

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

**Description**

The **AA-XEXX 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**

- Ultra High Frequency - up to 350.000MHz
- 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 -  $\pm 20$ ppm overall available
- Low cost
- COTS/Dual use

<b>Creating a Part Number</b>			
<b>AA - X E X X - X - FREQ</b>			
<b>Package Code</b>			<b>Environmental</b>
AA 6 pad 7.5x5.2 SMD			L Contains level of lead that is in excess of RoHS directive and is not designed for reflow
			R RoHS compliant
<b>Input Voltage</b>			<b>Overall Frequency Stability, ppm</b>
A 3.3V $\pm 5\%$			E $\pm 20$
B 2.5V $\pm 5\%*$			F $\pm 25$
			G $\pm 50$
			H $\pm 100$
			9 Customer Specific
		<b>Temperature Range, °C</b>	
		A 0 to 50	
		B 0 to 70	
		C -20 to 70	
		D -40 to 85	
		9 Customer specific	
*Note: Not all frequencies available at 2.5V			



**AA-XEXX-X Series** Continued  
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Rev. G

### 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

### Electrical Parameters (1)

Parameter	Symb	Conditions, Note	MIN	TYP	MAX	Unit	
Nominal Frequency	Fo	Vcc=2.5V Vcc=3.3V	20 20		240 350	MHz	
Supply Voltage	Vcc	Code A Code B	3.135 2.375	3.3 2.5	3.465 2.625	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	
<b>Jitter</b> @ 200MHz	Integrated	J	Integrated from Phase Noise, 12 KHz to 20 MHz, RMS			0.2 0.00004	ps UI
	Cycle to Cycle	Jc				250,01	ps UI
	Wavecrest characterized		Random period, RMS		2.5 0.00005		ps UI
			Total, pk-to-pk		400.01	500.01	ps UI
		Deterministic		120	180	ps UI	
Sub-harmonics		>150MHz		-45	-35	dBc	
Phase Noise	£(Δf)	@ 200MHz	@ 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"			ppm	

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



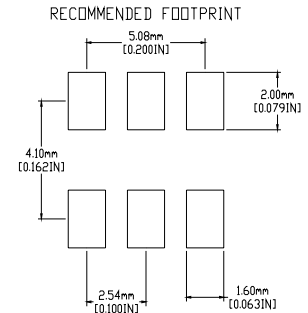
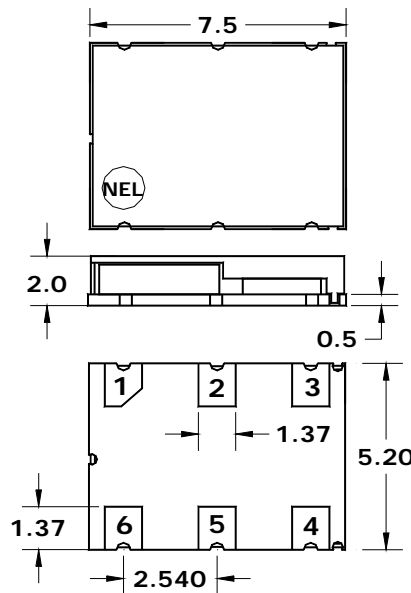
## AA-XEXX-X Series Continued HCSL Compatible HF/UHF Clock (XO)

Rev. G

### Electrical Connection

Pin	Connection
1	N/C
2	N/C
3	Gnd
4	Output
5	/Output
6	V <sub>CC</sub>

Dimensions are typical in mm

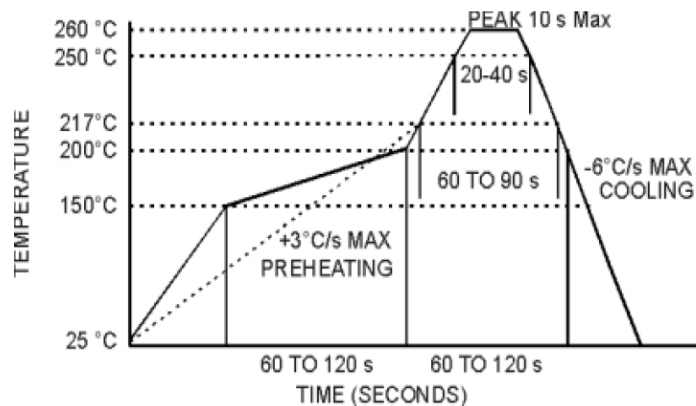


Based on IPC7351

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

### Maximum Reflow Profile



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