

## LVDS SD-X2D00 Series

### Description

The **SD-X2D00 Series** of quartz crystal oscillators provide LVDS compatible signals in a ceramic SMD package. Systems designers may now specify space-saving, cost-effective packaged LVDS oscillators to meet their timing requirements.

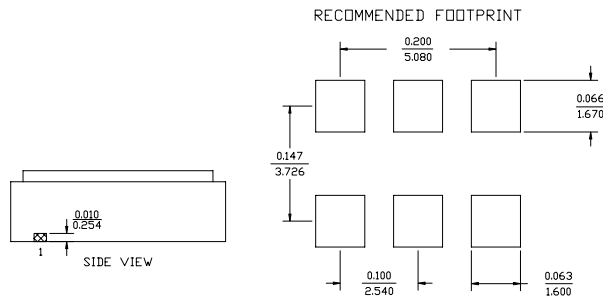
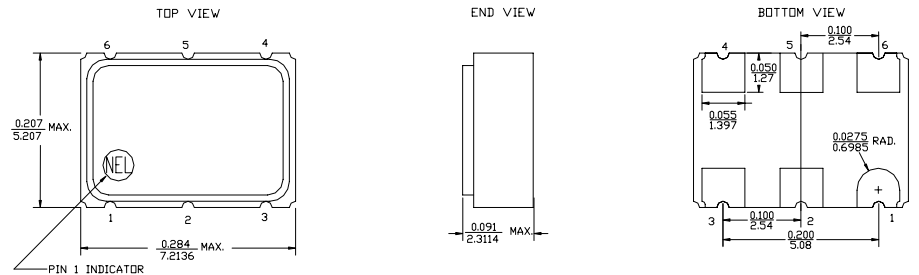
### Features

- Wide frequency range—80.0MHz to 312.5MHz
- User specified tolerance available
- Space-saving alternative to discrete component oscillators
- High shock resistance, to 1000g
- Metal lid electrically connected to ground to reduce EMI
- Enable/Disable
- LVDS output on pin 4, complement on Pin 5
- COTS/Dual use
- Low Jitter - Wavecrest jitter characterization available
- High Reliability - NEL HALT/HASS qualified for crystal oscillator start-up conditions
- Overtone technology
- High Q Crystal actively tuned oscillator circuit
- Power supply decoupling internal
- No internal PLL avoids cascading PLL problems
- High frequencies due to proprietary design
- Gold plated pads
- RoHS Compliant, Lead Free Construction

### Electrical Connection

NPin Connection

- |   |                   |
|---|-------------------|
| 1 | Enable/Disable.   |
| 2 | N.C               |
| 3 | Ground            |
| 4 | Output            |
| 5 | Output Complement |
| 6 | V <sub>CC</sub>   |



ALL DIMENSIONS:  $\frac{IN}{mm}$   
All tolerances are  $\pm 0.0005$  inches ( $\pm 0.127$  mm) unless otherwise specified.

## SD-X2D00 Series Continued LVDS

Rev. W

### Operating Conditions and Output Characteristics

#### Electrical Characteristics

Parameter <sup>(7)</sup>	Symbol	Conditions	Min	Typical	Max
Frequency	----	----	80.0MHz	----	312.5MHz
Duty Cycle <sup>(2)</sup>	----	@ V <sub>O</sub> /2	45/55%	----	55/45%
Differential Output Voltage <sup>(2)</sup>	V <sub>OD</sub>	----	247mV	330mV	454mV
Differential Output Error <sup>(2)</sup>	ΔV <sub>OD</sub>	----	----	----	50mV
Offset Voltage <sup>(2)</sup>	V <sub>OS</sub>	----	1.125V	1.25V	1.375V
Offset Error <sup>(2)</sup>	ΔV <sub>OS</sub>	----	----	----	50mV
Disable Voltage	----	V <sub>EE</sub> =0V	----	----	0.3V <sub>CC</sub>
Enable Voltage <sup>(5)</sup>	----	V <sub>EE</sub> =0V	0.7V <sub>CC</sub>	----	----
Rise & Fall Time <sup>(2)</sup>	tr,tf	20-80%V <sub>O</sub>	----	0.8 ns	1.0 ns
Tpd <sup>(4)</sup>	----	----	-0.5 ns	----	+0.5 ns
Jitter, Integrated	J	Integrated from phase noise, 12kHz to 20MHz, RMS	----	0.1 ps	----
Jitter, Wavecrest Characterized <sup>(3)</sup>	----	Random Period Accum, pk-to-pk 200MHz	----	2.3ps 28ps	----
Phase Noise <sup>(6)</sup>	f(Δf)	@ 10Hz @ 100Hz @ 1kHz @ 10kHz @ 100kHz @ >1Mhz	----	-65 dBc/Hz -100 dBc/Hz -130 dBc/Hz -143 dBc/Hz -143 dBc/Hz -145 dBc/Hz	----
Frequency Stability <sup>(1)</sup>	dF/F	Overall conditions including: voltage, calibration, temp., 10 yr aging, shock, vibration	-100ppm	----	+100ppm

#### General Characteristics

Parameter	Symbol	Conditions	Min	Typical	Max
Supply Voltage	V <sub>CC</sub>	Code A:3.3V±5% Code B:2.5V±5%	3.135V 2.375V	3.3V 2.5V	3.465V 2.625V
Supply Current	I <sub>CC</sub>	----	0.0 mA	----	80 mA
Output current	I <sub>O</sub>	Continuous Output Current	0.0 mA	----	±50.0 mA
Operating temperature	T <sub>A</sub>	----	0°C	----	70°C
Storage temperature	T <sub>S</sub>	----	-55°C	----	125°C
Power Dissipation	P <sub>D</sub>	3.3V 2.5V	----	----	277 mW 210 mW
Load	100 ohms across differential outputs		----	----	----
Start-up time	t <sub>s</sub>	----	----	2 ms	10 ms

#### Environmental and Mechanical Characteristics

Mechanical Shock	Per MIL-STD-202, Method 213, Condition E
Thermal Shock	Per MIL-STD-883, Method 1011, Condition A
Vibration	0.060" double amplitude 10 Hz to 55 Hz, 35g's 55Hz to 2000 Hz
Hermetic Seal	Leak rate less than 1 x 10 <sup>-8</sup> atm.cc/sec of helium

#### Footnotes:

- Standard frequency stability (±20,±25,±50ppm & others available)
- With Load of 100 ohms across differential outputs.
- Jitter performance is frequency dependent. Please contact factory for full Wavecrest characterization.
- Tpd is phase shift between the falling edge of pin 4 and the rising edge of pin 5.
- Open to enable pin also enables the output.
- If phase noise data at a particular frequency is needed, contact factory.
- All parameters are specified for normal conditions (25°C, Vcc, Load, etc.), unless specified otherwise.

Creating a Part Number	
<b>SD - X2D0X - FREQ</b>	
<b>Package Code</b>	<b>Tolerance/Performance</b>
SD 6 Pad 5x7 SMD	0 ±100ppm 0-70°C
	1 ±50ppm 0-70°C
	7 ±25ppm 0-70°C
	9 Customer Specific
<b>Input Voltage</b>	A ±20ppm 0-70°C
Code Specification	B ±50ppm -40 to +85°C
A 3.3V	C ±100ppm -40 to +85°C
B 2.5V	

SD-X2D00 Series Continued

Max Reflow Profile

