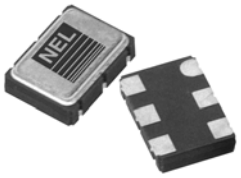
CRYSTAL CLOCK OSCILLATORS

Data Sheet 0208F

Rev. W



LVDS
SD-X2D00 Series

Description

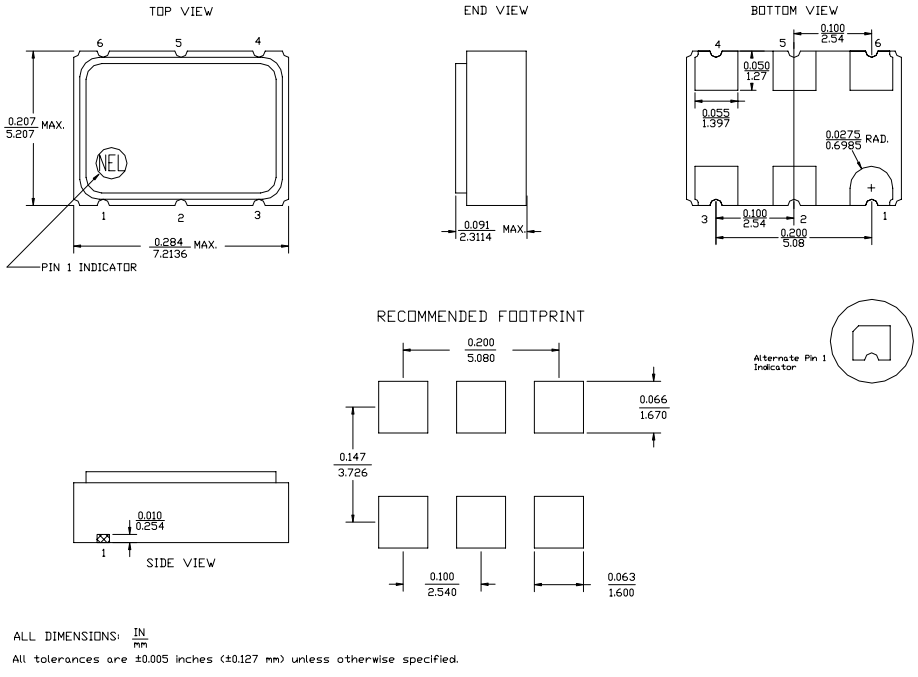
The **SD-X2D00 Series** of quartz crystal oscillators provide LVDS compatible signals in a ceramic SMD package. Systems designers may now specify space-saving, cost-effective packaged LVDS oscillators to meet their timing requirements.

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_{CC}



NEL FREQUENCY CONTROLS, INC.

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SD-X2D00 Series Continued
LVDS

Rev. W

Operating Conditions and Output Characteristics

Electrical Characteristics

Parameter [7]	Symbol	Conditions	Min	Typical	Max
Frequency	-----	-----	80.0MHz	-----	312.5MHz
Duty Cycle[2]	-----	@ V_O /2	45/55%	-----	55/45%
Differential Output Voltage[2]	V_{OD}	-----	247mV	330mV	454mV
Differential Output Error[2]	ΔV_{OD}	-----	-----	-----	50mV
Offset Voltage[2]	V_{OS}	-----	1.125V	1.25V	1.375V
Offset Error[2]	ΔV_{OS}	-----	-----	-----	50mV
Disable Voltage	-----	V_{EE}=0V	-----	-----	0.3V_{CC}
Enable Voltage[5]	-----	V_{EE}=0V	0.7V_{CC}	-----	-----
Rise & Fall Time [2]	tr,tf	20-80%V_O	-----	0.8 ns	1.0 ns
Tpd [4]	-----	-----	-0.5 ns	-----	+0.5 ns
Jitter, Integrated	J	Integrated from phase noise, 12kHz to 20MHz, RMS	-----	0.1 ps	-----
Jitter, Wavecrest Characterized [3]	-----	Random Period	-----	2.3ps	-----
		Accum, pk-to-pk	-----	28ps	-----
Phase Noise [6]	£(Δf)	200MHz			
		@ 10Hz	-----	-65 dBc/Hz	-----
		@100Hz	-----	-100 dBc/Hz	-----
		@1kHz	-----	-130 dBc/Hz	-----
		@10kHz	-----	-143 dBc/Hz	-----
		@100kHz	-----	-143 dBc/Hz	-----
		@ >1Mhz	-----	-145 dBc/Hz	-----
Frequency Stability [1]	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_{CC}	Code A:3.3V±5%	3.135V	3.3V	3.465V
		Code B:2.5V±5%	2.375V	2.5V	2.625V
Supply Current	I_{CC}	-----	0.0 mA	-----	80 mA
Output current	I_O	Continuous Output Current	0.0 mA	-----	±50.0 mA
Operating temperature	T_A	------	0°C	-----	70°C
Storage temperature	T_S	-----	-55°C	-----	125°C
Power Dissipation	P_D	3.3V	-----	-----	277 mW
		2.5V	-----	-----	210 mW
Load	100 ohms across differential outputs				
Start-up time	t_S	-----	-----	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^{-8} atm.cc/sec of helium

