CMOS/LVCMOS HF VCTCXO
AB-XC3XXX-X Series

Description

The AB-XC3XXX Series of voltage controlled, temperature compensated crystal oscillators (VCTCXO) provides high frequency with CMOS/LVCMOS output. The outputs can be tristated for test automation or combining multiple clocks. The device does not use any frequency multiplication, providing exceptionally low Phase Noise and Jitter. Itôs packaged in a miniature, FR-4 based 9x14 mm SMD package.

Applications and Features

- Fiber Channel; 10 GbE; Infiniband; Network Processors; SONET/SDH
- High Reliability ï NEL HALT/HASS qualified for crystal oscillator start-up conditions
- Extremely Low Phase Noise and Jitter
- No Multiplication
- Frequency Stability from ± 5 ppm
- High Shock Resistance, to 1000g
- COTS/Dual use

Creating a Part Number

AB - X C3 X X X ï X - FREQ

Package code
AB 6 pad 9x14x 6.1mm SMD

Operating Voltage
0 5.0 V ± 5%
A 3.3 V ± 5%
B 2.5 V ± 5%
C 1.8 V ± 5%

Tristate Option
T - tristate
N ï N/A

Temperature Range, ºC
A ï 0 to 50
B - 0 to 70
C - -20 to 70
9 ï customer specific

Temp. Stability, ppm,
5 ±5
6 ±10

Environmental
L Contains a level of lead that is in excess of RoHS directive
R RoHS compliant

NEL FREQUENCY CONTROLS, INC.

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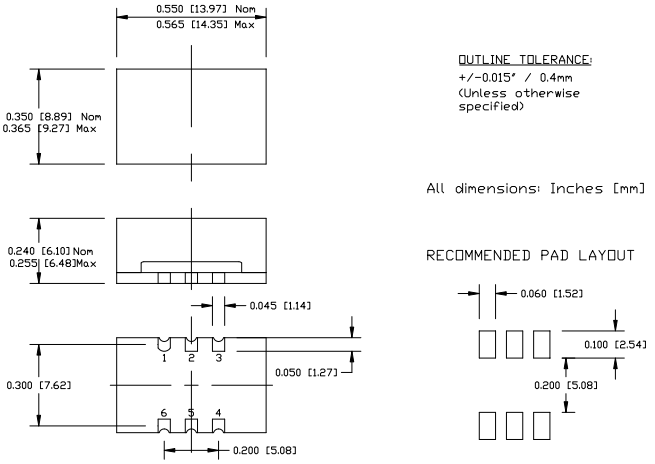
Drawing Specification



OUTLINE TOLERANCE:
±0.015" / 0.4mm
(Unless otherwise specified)

PIN FUNCTIONS:
[1] Vc
[2] EN / DIS or N/C
[3] CASE / GROUND
[4] OUTPUT
[5] N/C
[6] SUPPLY VOLTAGE

MARKING (EXAMPLE):
AB-XC3XXX

Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Operating Temperature Range	To	-40 to +85	ºC
Storage Temperature Range	Tst	-50 to +90	ºC
Supply Voltage	Vcc	-0.5 to 5.5	V
Control Voltage	Vc	-0.5 to 5.5	V
Enable/Disable Voltage	Ven/dis	0 to Vcc	V

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Electrical Parameters (1)

Parameter		Symb	Conditions, Note		MIN	TYP	MAX	Unit
Nominal Frequency		Fo			12		125	MHz
Supply Voltage		Vcc	Code 0 Code A Code B Code C		4.75 3.135 2.375 1.71	5.0 3.3 2.5 1.8	5.25 3.465 2.625 1.89	V
Supply current		Icc	No load, Vcc = 3.3 V 40 MHz				40	mA
Output Logic Type						CMOS		
Load						15 pF/10 KOhm		Ohm
Output Levels		Voh Vol	overall		0.9Vcc		0.1 Vcc	V
Duty Cycle (Symmetry)			At 50% Vcc		45/55	50/50	55/45	%
Rise/Fall Time		Tr/Tf	0.2Vcc to 0.8 Vcc; F< 70 MHz 70 MHz<F< 125 MHz			 3 2	 5 3	ns
Jitter @ 50 MHz	Integrated, RMS	J	Integrated from Phase Noise, 12 KHz to 20 MHz , RMS			0.1	0.15	ps
			100Hz to 80KHz,RMS				0.8	ps
			50 KHz to 80 MHz			0.2		ps
	Wavecrest characterized		Random period,			2.5		ps
			Accumul. , pk-to-pk			17		ps
			Determin.			0		ps
Sub-harmonics						None		dBc
Phase Noise		£(qpf)	50 MHz,	@ 10 Hz @100 Hz @1 KHz @10KHz @100KHz @>1MHz		-85 -115 -145 -160 -165 -165	-80 -110 -140 -155 -160 -160	dBc/Hz
Frequency Stability		qpF/F	Over Temperature, Calibration @Vcc/2, Aging 10 years Shock and vibration Reflow			 ±1 ±3 ±2 ±2	From ±5	ppm
Control Voltage Range		Vc			0V		Vcc	V
Setability		Vcs	Vc to set the F at Fo; T, Vcc, load ï nominal, as shipped		0.4 Vcc	0.5 Vcc	0.6 Vcc	V
Absolute Pull Range		APR	Over all conditions		±10			ppm
Input impedance		Zin	@ Fmod < 10 KHz		50			KOhm
Modulation Bandwidth			At Vc = Vcc/2, -3dB		20			KHz
Enable			Pin 2 = High, or floating		Enabled			
Disable			Pin 2 = Low		Tri-stated, output ï high Z			

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

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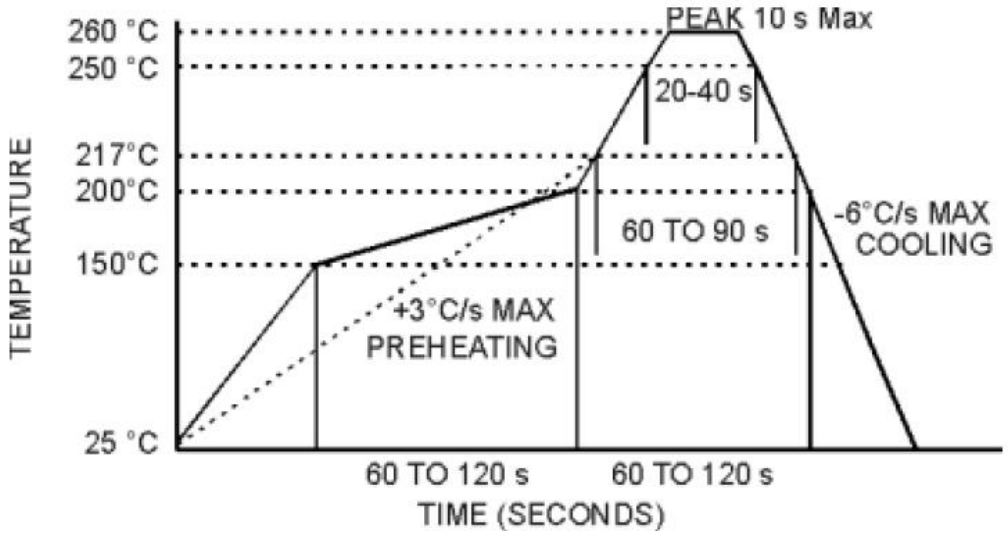
Environmental and Mechanical Characteristics

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 $5x10^{-8}$ 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



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