# 2.5V LVDS Low Jitter XO

PX

7.0 x 5.0mm Ceramic SMD

## Product Features

- 38.88 to 162 MHz Frequency Range
- <1 ps RMS jitter with non-PLL design
- Designed for standard reflow & washing techniques
- IBIS models available
- Pb-free & RoHS/Green compliant

## Product Description

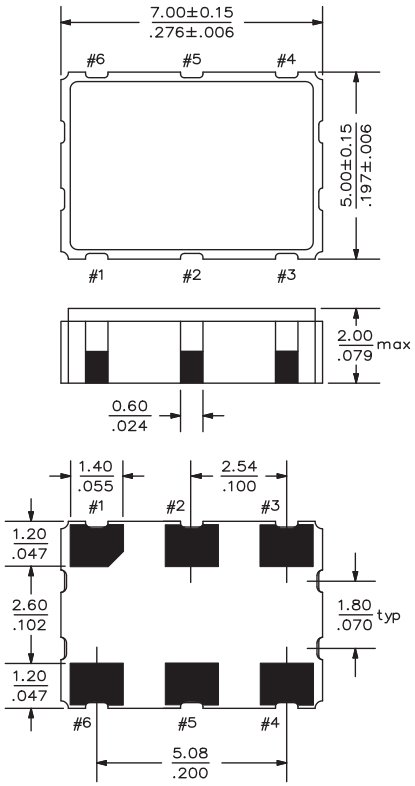
The PX Series 2.5V crystal clock oscillator achieves superb jitter and stability over a broad range of operating conditions and frequencies. The output clock signal, generated internally with a non-PLL oscillator design, is compatible with LVDS logic levels. The device, available on tape and reel, is contained in a 7.0 x 5.0mm surface-mount ceramic package.

## Applications

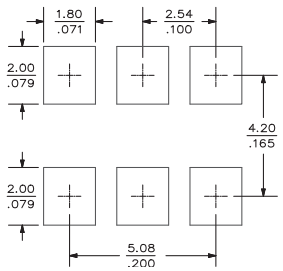
The PX Series is ideal for high-speed applications requiring low jitter, including:

- 1/10 Gigabit Ethernet
- 2/4/10G FibreChannel
- Serial Attached SCSI (SAS)
- Server & Storage platforms
- SONET/SDH linecards
- Passive Optical Network (PON) devices
- HD Video Systems

## Package:




Recommended Land Pattern:




## Pin Functions:

| Pin | Function |
|---|---|
| 1 | OE or NC |
| 2 | OE or NC |
| 3 | Ground |
| 4 | Q Output |
| 5 | $\overline{Q}$ Output |
| 6 | $V_{CC}$ |

## Part Ordering Information:

**PX XXX YYYY**

- A: Product Family
- B: XXX = Frequency Code
- C: YYYY = Specification Code

Following the above format, Saronix-eCera part numbers will be assigned upon confirmation of exact customer requirements.

## Legacy Ordering Information - For Reference Only:

**S DS382 3 B - 156.2500 (T)**

- **SaRonix**
- **Product Series**
- **Output Enable/Disable Function**
  - 0 = N/C pin 1, and pin 2
  - 3 = OE pin 1, N/C pin 2
  - 4 = N/C pin 1, OE pin 2
- **Frequency Stability**
  - A = ±25 ppm (0 to +70°C)
  - B = ±50 ppm (0 to +70°C)
  - E = ±50 ppm (-40 to +85°C)
- **Output Frequency** (MHz)
- **Packaging**
  - (T) = Tape & Reel full reel increments
  - Blank = Bulk packaged

