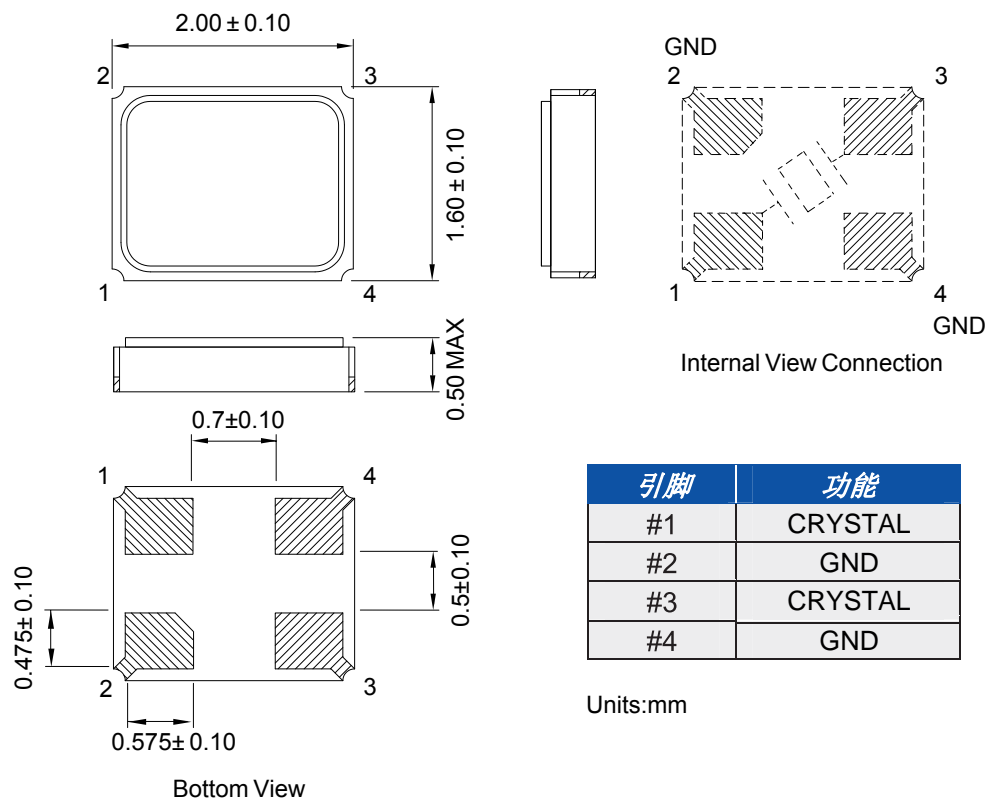
3. Electrical Characteristics

3.1 Nominal Frequency(f):	20.000MHz
3.2 Load Capacitance(C_L):	12pF
3.3 Frequency Tolerance($\Delta f/f$):	± 10 ppm
3.4 Frequency Temperature Stability:	± 40 ppm
3.5 Resonance Resistance(ohm):	80 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}):	-40 to + 105°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

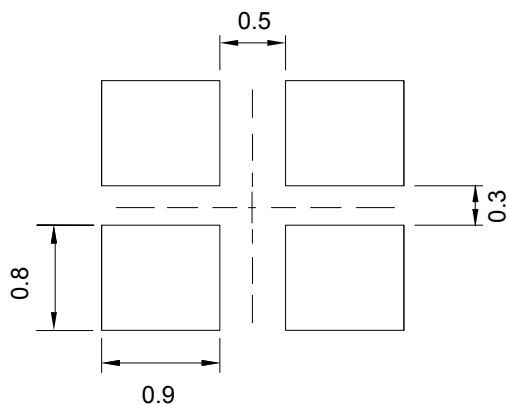
Reliability Specification

	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	$-40 \pm 2^{\circ}\text{C}/30 \pm 3 \text{ min} \sim +85 \pm 2^{\circ}\text{C}/30 \pm 3 \text{ min}$, 5 cycles	Frequency change: $\leq \pm 5\text{ppm}$ Rr as specification
8.	Refluence examination	 <p>Temp. ($^{\circ}\text{C}$)</p> <p>260</p> <p>220</p> <p>150</p> <p>Time (sec)</p> <p>1</p> <p>2</p> <p>3</p> <p>1. Max 200 sec 2. Max 80 sec 3. Max 10 sec</p>	Frequency change: $\leq \pm 5\text{ppm}$ Rr as specification

Package Outline Dimensions



Suggested Pad Layout



Units:mm

Packing Specification

