



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 : LVPECL/LVDS/HCSL
P/N : 8X Series
VER : A/0

| | | | |
|----------------------|-------|----------|---|
| R&D APPR. SIGNATURED | | | DEPT.  |
| ISSUE | CHECK | APPROVAL | |
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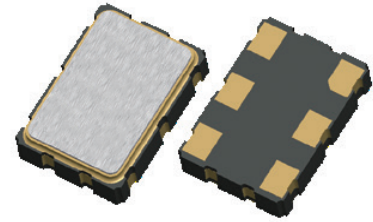
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Product Description

1. Scope:

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



2. Construction:

- 2.1 Oscillators series: LVPECL/LVDS/HCSL Crystal Oscillator
 2.2 Package: SMD3.2×2.5

3. Electrical Characteristics

| Parameter | LVPECL | | | | LVDS | | | | unit |
|--|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------|
| | 3.3V | | 2.5V | | 3.3V | | 2.5V | | |
| | Min | Max | Min | Max | Min | Max | Min | Max | |
| Supply Voltage Variation(V_{DD}) | $V_{DD}-5\%$ | $V_{DD}+5\%$ | $V_{DD}-5\%$ | $V_{DD}+5\%$ | $V_{DD}-5\%$ | $V_{DD}+5\%$ | $V_{DD}-5\%$ | $V_{DD}+5\%$ | V |
| Frequency Range | 10 | 250 | 10 | 250 | 10 | 250 | 10 | 250 | MHz |
| Supply Current | | | | | | | | | |
| $10\text{MHz} \leq F_o < 160\text{MHz}$ | - | 70 | - | 70 | - | 50 | - | 50 | mA |
| Output Level Output High | 2.275 | - | 1.475 | - | - | 1.6 | - | 1.6 | V |
| Output Low | - | 1.68 | - | 0.88 | 0.9 | - | 0.9 | - | |
| Transition Time: Rise/Fall Time ⁺ | - | 1.0 | - | 1.0 | - | 1.0 | - | 1.0 | nSec |
| Start Time | - | 10 | - | 10 | - | 10 | - | 10 | mSec |
| Tri-Start(Input to Pin 2 or Pin 1) | | | | | | | | | |
| Enable (High voltage or floating) | 2.31 | - | 1.75 | - | 2.31 | - | 1.75 | - | V |
| Disable (Low voltage or GND) | - | 0.99 | - | 0.75 | - | 0.99 | - | 0.75 | |
| RMS Phase Jitter | | | | | | | | | |
| (Integrated 12KHz-20MHz) | | | | | | | | | |
| $F_o < 80\text{MHz}$ | - | 1 | - | 1 | - | 1 | - | 1 | pSec |
| $80\text{MHz} \leq F_o < 125\text{MHz}$ | - | 0.5 | - | 0.5 | - | 0.5 | - | 0.5 | |
| $125\text{MHz} \leq F_o < 160\text{MHz}$ | - | 0.3 | - | 0.3 | - | 0.3 | - | 0.3 | |
| Phase Noise@ 156.25MHz | 100Hz | -95 | -90 | -90 | -90 | -90 | -90 | -90 | dBc/Hz |
| | 1KHz | -125 | -125 | -120 | -120 | -120 | -120 | -120 | |
| | 10KHz | -140 | -140 | -140 | -140 | -140 | -140 | -140 | |
| Aging(@25 °C 1 st year) | - | ±3 | - | ±3 | - | ±3 | - | ±3 | ppm |
| Storage Temp. Range | -55 | 125 | -55 | 125 | -55 | 125 | -55 | 125 | °C |

