

**AE-XA4XXX-X Series
PECL/LVPECL UHF TCXO**

Rev. M

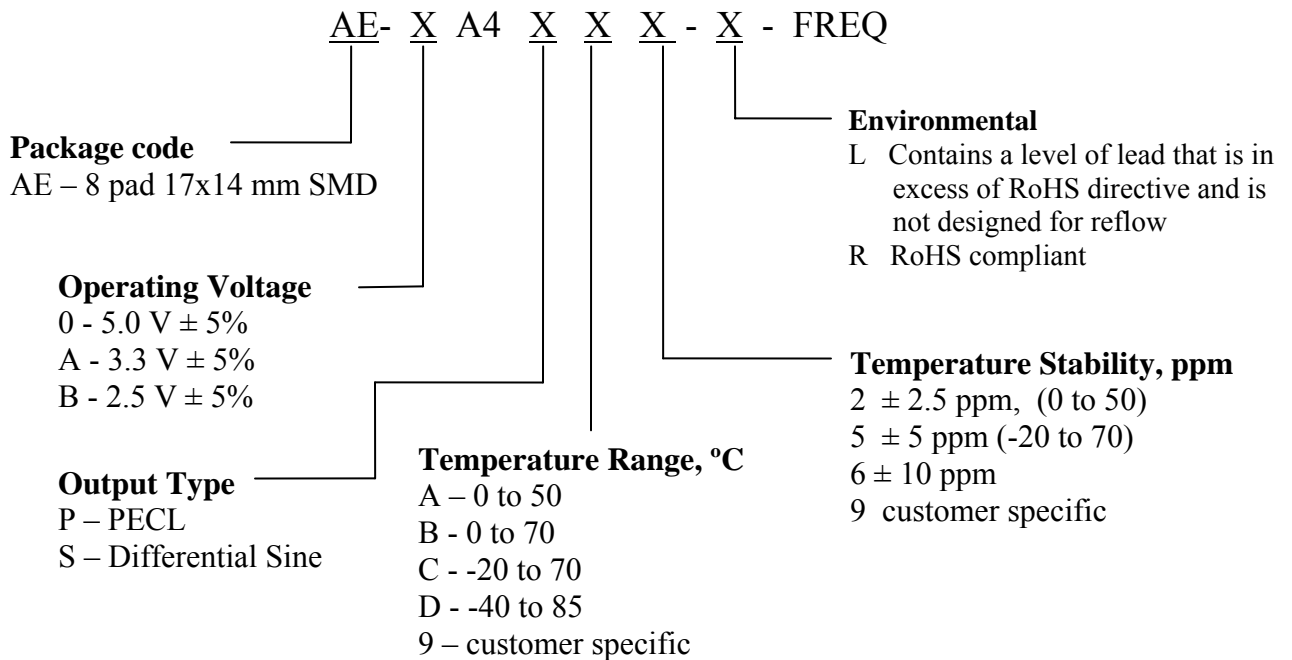
Description

The **AE-XA4XXX Series** of temperature compensated crystal oscillators (TCXO) 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 2,000 MHz
- High Shock Resistance, to 1000g
- COTS/Dual use

