

2.5/3.3V LVDS XO

**NX503**



5.0 x 3.2mm Ceramic SMD

**Product Features**

- Very low phase jitter - < 1.0ps RMS max.
- Wide frequency range - 5 ~ 1000MHz
- Thicker crystal for improved reliability
- Low supply current - 70mA max.
- Industrial Temperature Range
- Pb-free & RoHS compliant

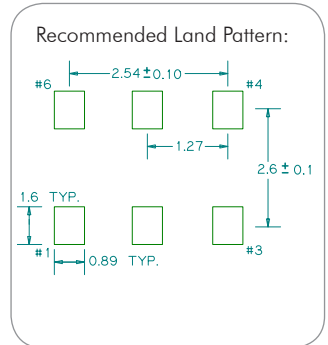
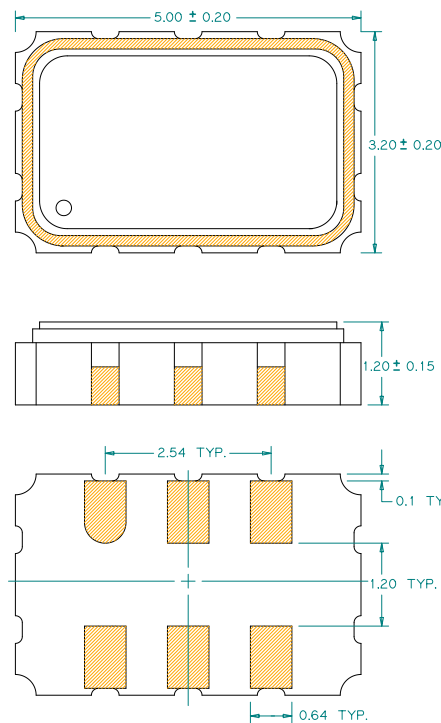
**Product Description**

The NX503 XO series is a high performance LVDS crystal oscillator family with very low jitter performance. It supports various options including wider frequency range, 2.5/3.3 voltage, various stabilities, and different package sizes. 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)



**Pin Functions:**

| Pin | Function        |
|-----|-----------------|
| 1   | OE Function     |
| 2   | N/C             |
| 3   | Ground          |
| 4   | Q               |
| 5   | $\bar{Q}$       |
| 6   | V <sub>CC</sub> |

\*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 503 V I FFFF.FFFFFFF**

| <p><b>Voltage:</b></p> <p>1 = +3.3V</p> <p>2 = +2.5V</p> | <p><b>Stability and Temp Range:</b></p> <table border="1"> <thead> <tr> <th>Stability</th> <th>Temp Range</th> </tr> </thead> <tbody> <tr> <td>A = +/-20 ppm</td> <td>-20/+70°C</td> </tr> <tr> <td>B = +/-25 ppm</td> <td>-20/+70°C</td> </tr> <tr> <td>C = +/-50 ppm</td> <td>-20/+70°C</td> </tr> <tr> <td>D = +/-25 ppm</td> <td>-40/+85°C</td> </tr> <tr> <td>E = +/-50 ppm</td> <td>-40/+85°C</td> </tr> </tbody> </table> | 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 | <p><b>Frequency:</b></p> <p>FFFF.FFFFFFF</p> <p>MHz, "4 digits/decimal/6 digits" format</p> |
|--|--|-----------|------------|---------------|-----------|---------------|-----------|---------------|-----------|---------------|-----------|---------------|-----------|---|
| 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  |           |            |               |           |               |           |               |           |               |           |               |           |   |

### Electrical Performance

| Parameter                                    | Min.                           | Typ. | Max.  | Units | Notes                          |
|--|--------------------------------|------|-------|-------|--------------------------------|
| Output Frequency                             | 5                              |      | 1000  | MHz   |                                |
| Supply Voltage                               | 3.135                          | 3.3  | 3.465 | V     | See ordering options           |
|  | 2.375                          | 2.5  | 2.625 |       |                                |
| Supply Current, Output Enabled               |                                |      | 70    | 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 <sub>OL</sub>              | 0.9                            | 1.1  |       | V     |                                |
| Output Logic 1, V <sub>OH</sub>              |                                | 1.43 | 1.6   | V     |                                |
| Output Load                                  | 100Ω connected between outputs |      |       |       | Output requires termination    |
| Differential Output Voltage, V <sub>OD</sub> | 0.247                          |      | 0.454 | V     |                                |
| Duty Cycle                                   | 45                             |      | 55    | %     | Measured 50% V <sub>CC</sub>   |
| Rise and Fall Time                           |                                |      | 400   | ps    | 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 1000MHz                  | 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:

- 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.
- Phase jitter typical value is depending on output frequencies.
- 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 <sub>CC</sub> |      |                     | V     | or open        |
| Input Voltage (pin 1), Output Disable (low power standby) |                     |      | 0.3 V <sub>CC</sub> | 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=NX503>

For test circuit go to: [http://www.pericom.com/pdf/sre/tc\\_lvds.pdf](http://www.pericom.com/pdf/sre/tc_lvds.pdf)

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

For tape and reel information go to: [http://www.pericom.com/pdf/sre/tr\\_5032\\_xo.pdf](http://www.pericom.com/pdf/sre/tr_5032_xo.pdf)