



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

**Specifications For Product**

TYPE : Quartz Crystal Oscillator  
SPEC : CXO3225/13.560M/3.3V/±30PPM  
P/N : 83013560301  
VER : A/2

R&D APPR. SIGNATURED			DEPT. 
ISSUE	CHECK	APPROVAL	
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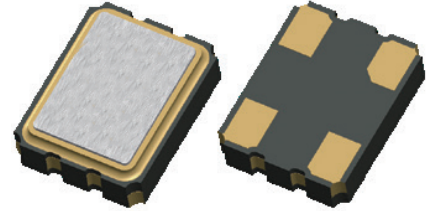
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### 83013560301

#### 1. Scope:

- 1.1 This specification applies to the RoHS crystal oscillator with a frequency of 13.560MHz which will be used in electronic equipment.



#### 2. Construction:

- 2.1 Oscillators series: 83 series CXO3225  
2.2 Package: SMD3.2×2.5

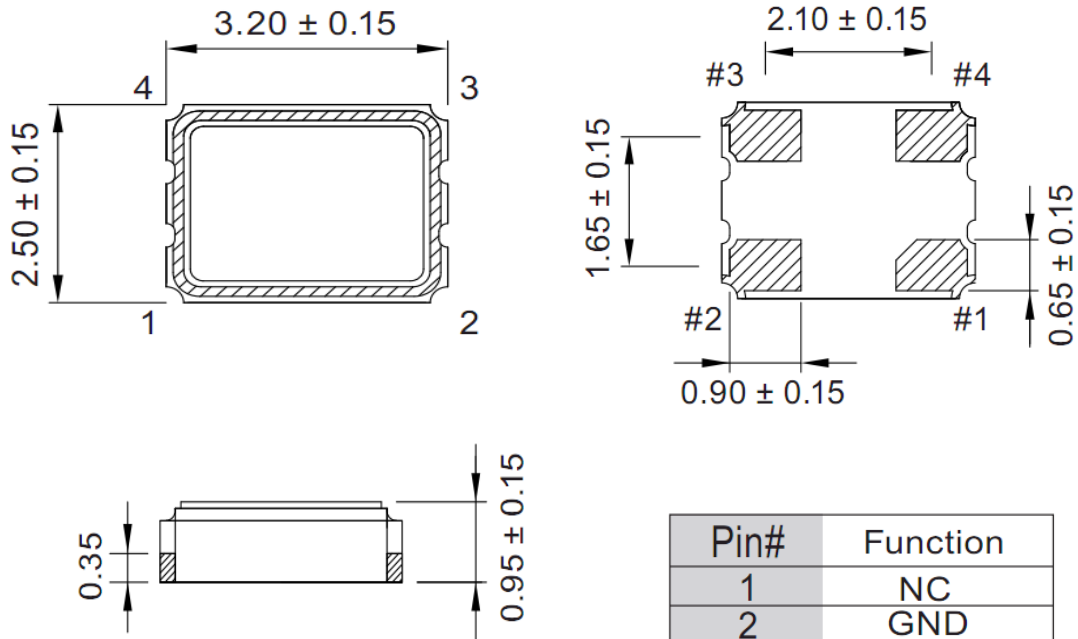
#### 3. Electrical Characteristics

- |      |   |   |
|------|---|---|
| 3.1  | Nominal Frequency:  | 13.560MHz                               |
| 3.2  | Frequency Stability:  | ±30ppm                                  |
|      | (incl. 25°C tolerance, tolerance over operating temperature range, input voltage change, load change, 1 year aging) |   |
| 3.3  | Aging:  | ±3ppm/year                              |
| 3.4  | Operating Temperature Range:  | -40 to + 85°C                           |
| 3.5  | Storage Temperature Range:  | -55 to + 125°C                          |
| 3.6  | Input Voltage ( $V_{DD}$ ):   | +3.3Vdc±10%                             |
| 3.7  | Input Current ( $I_{DD}$ ):   | 20mA max                                |
| 3.8  | Output Waveform:  | CMOS                                    |
| 3.9  | Output Symmetry:  | 50±10%                                  |
| 3.10 | Rise/Fall Time:   | 8ns max                                 |
| 3.11 | Output Voltage $V_{OL}$ :   | 10%VDD                                  |
|      | $V_{OH}$ :  | 90%VDD                                  |
| 3.12 | Output Load:  | 15pF                                    |
| 3.13 | Output State Control:   | Enable/disable                          |
| 3.14 | Start-up Time:  | 10ms max                                |
| 3.15 | Standby current:  | 10µA max                                |
| 3.16 | Phase Jitter (rms):   | 1ps rms max 12kHz to 20MHz max          |
| 3.17 | Oscillation mode:   | Fundamental                             |
| 3.18 | Others:   | Not recommended for safety applications |

# 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 style="text-align: center;">Temp. (<math>^\circ\text{C}</math>)</p> <p style="text-align: center;">Time (sec)</p> <p style="text-align: center;">1. Max 200 sec 2. Max 80 sec 3. Max 10 sec</p>	Frequency change: $\leq \pm 5\text{ppm}$ Rr as specification

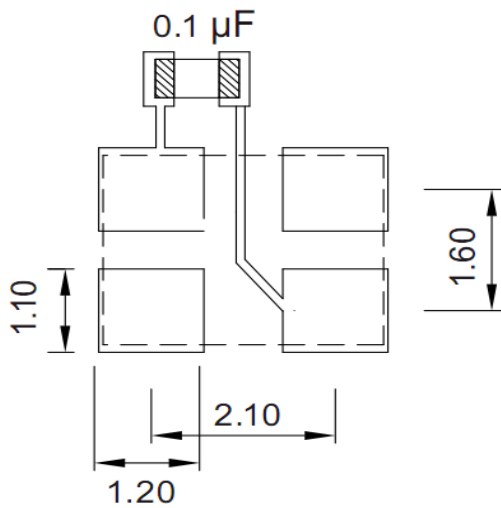
## Package Outline Dimensions



Pin#	Function
1	NC
2	GND
3	Output
4	VDD

Units:mm

## Suggested Pad Layout



To ensure optimal oscillator performance, place a by-pass capacitor of  $0.1\mu\text{F}$  as close to the part as possible between Vdd and GND pads.

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## Packing Specification

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