

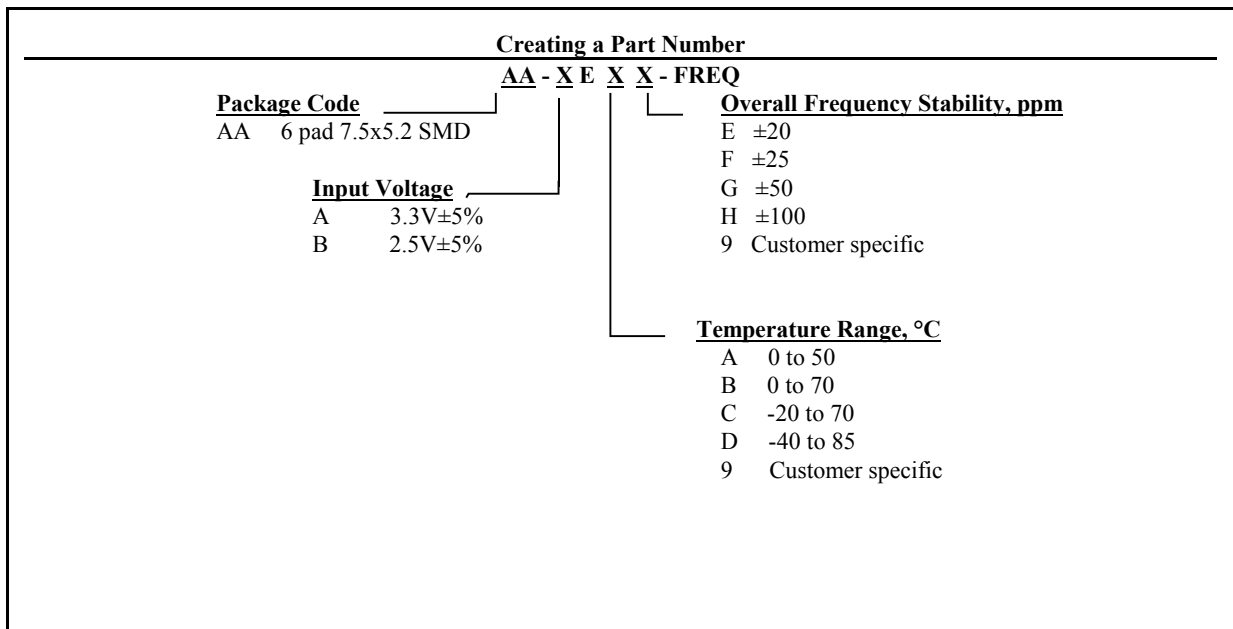
**HCSL COMPATIBLE HF/UHF CLOCK (XO)  
AA-XEXX Series**

**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 240.000MHz
- 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
- RoHS Compliant, Lead Free Construction
- Low cost



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

**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				240	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		0		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	
<b>Jitter</b>	Integrated	J	Integrated from Phase Noise, 12 KHz to 20 MHz, RMS			0.2	ps
	Wavecrest characterized		Random period,		2.5		ps
			Accumul., pk-to-pk		25		ps
		Deterministic		3	6	ps	
Sub-harmonics				-45	-35	dBc	
Phase Noise	£(Δf)		@ 10 Hz @100 Hz @1 KHz @10KHz @100KHz @>1MHz	-65 -95 -125 -140 -145 -148		dBc/Hz	
Frequency Stability, usually not specified - unless necessary, APR is specified to incorporate stability	ΔF/F	Overall, including initial calibration, temperature, aging 10 years, shock and vibration @ Vc=Vcc/2; APR 50ppm, or less	See "Creating a Part Number" Not all combinations available, consult factory			ppm	



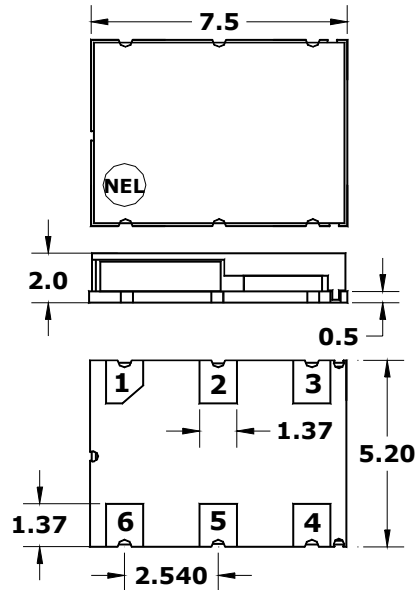
**AA-XEXX Series Continued**  
**HCSL Compatible HF/UHF Clock (XO)**

**Rev. A**

**Electrical Connection**

Pin	Connection
1	Enable/Disable or No Connect
2	N/C
3	Gnd
4	Output
5	/Output
6	V <sub>CC</sub>

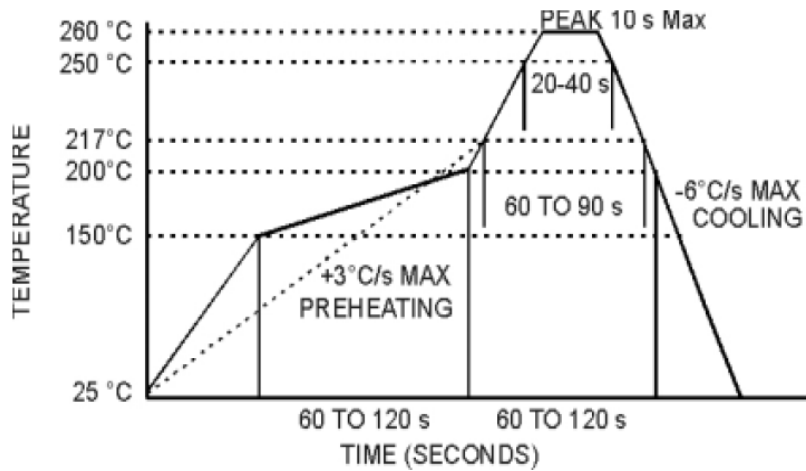
Dimensions are typical in mm



**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

Maximum Reflow Profile



**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](http://www.nelfc.com)