

**LVDS UHF CLOCK (XO)  
SD-A2D5XXX Series**

**Description**

The **SD-A2D5XXX 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, and packaged in a miniature, low profile leadless ceramic SMD package with 6 gold plated pads.

**Applications and Features**

- Wide frequency range – 38.0MHz to 800.000MHz
- 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 -  $\pm 20$  ppm overall available
- Grounded lid and internal by-pass capacitor reduce EMI
- RoHS Compliant, Lead Free Construction

Creating a Part Number	
<b>SD - A 2D5 X X X - FREQ</b>	
<p><u>Package Code</u> _____</p> <p>SD 6 pad 5x7mm SMD</p>	<p><u>Overall Frequency Stability, ppm</u></p> <p>E <math>\pm 20</math></p> <p>F <math>\pm 25</math></p> <p>G <math>\pm 50</math></p> <p>H <math>\pm 100</math></p> <p>9 Customer specific</p>
<p><u>Input Voltage</u> _____</p> <p>A 3.3V<math>\pm 5\%</math></p>	
<p><u>Enable Option</u> _____</p> <p>H Enable High</p> <p>L Enable Low</p>	<p><u>Temperature Range, °C</u></p> <p>A 0 to 50</p> <p>B 0 to 70</p> <p>C -20 to 70</p> <p>D -40 to 85</p> <p>9 Customer specific</p>



SD-A2D5XXX Series Continued  
LVDS UHF CLOCK (XO)

Rev. -

## Absolute Maximum Ratings

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

## Electrical Parameters

Parameter	Symb	Conditions, Note	MIN	TYP	MAX	Unit
Nominal Frequency	Fo		38		800	MHz
Supply Voltage	Vcc	Code A	3.135	3.3	3.465	V
Supply current	Icc			80	100	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
<b>Jitter</b>	Integrated	J	Integrated from Phase Noise, 12 KHz to 20 MHz, RMS		0.3	ps
	Wavecrest characterized	Random period,	<320 M	2.5		ps
			>320 M	2.5		
		Accumul., pk-to-pk	<320 M	30		ps
			>320 M	43		
Deterministic	<320 M	6		ps		
	>320 M	18				
Subharmonics			<320 M	-50		dBc
			>320 M	-35		
Phase Noise	£(Δf)	212.5 MHz	@ 10 Hz	-65		dBc/Hz
			@100 Hz	-95		
			@1 KHz	-125		
			@10KHz	-140		
			@100KHz	-145		
			@>1MHz	-148		
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						
Pin 2 Enabled		CMOS logic 1 or N/C	0.7 Vcc		Vcc	V
Pin 2 Disabled		CMOS logic 0	0		0.3 Vcc	
Enable Low Option						
Pin 2 Disabled		CMOS logic 1 or N/C	0.7 Vcc		Vcc	V
Pin 2 Enabled		CMOS logic 0	0		0.3 Vcc	



**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

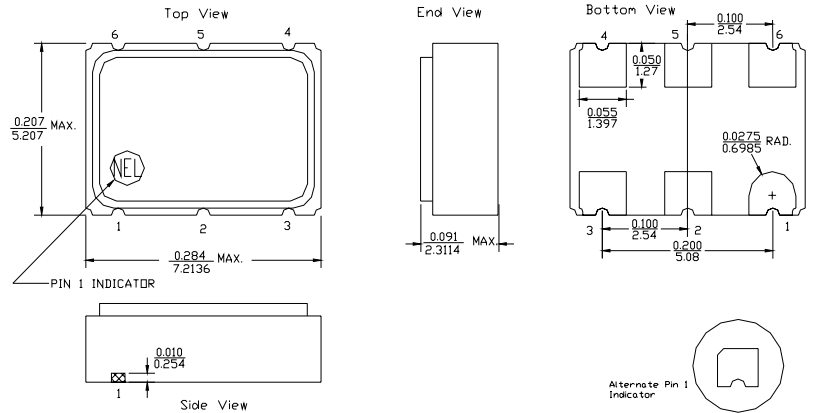
Email: [nelsales@nelfc.com](mailto:nelsales@nelfc.com) www.nelfc.com

Rev. -

SD-A2D5XXX Series Continued

## LVDS UHF CLOCK (XO) Electrical Connection

Pin	Connection
1	Enable/Disable
2	N.C.
3	V <sub>EE</sub> /Ground
4	Output
5	/Output
6	V <sub>CC</sub>



ALL DIMENSIONS:  $\frac{IN}{mm}$   
All tolerances are  $\pm 0.005$  inches ( $\pm 0.127$  mm) unless otherwise specified.

## Environmental and Mechanical Characteristics

<b>Operating temp. range</b>	see part # table
<b>Mechanical Shock</b>	Per MIL-STD-202, Method 213, Cond. E
<b>Thermal Shock</b>	Per MIL-STD-883, Method 1011, Cond. A
<b>Vibration</b>	Per MIL-STD-883, Method 2007, Cond. A
<b>Hermetic Seal</b>	Leak rate less than $1 \times 10^{-8}$ atm.cc/s of helium
<b>Soldering conditions</b>	See MAX reflow profile below

### Maximum Reflow Profile

