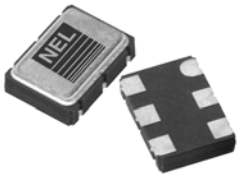
Rev. K



LVDS UHF CLOCK (XO)
SD-X2D5XXX-X Series

Description

The **SD-X2D5XXX Series** of quartz crystal oscillators provides ultra high frequency with LVDS complementary outputs. The outputs can be Tri-stated for test automation or combining multiple clocks. The device is based on low noise analog harmonic multiplication for higher frequencies (typically used over 60MHz), and packaged in a miniature, low profile leadless ceramic SMD package with 6 gold plated pads.

Applications and Features

- Wide frequency range – 150.0MHz to 320.000MHz
- Fiber Channel; 10 GbE; Infiniband; Network Processors; SOHO Routing
- High Reliability - NEL HALT/HASS qualified for crystal oscillator start-up conditions
- Low Phase Noise, Low Jitter
- High shock resistance, to 1000g
- Ultra High Frequency
- Tight frequency stability - ±20 ppm overall available
- Grounded lid and internal by-pass capacitor reduce EMI
- COTS/Dual use

Creating a Part Number

SD - X 2D5 X X X - X - FREQ

Package Code
SD 6 pad 5x7mm SMD

Input Voltage
A 3.3V±5%
B 2.5V±5%

Environmental
L Contains a level of lead that is in excess of RoHS directive and is not designed for reflow
R RoHS compliant

Enable Option
H Enable High, Pin 1
L Enable Low, Pin 1
N No Enable/Disable
A Enable High, Pin 2
B Enable Low, Pin 2

Temperature Range, °C
A 0 to 50
B 0 to 70
C -20 to 70
D -40 to 85
9 Customer specific

Overall Frequency Stability, ppm
E ±20
F ±25
G ±50
H ±100
9 Customer specific

NEL FREQUENCY CONTROLS, INC.
357 Beloit Street, P.O. Box 457, Burlington, WI 53105-0457 U.S.A. Phone 262/763-3591 FAX 262/763-2881
Email: nelsales@nelfc.com www.nelfc.com

SD-X2D5XXX-X Series Continued
LVDS UHF CLOCK (XO)

Rev. K

Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Operating Temperature Range	To	-40 to +85	ºC
Storage Temperature Range	Tst	-50 to +90	ºC
Supply Voltage	Vcc	-0.5 to 4.5	V
Enable/Disable Voltage	Ven/dis	0 to Vcc	V

Electrical Parameters (2)

Parameter		Symb	Conditions, Note		MIN	TYP	MAX	Unit
Nominal Frequency		Fo			150		320	MHz
Supply Voltage		Vcc	Code A Code B		3.135 2.375	3.3 2.5	3.465 2.625	V
Supply current		Icc				55	90	mA
Output Logic Type						LVDS		
Load			At receiving end between the outputs		90	100	110	Ohm
Output Levels		Vod	Differential amplitude		247	330	454	mV
			Amplitude error				50	mV
		Vof	Offset Voltage		1.125	1.25	1.375	V
			Offset Voltage error				50	mV
Duty Cycle (Symmetry)			At outputs crossing, room temperature		45/55	50/50	55/45	%
Rise/Fall Time		Tr/Tf	20 to 80, 80 to 20 %			0.5	0.7	ns
Jitter	Integrated	J	Integrated from Phase Noise, 12KHz to 20MHz , RMS			0.3		ps
	Wavecrest characterized		Random period,			2.5		ps
			Accumul., pk-to-pk			30		ps
			Deterministic			4		ps
Subharmonics						-65		dBc
Phase Noise (1)		£(Δf)	212.5 MHz	@ 10 Hz @100 Hz @1 KHz @10KHz @100KHz @>1MHz		-65 -95 -125 -140 -145 -148		dBc/Hz
Frequency Stability		ΔF/F	Overall, including initial calibration, temperature, aging 10 years, shock and vibration		See "Creating a Part Number" Not all combinations available, consult factory			ppm
Enable High Option Enabled Disabled			CMOS logic 1 or N/C CMOS logic 0		0.7 Vcc 0		Vcc 0.3 Vcc	V
Enable Low Option Disabled Enabled			CMOS logic 1 or N/C CMOS logic 0		0.7 Vcc 0		Vcc 0.3 Vcc	V

Footnotes: 1) If phase noise data at a particular frequency is needed, contact factory.
2) All parameters, unless otherwise specified, are at nominal conditions, ie: T=25°C, Nominal Vcc & Nominal Load.

