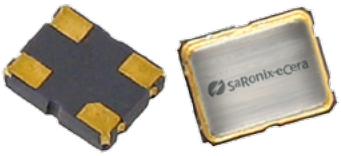
# Ultra Low Jitter PLL Crystal Oscillator 3.2 x 2.5mm

## 2.5V/3.3V CMOS XO

# NX321



3.2 x 2.5mm Ceramic SMD

## Product Features

- Very low phase jitter - < 1ps RMS max.
- Wide frequency range - 5 ~ 250MHz
- Thicker crystal for improved reliability
- Low supply current - 60mA max.
- Industrial Temperature Range
- Pb-free & RoHS compliant
- Fast lead time

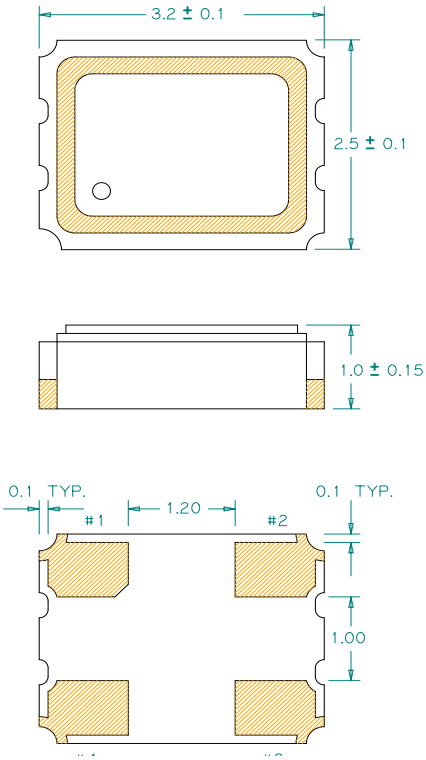
## Product Description

The NX321 XO series is a high performance CMOS crystal oscillator family with very low jitter performance. It supports various options including wider frequency range, 2.5V/3.3V voltage, and various stabilities. It is designed to meet the clock source specifications for communication systems, and other high performance equipment.

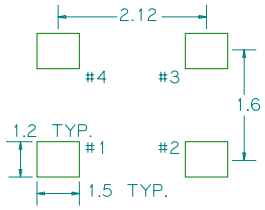
## Applications

- Networking systems
- Servers and storage systems
- Profession video equipments
- Test and measurement
- FPGA/ASIC clock generation

## Package: (Scale: none; dimensions are in mm)




Recommended Land Pattern:




## Pin Functions:

| Pin | Function |
|---|---|
| 1 | OE |
| 2 | Ground |
| 3 | Output |
| 4 | $V_{DD}$ |

*Extended high frequency power decoupling is recommended (see test circuit for minimum recommendation). To ensure optimal performance, do not route RF traces beneath the package.

## Part Ordering Information:

**NX 321 V 1 FFFF.FFFFFF**

(A) Voltage:
1=+3.3V
2=+2.5V

(B) Stability and Temp Range:

| Stability | Temp Range |
|---|---|
| A = +/-20 ppm | -20/+70°C |
| B = +/-25 ppm | -20/+70°C |
| C = +/-50 ppm | -20/+70°C |
| D = +/-25 ppm | -40/+85°C |
| E = +/-50 ppm | -40/+85°C |

(C) Frequency:
FFFF.FFFFFF
MHz, "4 digits/decimal/6 digits" format

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## Electrical Performance

| Parameter | | Min. | Typ. | Max. | Units | Notes |
|---|---|---|---|---|---|---|
| Output Frequency | | 5 | | 250 | MHz | |
| Supply Voltage | | 3.135 | 3.3 | 3.465 | V | See ordering options |
| | | 2.375 | 2.5 | 2.625 | | |
| Supply Current, Output Enabled | | | | 60 | mA | |
| Supply Current, Output Disabled only | | | | 40 | mA | |
| Frequency Stability | | | | ±50 | ppm | See ordering options |
| Operating Temperature Range | | -40 | | +85 | °C | See ordering options |
| Output Logic 0, $V_{OL}$ | | | | 0.4 | V | |
| Output Logic 1, $V_{OH}$ | | $V_{DD}$-0.4 | | | V | |
| Output Load | | | | 15 | pF | |
| Duty Cycle | | 45 | | 55 | % | Measured 50% $V_{DD}$ |
| Rise and Fall Time | | | | 3 | ns | Measured 20/80% of waveform |
| Jitter, Accumulated, RMS (1-σ) | | | | 6 | ps | 20.000 adjacent periods |
| Jitter, Phase, RMS | < 40MHz | | 0.4 | 1 | ps | 12kHz to 5 MHz frequency band |
| | 40 to 250MHz | | 0.4 | 1 | ps | 12kHz to 20 MHz frequency band |
| | 125MHz, 156.25MHz | | 0.4 | 0.6 | ps | 12kHz to 20 MHz frequency band |
| Jitter, pk-pk | | | | 40 | ps | 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 (1 year at 25°C average effective ambient temperature), shock and vibration.
2. Phase jitter typical value is depending on output frequencies.
3. For specifications other than those listed, please contact sales.

## Output Enable / Disable Function

| Parameter | Min. | Typ. | Max. | Units | Notes |
|---|---|---|---|---|---|
| Input Voltage (pin 1), Output Enable | 0.7 $V_{DD}$ | | | V | or open |
| Input Voltage (pin 1), Output Disable (low power standby) | | | 0.3 $V_{DD}$ | V | Output is Hi-Z |
| Output Disable Delay | | | 100 | ns | |
| Output Enable Delay | | | 100 | ns | |
| Start up Time | | | 10 | ms | |

## Absolute Maximum Ratings

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

**For the latest product information visit:** http://www.pericom.com/products/crystals-and-crystal-oscillators/hiflex-xo/?part=NX321

**For test circuit go to**: http://www.pericom.com/pdf/sre/tc_cmos2.pdf

**For soldering reflow profile and reliability test ratings go to:** http://www.pericom.com/pdf/sre/reflow.pdf

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