

**AE-X29PXXX-X Series  
PECL/LVPECL UHF XO**

**Rev. L**

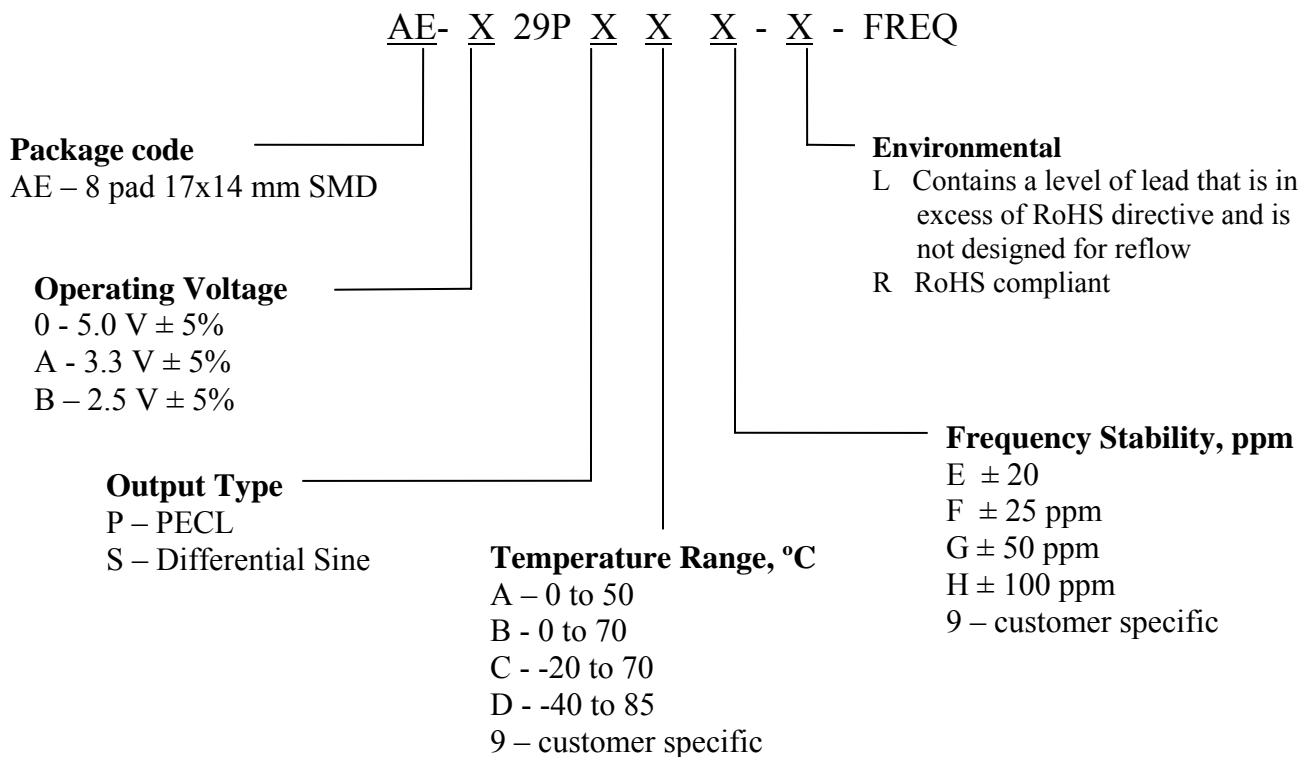
**Description**

The **AE-X29PXXX Series** of crystal oscillators (XO) provides ultra high frequency with PECL/LVPECL or differential Sine-Wave complementary outputs. The device is based on low noise analog harmonic 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
- Extremely Low Phase Noise and Jitter
- Frequency Range to 2,500 MHz
- High Shock Resistance, to 1000g
- COTS/Dual use

