

**AE-X0A6XX-X Series
SINEWAVE HF XO**

Rev. H

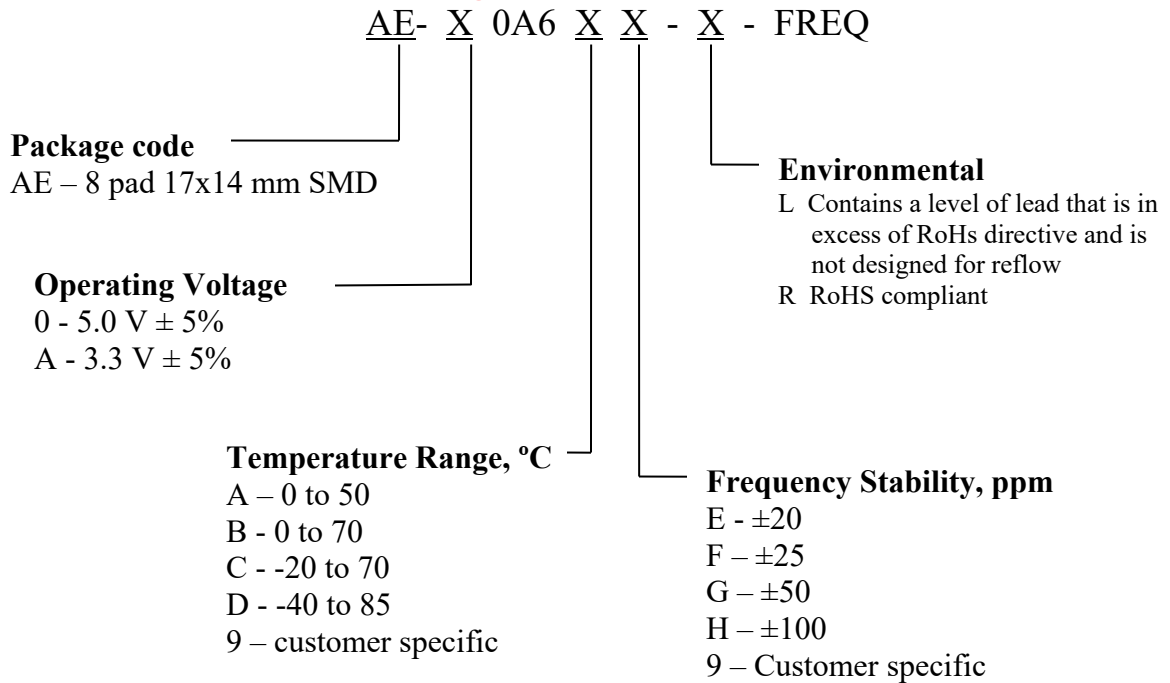
Description

The **AE-X0A6XX Series** of crystal oscillators (XO) provides high frequency with Sine-Wave output. The device does not use any frequency multiplication, providing exceptionally low Phase Noise and Jitter. It's packaged in a miniature, FR-4 based 17x14 mm SMD package.

Applications and Features

- Fiber Channel; 10 GbE; Infiniband; Network Processors; SONET/SDH
- High Reliability – NEL HALT/HASS qualified for crystal oscillator start-up conditions
- Ultra Low Phase Noise and Jitter
- No Multiplication
- SONET ± 20 ppm overall free-run stability available
- High Shock Resistance, to 1000g
- COTS/Dual use

Creating a Part Number



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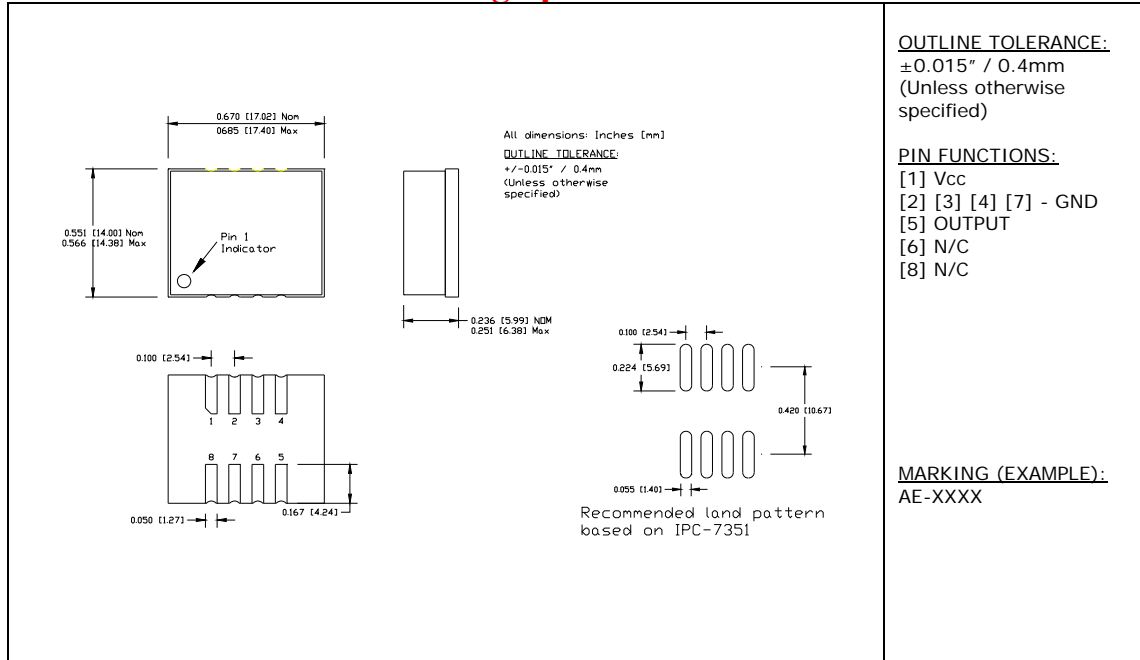
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Email: nelsales@nelfc.com www.nelfc.com

