

**AE-X0A5XXXX-X Series  
SINEWAVE/CMOS HF XO**

Rev. G

**Product Data Sheet**

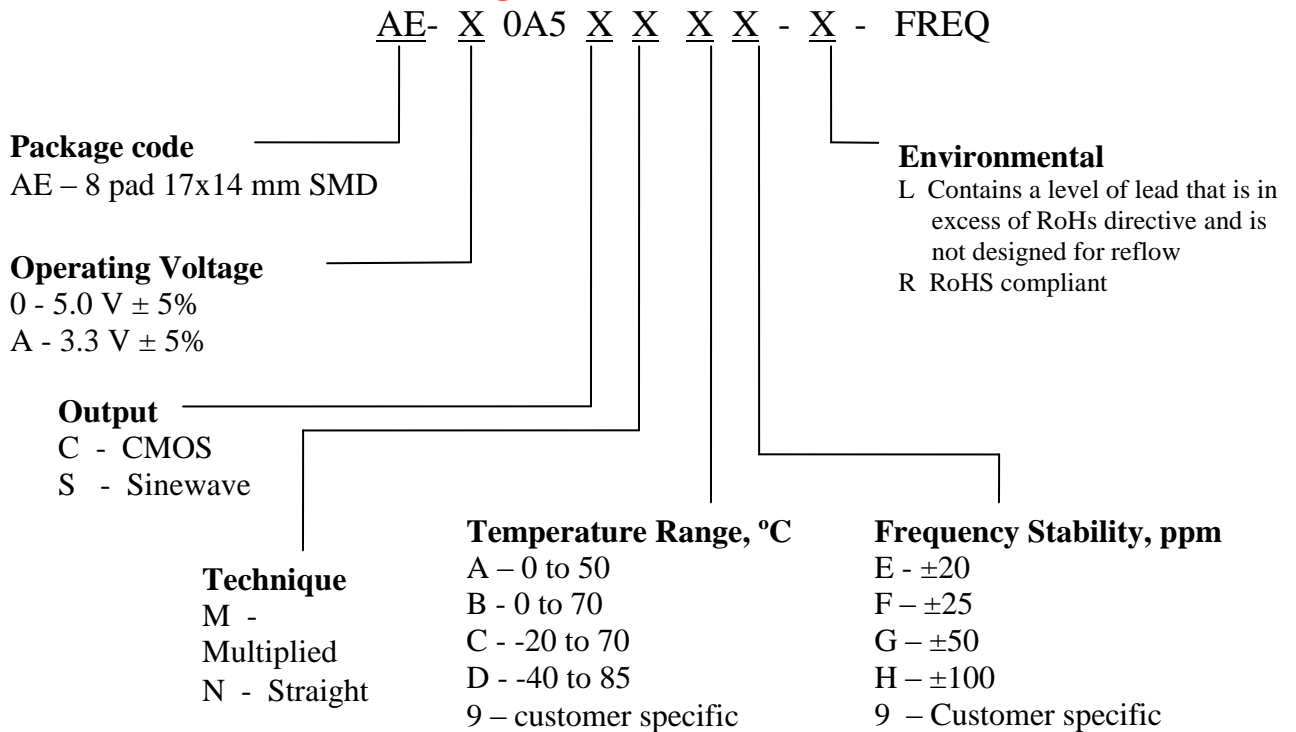
**Description**

The **AE-X0A5XXXX Series** of crystal oscillators (XO) provides high frequency with Sine-Wave or CMOS output. The device provides exceptionally low Phase Noise and Jitter. It's packaged in a miniature, FR-4 based 17x14 mm SMD package.

**Applications and Features**

- Frequency Synthesizers, Low Phase Noise Reference
- High Reliability – NEL HALT/HASS qualified for crystal oscillator start-up conditions
- Extremely Low Phase Noise and Jitter
- SONET ± 20 ppm overall free-run stability available
- High Shock Resistance, to 1000g
- COTS/Dual use