Creating a Part Number



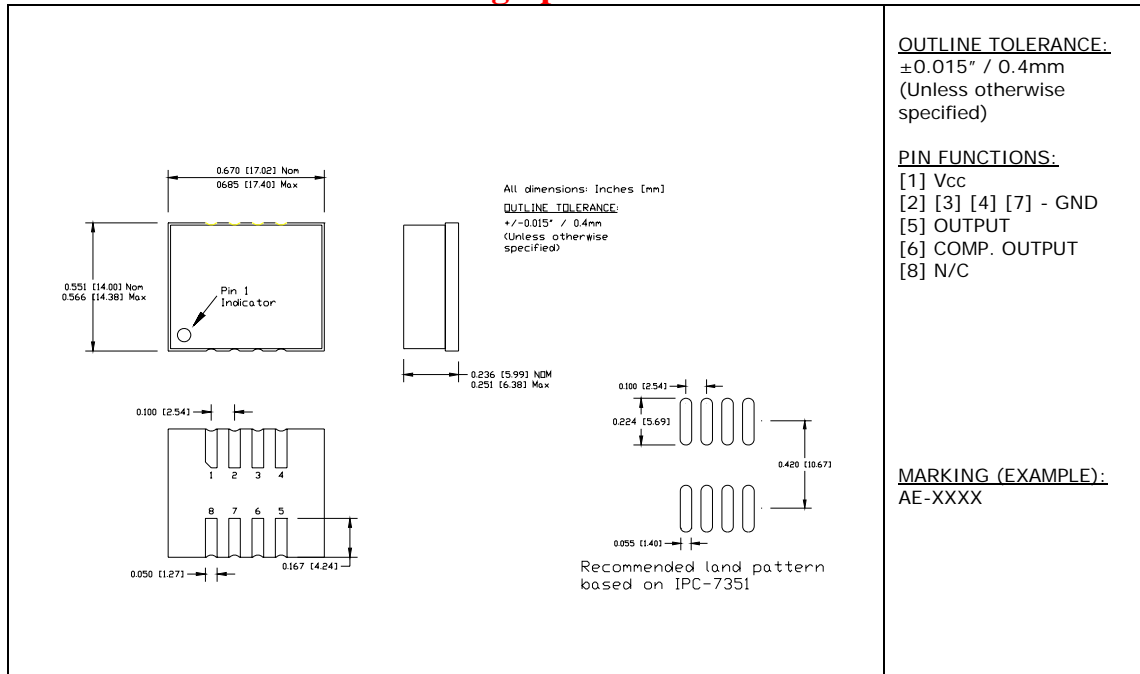
**FREQUENCY
CONTROLS, INC.**

357 Beloit Street, P.O. Box 457, Burlington, WI 53105-0457 U.S.A. Phone 262/763-3591
FAX 262/763-2881

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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
Control Voltage	Vc	-0.5 to 5.5	V



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Electrical Parameters (1)

Parameter	Symb	Conditions, Note	MIN	TYP	MAX	Unit
Nominal Frequency	Fo		700		2,000	MHz
Supply Voltage	Vcc	Code 0	4.75	5.0	5.25	V
		Code A	3.135	3.3	3.465	
		Code B	2.375	2.5	2.625	
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	PECL	Vcc-1.025			V
	Vol	Sine		-3 dBm	Vcc-1.620	
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
Jitter	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	-50	-45	dBc/Hz
			@100 Hz	-80	-75	
			@1 KHz	-115	-110	
			@10KHz	-130	-125	
			@100KHz	-130	-125	
Sub-harmonics		At 1,500 MHz		-50	-46	dBc
Frequency Stability, calibration plus temp. Aging Voltage and load Reflow	ΔF/F	See chart				ppm
		First year			±1	
		At room			±1	
					±2	

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



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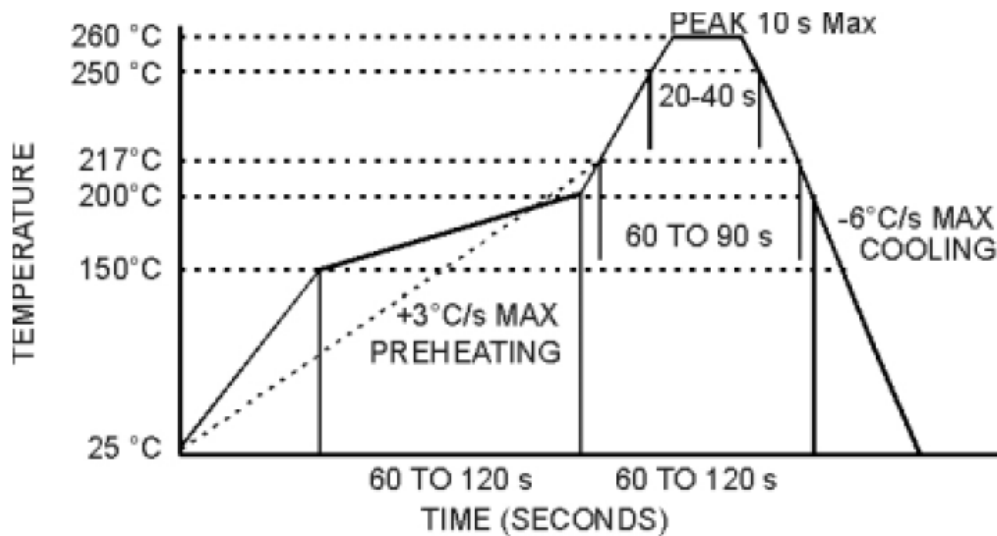
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Environmental and Mechanical Characteristics

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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