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Drawing Specification



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 5.5	V



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Electrical Parameters (1)

Parameter	Symb	Conditions, Note	MIN	TYP	MAX	Unit	
Nominal Frequency	Fo	See Note below	12		250	MHz	
Supply Voltage	Vcc	Code 0 Code A	4.75 3.135	5.0 3.3	5.25 3.465	V	
Supply current	Icc	No load, Vcc=3.3V 100MHz		60	160	mA	
Output Logic Type				Sine			
Load		Internally AC coupled	45	50	55	Ohm	
Harmonic	Ph				-25	dBc	
Sub-Harmonics			None				
Output Power	Po	Into 50 ohm, 5V 3.3V	7 5	10 7		dBm	
Jitter	Integrated, RMS	J	Integrated from Phase Noise, 12 KHz to 20 MHz RMS		0.1	0.15	ps
			100Hz to 80KHz,RMS			0.5	ps
			50 KHz to 80 MHz		0.2		ps
	Wavecrest characterized	J	Random period,		2.5		ps
			Accumul., pk-to-pk		17		ps
			Determin.		0		ps
Phase Noise	£(Δf)	100 MHz, 3.3V	@ 10 Hz @100 Hz @1 KHz @10KHz @100KHz @>1MHz	-85 -115 -145 -166 -172 -175		dBc/Hz	
Frequency Stability, over all conditions	ΔF/F	See Chart		±50		ppm	

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



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AE-X0A6XX-X Series

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Typical Phase Noise at 100 MHz



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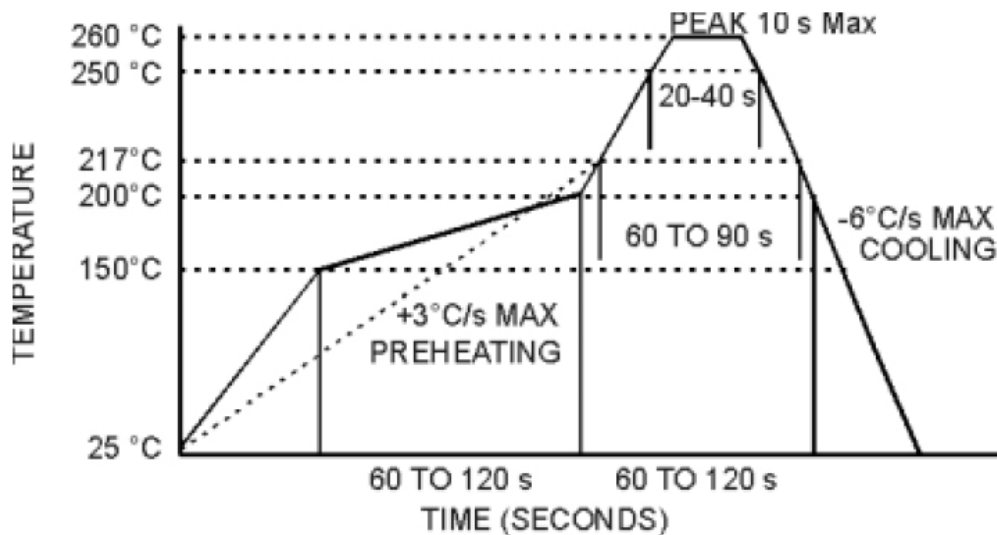
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Environmental and Mechanical Characteristics

Operating temp. range	see part # table
Mechanical Shock	Per MIL-STD-202, Method 213, Cond. A
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 5×10^{-8} atm.cc/s of helium , crystal only.
Soldering conditions	See MAX reflow profile below; The device may be reflowed once. Reflowing upside down is not allowed. NO CLEAN assembly is recommended.

MAX Reflow Profile



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



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