

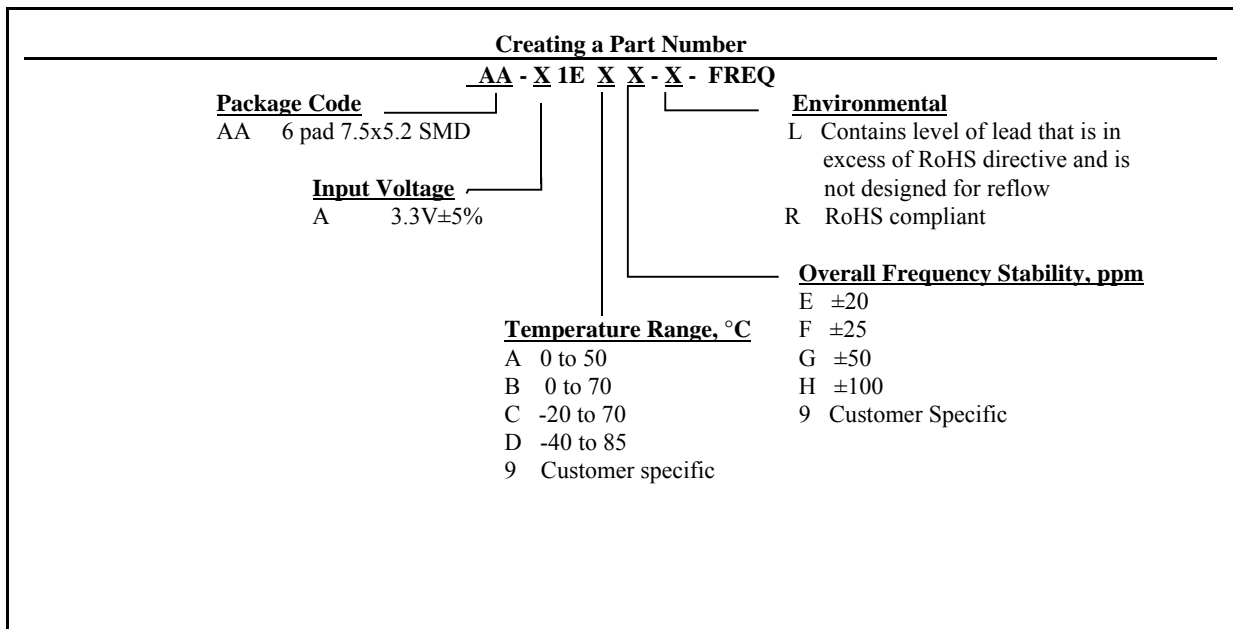
**HCSL COMPATIBLE HF/UHF CLOCK (XO)  
AA-X1EXX-X Series**

**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 -  $\pm 20$ ppm overall available
- Low cost
- COTS/Dual use



AA-X1EXX-X Series Continued  
HCSL Compatible HF/UHF Clock (XO)

Rev. E

## 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=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
<b>Jitter</b> @ 100MHz	Integrated	J	Integrated from Phase Noise, 12 KHz to 20 MHz, RMS		0.2	ps UI
					0.00004	
	Cycle to Cycle	Jc			25	ps UI
					0.01	
Wavecrest characterized		Random period, RMS			2.5	ps UI
					0.00005	
					Total, pk-to-pk	
		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.



**FREQUENCY  
CONTROLS, INC.**

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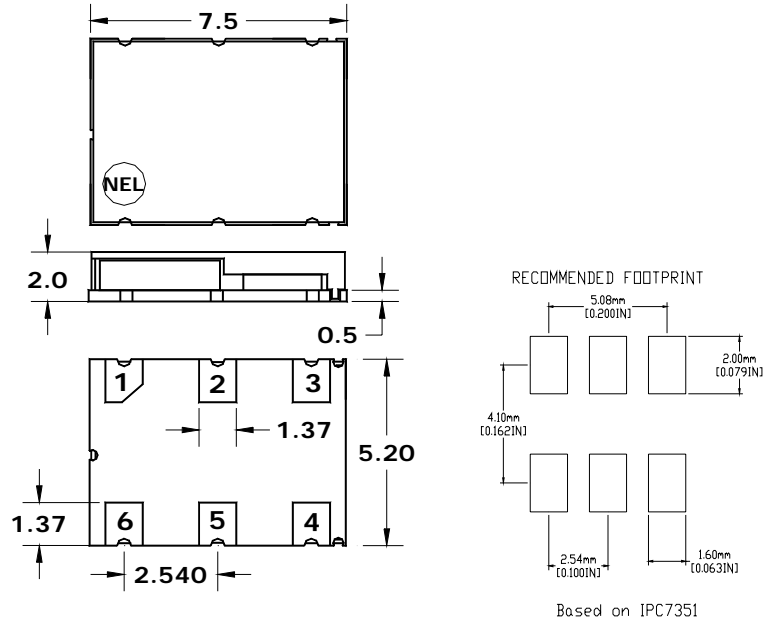
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**Electrical Connection**

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

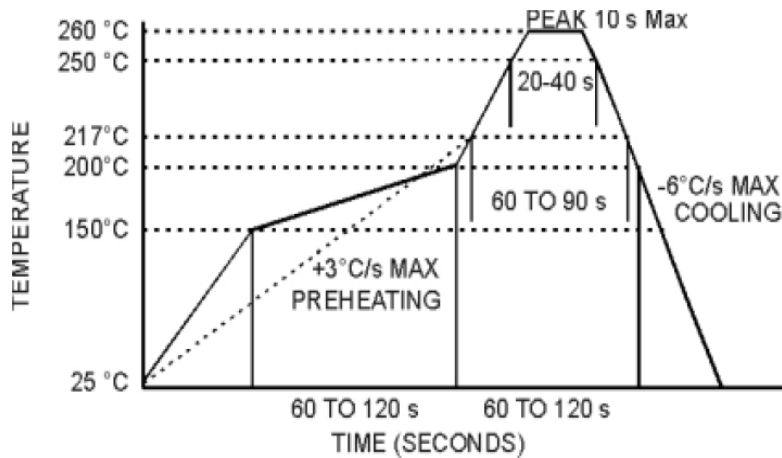
Dimensions are typical in mm



**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

