

**LVDS UHF CLOCK (XO)  
SD-A2D4XXX-X Series**

**Description**

The **SD-A2D4XXX 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 advanced PLL 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 640.000MHz
- 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**

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**SD - A 2D4 X X X - X - FREQ**

<p><b>Package Code</b> _____ SD 6 pad 5x7mm SMD</p> <p><b>Input Voltage</b> _____ A 3.3V±5%</p> <p><b>Enable Option</b> _____ H Enable High L Enable Low</p>	<p><b>Temperature Range, °C</b> A 0 to 50 B 0 to 70 C -20 to 70 D -40 to 85 9 Customer specific</p>	<p><b>Environmental</b> L Contains a level of lead that is in excess of RoHS directive and is not designed for reflow R RoHS compliant</p> <p><b>Overall Frequency Stability, ppm</b> E ±20 F ±25 G ±50 H ±100 9 Customer specific</p>
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**SD-A2D4XXX-X Series** Continued  
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**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		640	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		0.4	ps
	Wavecrest characterized	Random period,	155 MHz	3.5		ps
		Accumul., pk-to-pk	622 MHz	6		ps
		Accumul., pk-to-pk	155 MHz	20		ps
			622 MHz	40		ps
Phase Noise	£(Δf)	155 MHz	@ 10 Hz @100 Hz @1 KHz @10KHz @100KHz @1MHz @>10M	-60 -90 -120 -130 -128 -144 -150		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

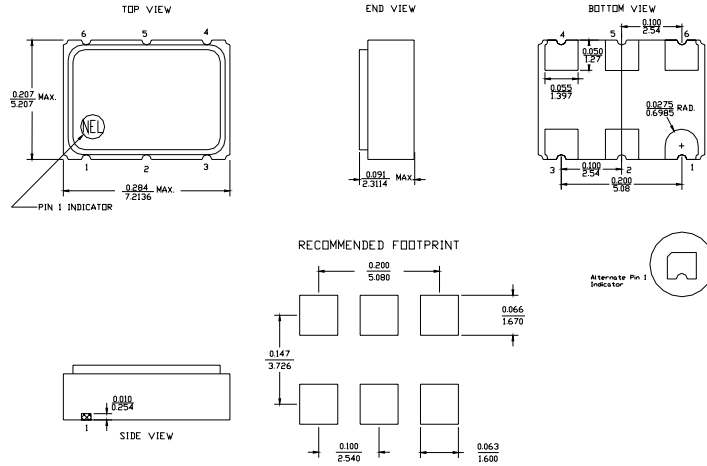


### SD-A2D4XXX-X Series Continued LVDS UHF CLOCK (XO)

#### 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>

\*Consult factory for pin 2 enable

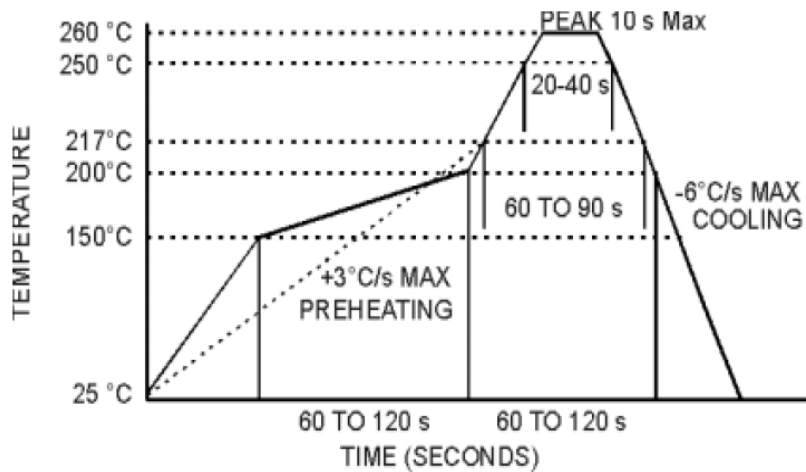


ALL DIMENSIONS:  $\frac{IN}{MM}$   
All tolerances are  $\pm 0.005$  inches ( $\pm 0.127$  mm) unless otherwise specified.

## 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



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**FREQUENCY  
CONTROLS, INC.**