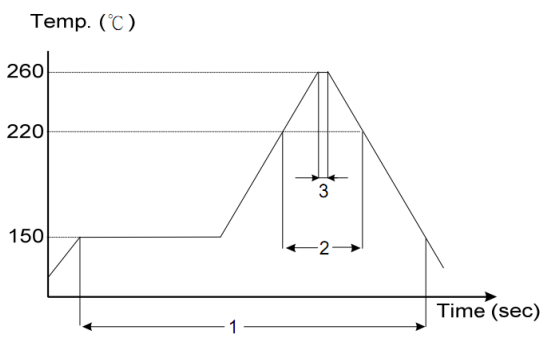
Product Description

| Parameter | HCSL | | | | unit |
|--|---------------------|---------------------|---------------------|---------------------|------|
| | 3.3V | | 2.5V | | |
| | Min | Max | Min | Max | |
| Supply Voltage Variation(V _{DD}) | V _{DD} -5% | V _{DD} +5% | V _{DD} -5% | V _{DD} +5% | V |
| Frequency Range | 25 | 175 | 25 | 175 | MHz |
| Supply Current 25MHz ≤ Fo < 160MHz | - | 50 | - | 50 | mA |
| Output Level Output High | 0.6 | - | 0.58 | - | V |
| Output Low | - | 0.15 | - | 0.15 | |
| Transition Time: Rise/Fall Time ⁺ | - | 0.5 | - | 0.5 | nSec |
| Start Time | - | 10 | - | 10 | mSec |
| Tri-Start(Input to Pin 2 or Pin 1) | | | | | V |
| Enable | 0.7V _{DD} | - | 0.7V _{DD} | - | |
| Disable | - | 0.3V _{DD} | - | 0.3V _{DD} | |
| RMS Phase Jitter (Integrated 12KHz-20MHz) 125MHz ≤ Fo < 160MHz | - | 0.5 | - | 0.5 | pSec |
| Aging(@25 °C 1 st year) | - | ±3 | - | ±3 | ppm |
| Storage Temp. Range | -55 | 125 | -55 | 125 | °C |

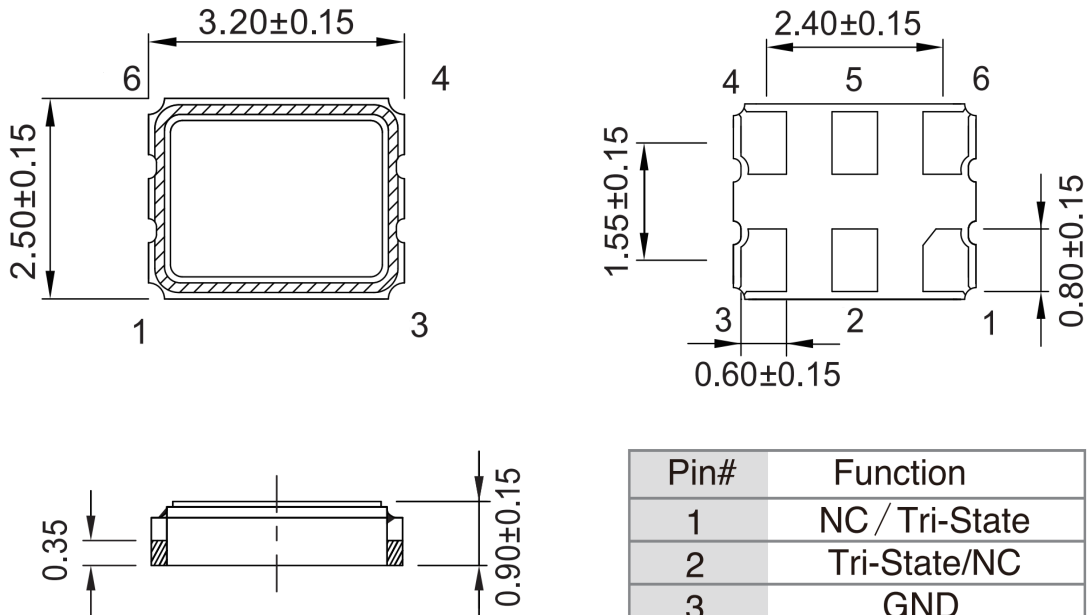
Standard frequencies are frequencies which the crystal has been designed and does not imply a stock position.

+ Transition times are measured between 20% and 80% of V_{DD}.

Reliability Specification

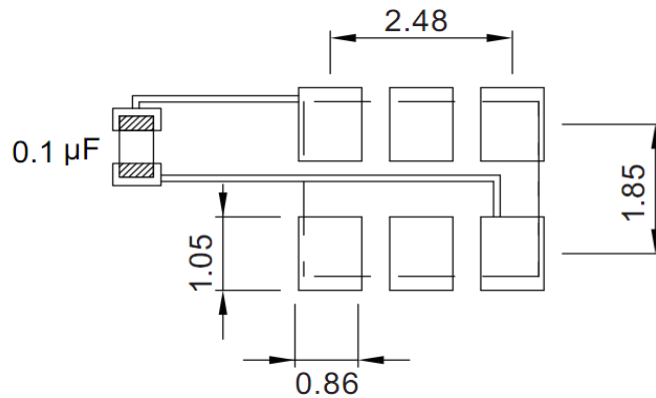
| | Item | Condition | Standard |
|----|----------------------------------|--|---|
| 1. | Drop characteristics | Free drop from 75cm height on a hard wooden board for 3 times. (Board is thickness more than 30 mm.) | Frequency change: $\leq \pm 5\text{ppm}$ Rr as specification |
| 2. | Mechanical shock | 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;">1. Max 200 sec 2. Max 80 sec 3. Max 10 sec</p> | Frequency change: $\leq \pm 5\text{ppm}$ Rr as specification |
| 9. | Others | | |

Package Outline Dimensions



Units:mm

Suggested Pad Layout



To ensure optimal oscillator performance, place a by-pass capacitor of 0.1µF as close to the part as possible between Vdd and GND pads.

Packing Specification