## Electrical Performance

| Parameter | Min. | Typ. | Max. | Units | Notes |
|---|---|---|---|---|---|
| Output Frequency | 38.88 | | 162 | MHz | As specified |
| Supply Voltage | 2.25 | 2.50 | 2.75 | V | |
| Supply Current, Enabled | | 35 | 47 | mA | |
| Supply Current, Disabled | | | 0.03 | mA | |
| Frequency Stability | | | ±20 to ±50 | ppm | See Note 1 below |
| Operating Temperature Range | -20 | | +70 | °C | Commercial (standard) |
| | -40 | | +85 | | Industrial (standard) |
| Output Logic 0, $V_{OL}$ | 0.9 | 1.1 | | V | |
| Output Logic 1, $V_{OH}$ | | 1.43 | 1.6 | V | |
| Output Load | 100Ω connected between both outputs | | | | output requires termination |
| Duty Cycle | 45 | | 55 | % | measured 50% of waveform |
| Rise and Fall Time | | 500 | 850 | ps | measured 20/80% of waveform |
| Jitter, Phase | | 0.5 | 1 | ps RMS (1-σ) | 12kHz to 20MHz frequency band |
| Jitter, Total | | | 25 | ps pk–pk | 100,000 random periods |

**Notes:**
1. Stability includes all combinations of operating temperature, load changes, rated input (supply) voltage changes, initial calibration tolerance (25°C), aging (5 year at 40°C average effective ambient temperature), shock and vibration.
2. For specifications othere than those listed, please contact sales.

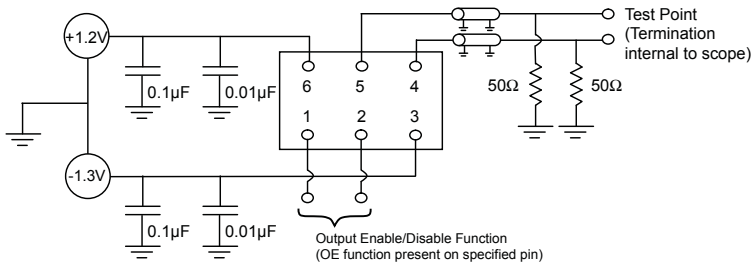
## Output Enable / Disable Function

| Parameter | Min. | Typ. | Max. | Units | Notes |
|---|---|---|---|---|---|
| Input Voltage (pin OE), Output Enable | 0.7 | | | V | or open |
| Input Voltage (pin OE), Output Disable (low power standby) | | | 0.3 | V | Outpus disabled to Hi-Z |
| Internal Pullup Resistance | 50 | | | kΩ | |
| Output Disable Delay | | | 200 | ns | |
| Output Enable Delay | | | 10 | ms | |

## Absolute Maximum Ratings

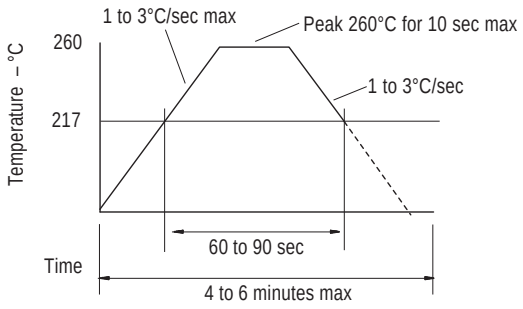
| Parameter | Min. | Typ. | Max. | Units | Notes |
|---|---|---|---|---|---|
| Storage Temperature | -55 | | +125 | °C | |

## Test Circuit




## Reflow Soldering Profile

As per IPC/JEDEC J-STD-020C




## Reliability Test Ratings

This product is rated to meet the following test conditions:

| Type | Parameter | Test Condition |
|---|---|---|
| Mechanical | Shock | MIL-STD-883, Method 2002, Condition B |
| Mechanical | Solderability | JESD22-B102-D Method 2 (Preconditioning E) |
| Mechanical | Terminal strength | MIL-STD-883, Method 2004, Condition D |
| Mechanical | Gross leak | MIL-STD-883, Method 1014, Condition C |
| Mechanical | Fine leak | MIL-STD-883, Method 1014, Condition A2 ($R_1 = 2x10^{-8}$ atm cc/s) |
| Mechanical | Solvent resistance | MIL-STD-202, Method 215 |
| Environmental | Thermal shock | MIL-STD-883, Method 1011, Condition A |
| Environmental | Moisture resistance | MIL-STD-883, Method 1004 |
| Environmental | Vibration | MIL-STD-883, Method 2007, Condition A |
| Environmental | Resistance to soldering heat | J-STD-020C Table 5-2 Pb-free devices (2 cycles max) |