

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

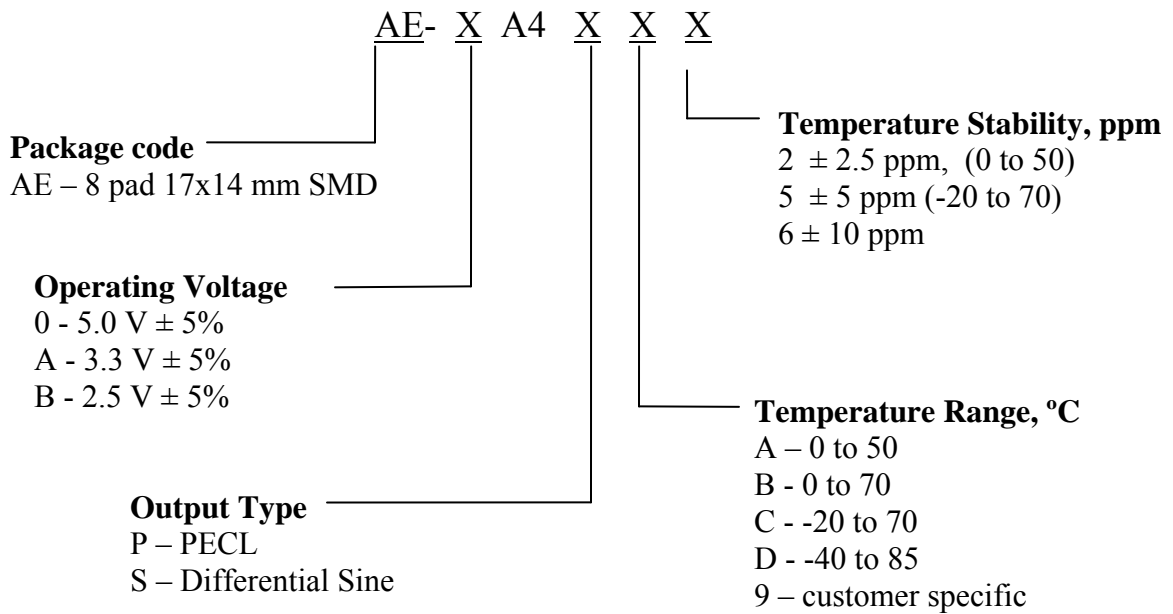
Description

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 2,500 MHz
- RoHS compliant
- High Shock Resistance, to 1.000 G

Creating a Part Number



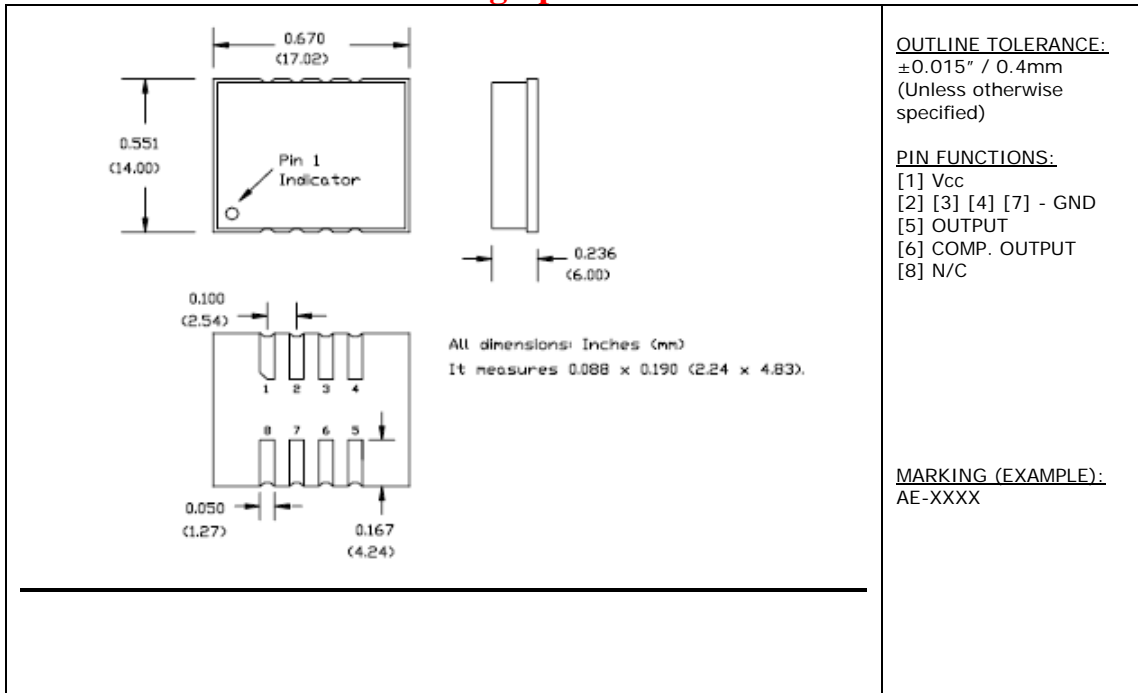
**FREQUENCY
CONTROLS, INC.**

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

AE-XA4XXX Series

Rev. -

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

Parameter		Symb	Conditions, Note	MIN	TYP	MAX	Unit
Nominal Frequency		Fo		700		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	 -3 dBm	 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
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 @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, calibration plus temp. Aging Voltage and load Reflow		ΔF/F	See chart First year At room			 ±1 ±1 ±2	ppm



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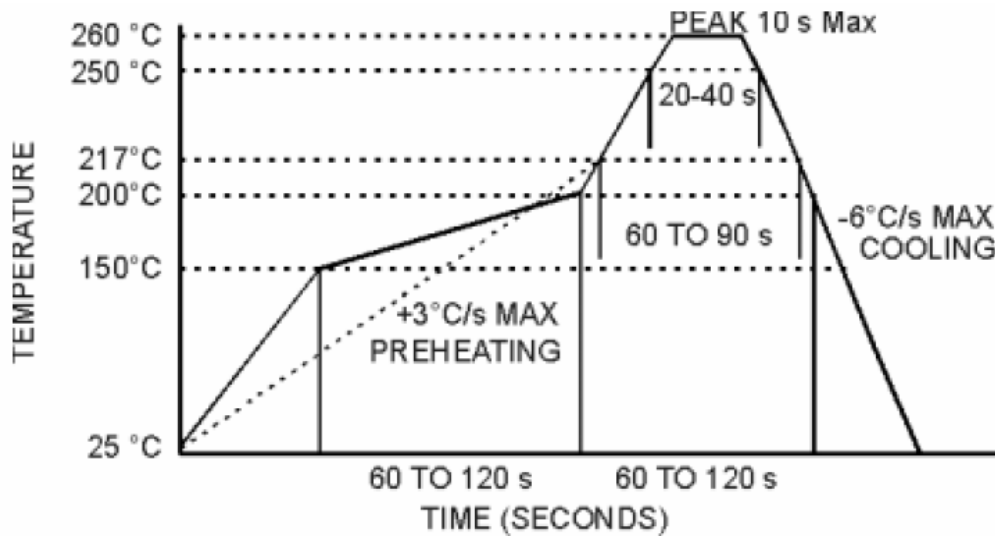
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Environmental and Mechanical Characteristics

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

MAX Reflow Profile



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