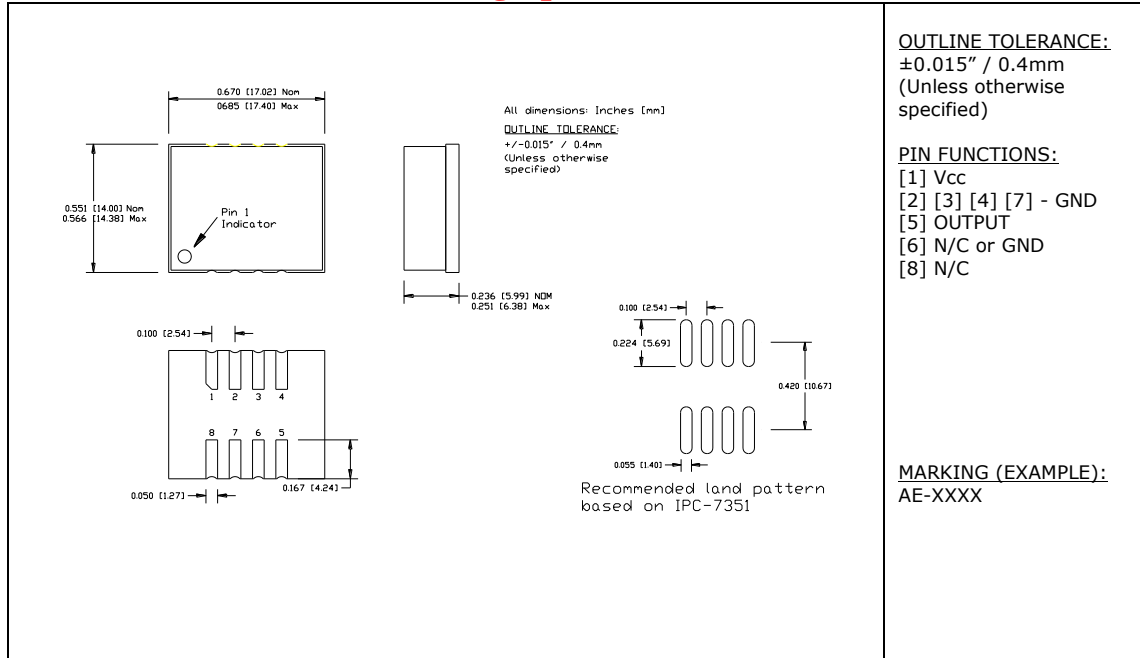
**Creating a Part Number**



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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			S version C version		Sine CMOS		
Load			Internally AC coupled	45	50	55	Ohm
Harmonic		Ph				-25	dBc
Sub-Harmonics			N version	None			
Sub-Harmonics			M version		-50	-45	dBc
Output Power		Po	S version Into 50 ohm,5V 3.3V	7 5	10 7		dBm
Logic Levels		Vol Voh	C version	0.9Vcc		0.1Vcc	V
<b>Jitter</b>	Integrated, RMS	J	Integrated from Phase Noise, 12 KHz to 20 MHz RMS		0.1	0.15	ps
			100Hz to 80KHz,RMS			0.5	ns
			50 KHz to 80 MHz			0.2	ps
	Wavecrest characterized	Random period,			2.5		ps
		Accumul., pk-to-pk			17		ps
		Determin.		N version	0		ps
			M version @ 100MHz	10			
Phase Noise, N version		£(Δf)	100 MHz, 3.3V	@ 10 Hz @100 Hz @1 KHz @10KHz @100KHz @>1MHz	-85 -115 -145 -170 -172 -175	-80 -110 -140 -168 -170 -172	dBc/Hz
Phase Noise, M version, Sinewave only		£(Δf)	100 MHz, 3.3V	@ 10 Hz @100 Hz @1 KHz @10KHz @100KHz @>1MHz	-95 -125 -145 -160 -162 -165	-90 -120 -140 -158 -160 -162	dBc/Hz
Frequency Stability, overall 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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Typical Phase Noise at 100 MHz



AE-X0A5NXXX “N” Non-multiplied version



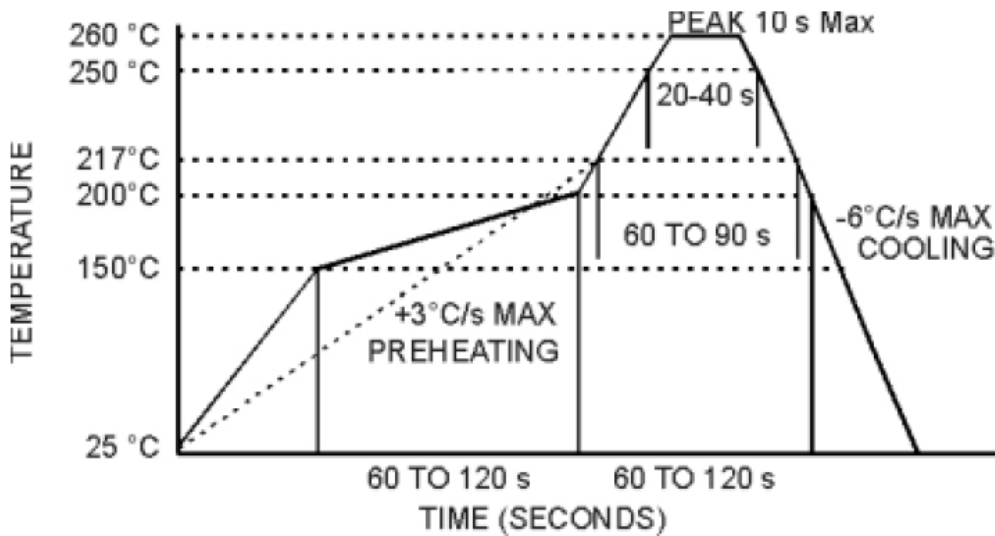
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**Environmental and Mechanical Characteristics**

<b>Operating temp. range</b>	see part # table
<b>Mechanical Shock</b>	Per MIL-STD-202, Method 213, Cond. A
<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 $5 \times 10^{-8}$ atm.cc/s of helium , crystal only.
<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.

**MAX Reflow Profile**



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