**Creating a Part Number**



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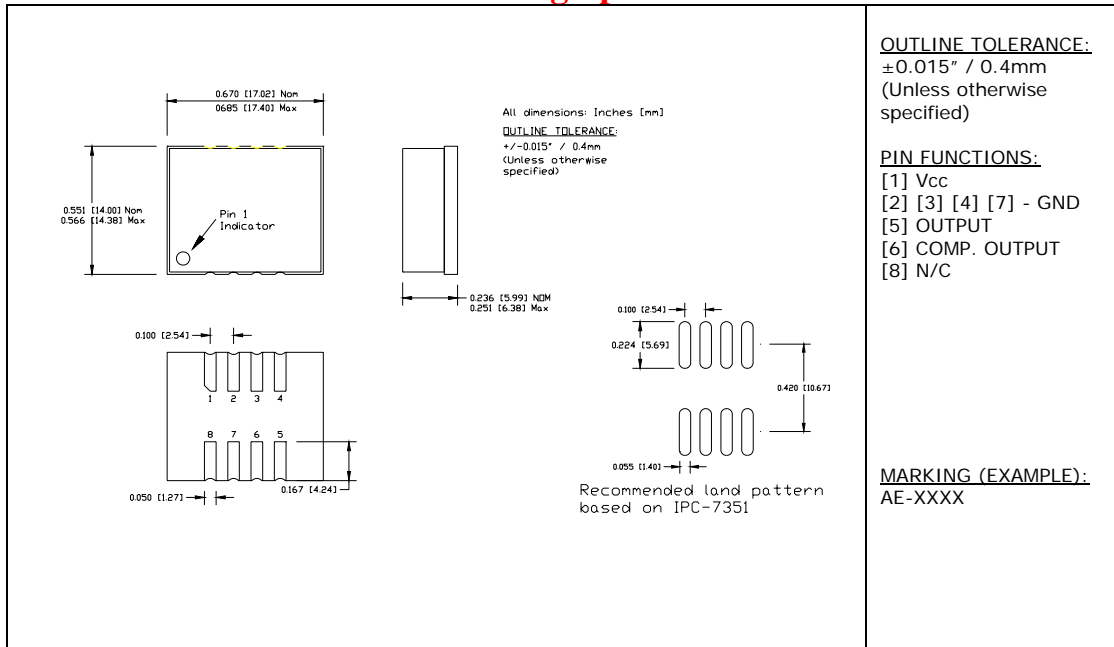
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**Drawing Specification**



**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		250		2,500	MHz
Supply Voltage		Vcc	Code 0 Code A Code B	4.75 3.135 2.375	5.0 3.3 2.5	5.25 3.465 2.625	V
Supply current		Icc			140	160	mA
Output Logic Type					LVPECL Sine		
Load			Output to Vcc-2V, or Thevenin Equivalent, PECL Sine – internally AC coupled		50		Ohm
Output Levels		Voh  Vol	PECL  Sine	Vcc- 1.025		Vcc- 1.620	V
Duty Cycle (Symmetry), PECL			At 50% of output voltage swing	45/55	50/50	55/45	%
Rise/Fall Time, PECL		Tr/Tf	20 to 80, 80 to 20 %		0.25	0.3	ns
<b>Jitter</b>	Integrated	J	Integrated from Phase Noise, 12 KHz to 20 MHz, RMS		0.1	0.2	ps
			100Hz to 80KHz,RMS			1.0	ps
			50 KHz to 80 MHz		0.3		ps
	Wavecrest characterized	Random period,			2.5		ps
		Accumul. pk-to-pk			25		ps
		Determin.			1		ps
Phase Noise		£(Δf)	1,500 MHz, APR 50 ppm or less	@ 10 Hz @100 Hz @1 KHz @10KHz @100KHz @>1MHz	-50 -80 -115 -130 -130 -135	-45 -75 -110 -125 -125 -130	dBc/Hz
Sub-harmonics			At 1,500 MHz		-50	-46	dBc
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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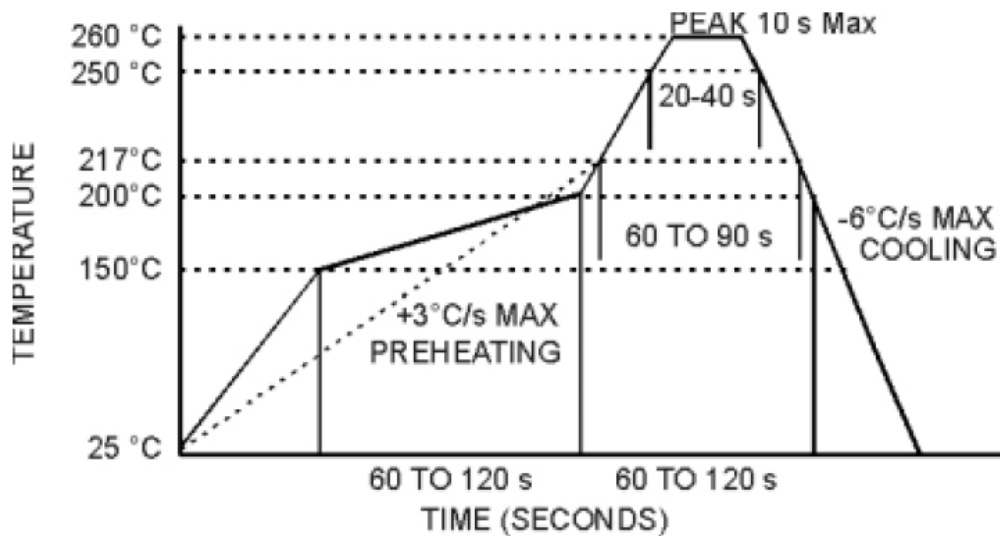
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**Environmental and Mechanical Characteristics**

<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 $1 \times 10^{-8}$ 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.



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