NEL FREQUENCY CONTROLS, INC.
357 Beloit Street, P.O. Box 457, Burlington, WI 53105-0457 U.S.A. Phone 262/763-3591 FAX 262/763-2881
Email: nelsales@nelfc.com www.nelfc.com

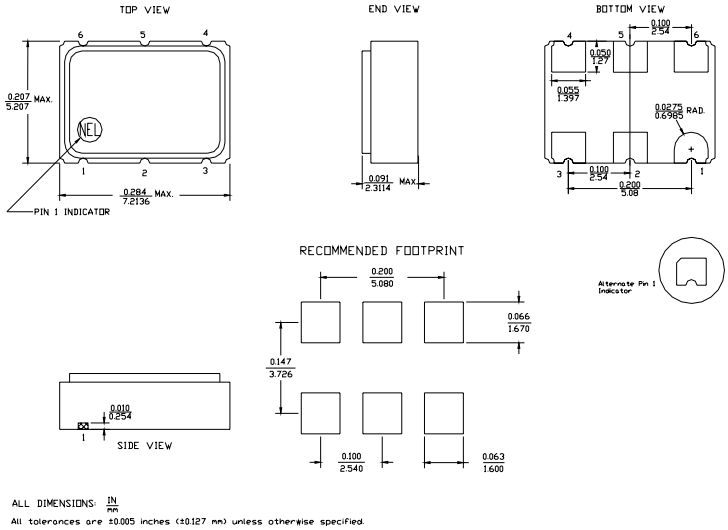
SD-X2D5XXX-X Series Continued
LVDS UHF CLOCK (XO)

Electrical Connection

Pin Connection

1*	Enable/Disable
2*	N.C.
3	V_{EE} /Ground
4	Output
5	/Output
6	V_{CC}

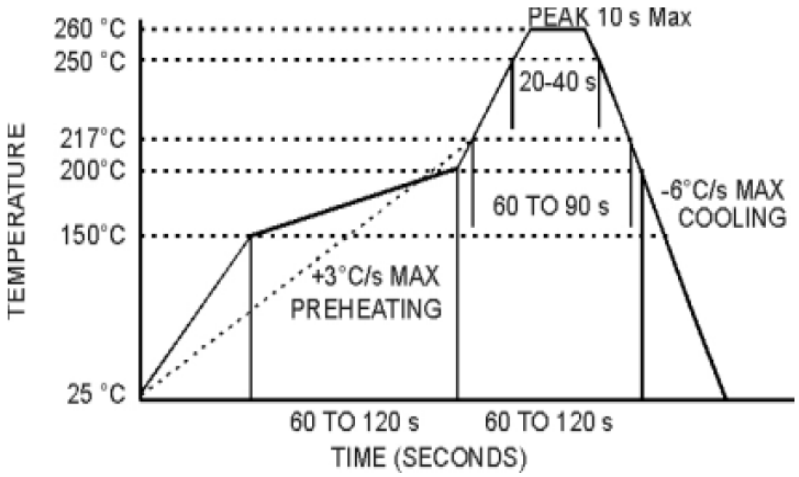
* Note: Consult factory for alternate enable pin connection



Environmental andMechanical Characteristics

Operating temp. range	see part # table
Mechanical Shock	Per MIL-STD-202, Method 213, Cond. E
Thermal Shock	Per MIL-STD-883, Method 1011, Cond. A
Vibration	Per MIL-STD-883, Method 2007, Cond. A
Hermetic Seal	Leak rate less than $1x10^{-8}$ atm.cc/s of helium
Soldering conditions	See MAX reflow profile below

Maximum Reflow Profile



NEL FREQUENCY CONTROLS, INC.
357 Beloit Street, P.O. Box 457, Burlington, WI 53105-0457 U.S.A. Phone 262/763-3591 FAX 262/763-2881
Email: nelsales@nelfc.com www.nelfc.com