

# PX Type

## 3.2 x 2.5 mm SMD Crystal Oscillator

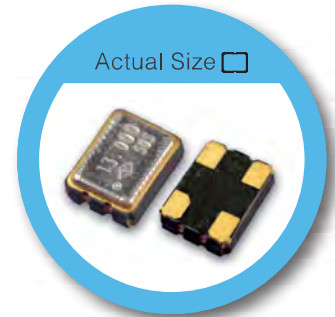
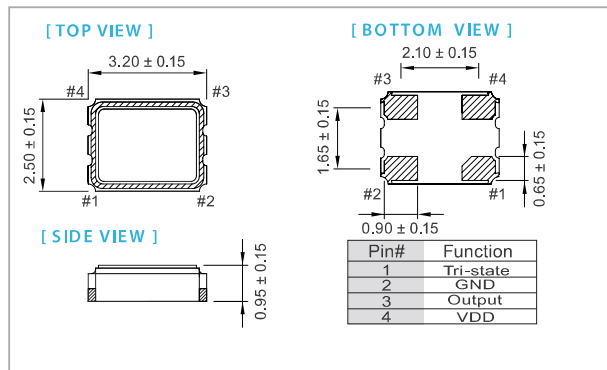
### FEATURE

- Typical 3.2 x 2.5 x 0.95mm ceramic SMD package.
- Tight symmetry (45 to 55%) available.
- Operation voltage: 1.8V, 2.5V, 3.3V
- Tri-state enable/disable

### TYPICAL APPLICATION

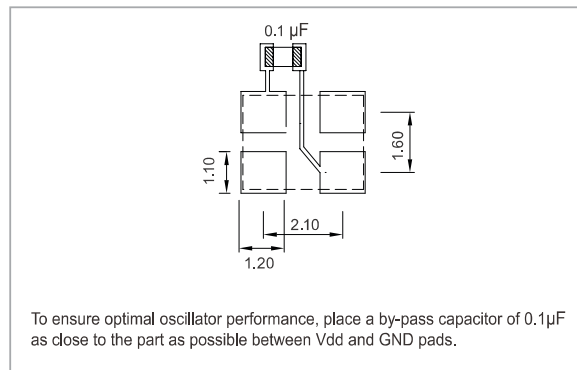
- Computer Peripherals
- Set-top Box , HDTV
- DSC, PDA

### DIMENSION (mm)



**RoHS Compliant**

### SOLDER PAD LAYOUT (mm)



### ELECTRICAL SPECIFICATION

| Parameter   | 3.3 V   |         | 2.5 V   |         | 1.8 V   |         | unit |
|---|---------|---------|---------|---------|---------|---------|------|
|   | Min.    | Max.    | Min.    | Max.    | Min.    | Max.    |      |
| <b>Supply Voltage Variation (VDD)</b>   | VDD-10% | VDD+10% | VDD-10% | VDD+10% | VDD-10% | VDD+10% | V    |
| <b>Frequency Range</b>  | 2.048   | 200     | 2.048   | 166     | 2.048   | 110     | MHz  |
| <b>VDD Sensitivity (±10%)</b>   | -2      | 2       | -2      | 2       | -2      | 2       | ppm  |
| <b>Supply Current</b><br>2.048 MHz ≤ Fo < 30 MHz<br>30 MHz ≤ Fo < 75 MHz<br>75 MHz ≤ Fo < 133 MHz<br>133 MHz ≤ Fo < 166 MHz<br>166 MHz ≤ Fo ≤ 200 MHz | -       | 10      | -       | 8       | -       | 6       | mA   |
|   | -       | 15      | -       | 10      | -       | 8       |      |
|   | -       | 20      | -       | 15      | -       | 12      |      |
|   | -       | 22      | -       | 15      | -       | -       |      |
|   | -       | 25      | -       | -       | -       | -       |      |
| <b>Duty Cycle</b>   | 45      | 55      | 45      | 55      | 45      | 55      | %    |
| <b>Output Level (CMOS)</b><br>Output High (Logic "1")<br>Output Low (Logic "0")   | 2.97    | -       | 2.25    | -       | 1.62    | -       | V    |
|   | -       | 0.33    | -       | 0.25    | -       | 0.18    |      |
| <b>Transition Time: Rise/Fall Time<sup>+</sup></b><br>2.048 MHz ≤ Fo < 10 MHz<br>10 MHz ≤ Fo  | -       | 3       | -       | 4       | -       | 5       | nSec |
|   | -       | 2       | -       | 3       | -       | 4       |      |
| <b>Start Time</b>   | -       | 2       | -       | 2       | -       | 2       | mSec |
| <b>Tri-State (Input to Pin 1)</b><br>Enable (High voltage or floating)<br>Disable (Low voltage or GND)  | 2.31    | -       | 1.75    | -       | 1.26    | -       | V    |
|   | -       | 0.99    | -       | 0.75    | -       | 0.54    |      |
| <b>Period Jitter (Pk-Pk)</b><br>Specific Frequency <sup>**</sup><br>Others  | -       | 40      | -       | 40      | -       | 40      | pSec |
|   | -       | 200     | -       | 200     | -       | 200     |      |
| <b>Standby Current</b>  | -       | 15      | -       | 15      | -       | 15      | µA   |
| <b>Aging (@ 25°C 1st year)</b>  | -       | ±3      | -       | ±3      | -       | ±3      | ppm  |
| <b>Storage Temp. Range</b>  | -55     | 125     | -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 10% and 90% of VDD, with an output load of 15pF.

\*\* Specific frequency including 4.0, 6.0, 8.0, 12.0, 13.0, 16.0, 19.2, 20.0, 24.0, 26.0, 32.0, 38.4 and 40.0MHz

### FREQ. STABILITY vs. TEMP. RANGE

| Temp. (°C) | ppm |     |     |
|------------|-----|-----|-----|
|            | ±20 | ±25 | ±50 |
| -10 ~ +60  | ○   | ○   | ○   |
| -20 ~ +70  | △   | ○   | ○   |
| -40 ~ +85  | ×   | ○   | ○   |

\* ○: Available △: Conditional X: Not available

\* Inclusive of calibration @ 25 °C, operating temperature range, input voltage variation, load variation, aging (1<sup>st</sup> year), shock, and vibration