HCSL COMPATIBLE HF/UHF CLOCK (XO)
AA-X1EXX-X Series

Description

The **AA-X1EXX Series** of quartz crystal oscillators provide ultra high frequency with HCSL compatible complementary outputs. The device is based on low noise analog harmonic multiplication, and packaged in a miniature, low profile leadless FR-4 based package with gold plated pads, which enhances compatibility with PCB material.

Applications and Features

- Wide Frequency Range - 20.0MHz to 156.250MHz
- Fiber Channel; 10 GbE; Infiniband; Network Processors; SONET/SDH
- High Reliability - NEL HALT/HASS qualified for crystal oscillator start-up conditions
- Low Phase Noise, Low Jitter
- Fast Rise and Fall times
- Tight frequency stability - ±20ppm overall available
- Low cost
- COTS/Dual use

Creating a Part Number

AA - X 1E X X - X - FREQ

Package Code
AA 6 pad 7.5x5.2 SMD

Input Voltage
A 3.3V±5%

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

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

NEL FREQUENCY CONTROLS, INC.
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Rev. E

AA-X1EXX-X Series Continued
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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

Electrical Parameters (1)

Parameter		Symb	Conditions, Note		MIN	TYP	MAX	Unit
Nominal Frequency		Fo	Vcc=3.3V		20		156.250	MHz
Supply Voltage		Vcc			3.135	3.3	3.465	V
Supply current		Icc				80	100	mA
Logic Type						HCSL Compatible		
Load			At receiving end each output, Rs=0 Ohm			50		Ohm
Output Levels		Voh	Output High 1,2		660	700	850	mV
		Vol	Output Low 1,2		-150	0	150	V
		Vcr	Crossing Point		250	350	550	mV
Duty Cycle (Symmetry)			At outputs crossing, room temperature		45/55	50/50	55/45	%
Rise/Fall Time		Tr/Tf	From 0.175 to 0.525V			0.35	0.5	ns
Cross Point Skew							140	mV
Jitter @ 100MHz	Integrated	J	Integrated from Phase Noise, 12 KHz to 20 MHz, RMS			0.2 0.00004		ps UI
	Cycle to Cycle	Jc					25 0.01	ps UI
	Wavecrest characterized		Random period, RMS			2.5 0.00005		ps UI
			Total, pk-to-pk			20	25	ps
			Deterministic			0		ps
Phase Noise		£(Δf)	@ 100MHz	@ 10 Hz @100 Hz @1 KHz @10KHz @100KHz @>1MHz		-75 -105 -135 -145 -150 -152		dBc/Hz
Frequency Stability		ΔF/F	Overall, including initial calibration, temperature, aging 10 years, shock and vibration		See "Creating a Part Number"			ppm
Enable Low Option Disabled Enabled			PECL logic "1" PECL logic "0" or floating		Vcc-1 0		Vcc Vcc-1.6	V

Note 1. All parameters, unless otherwise specified, are at nominal conditions, ie: T=25°C, Nominal Vcc & Nominal Load.

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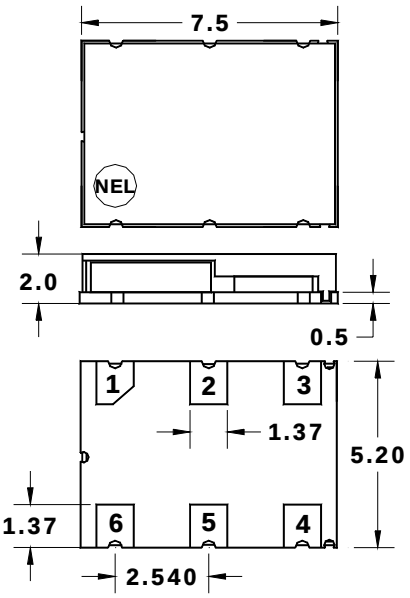
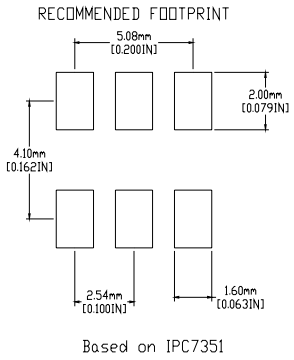
Rev. E

Electrical Connection

Pin	Connection
1	N/C
2	Enable/Disable
3	Gnd
4	Output
5	/Output
6	V_{CC}

Dimensions are typical in mm

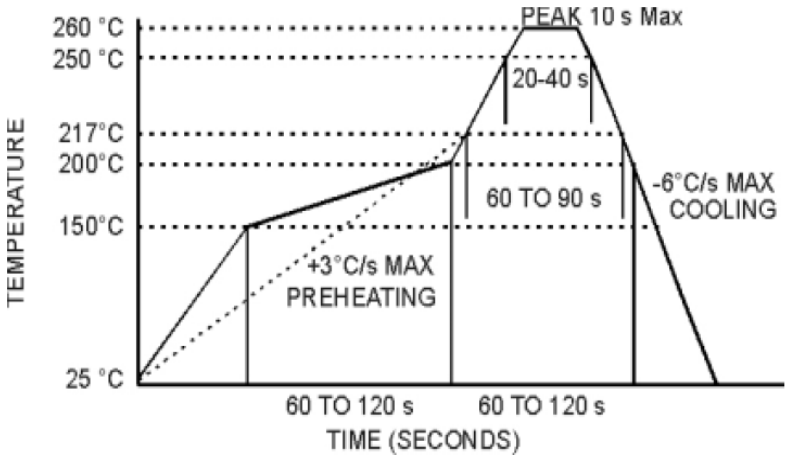




Environmental and Mechanical Characteristics

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; The device may be reflowed once. Reflowing upside down is not allowed. NO CLEAN assembly is recommended.

Maximum Reflow Profile



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