Footnotes:

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

Creating a Part Number

SD - X2D0X - FREQ

Package Code
SD 6 Pad 5x7 SMD

Input Voltage

Code	Specification
A	3.3V
B	2.5V

Tolerance/Performance

0	±100ppm 0-70°C
1	±50ppm 0-70°C
7	±25ppm 0-70°C
9	Customer Specific
A	±20ppm 0-70°C
B	±50ppm -40 to +85°C
C	±100ppm -40 to +85°C

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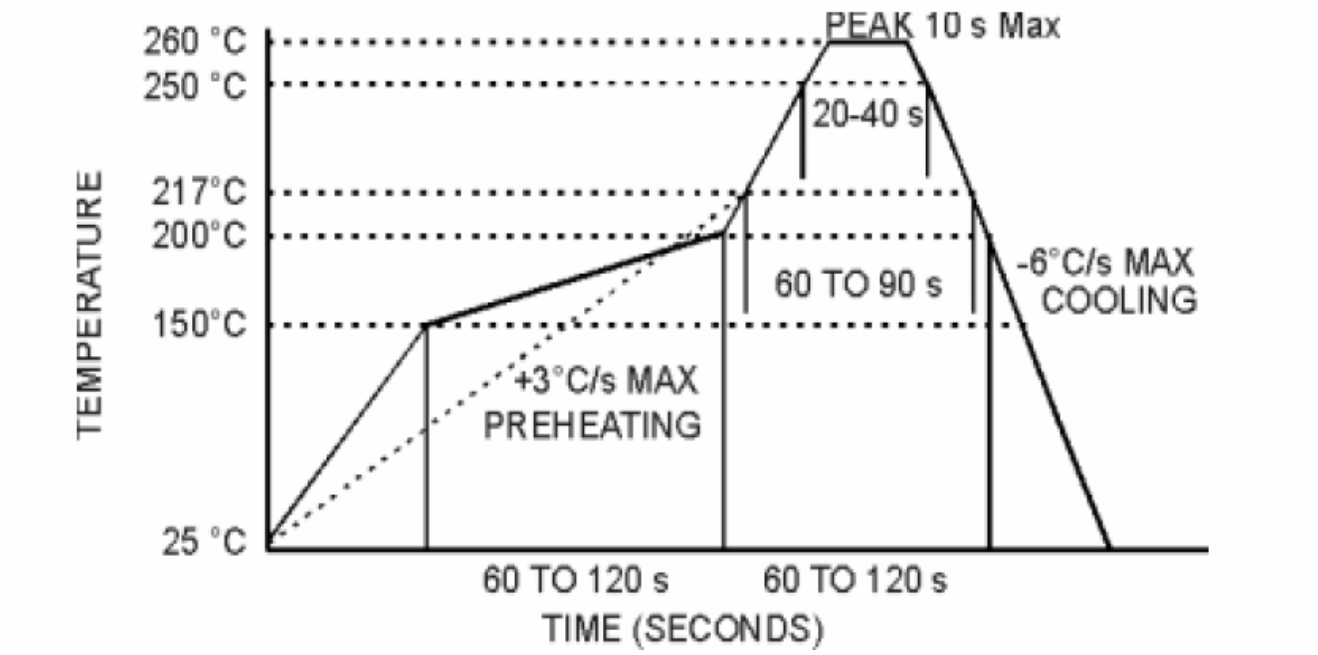
SD-X2D00 Series Continued

Max Reflow Profile



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