AB-X3A1XX-X Series
SINEWAVE UHF VCXO

Rev. P

Description

The AB-X3A1XX Series of voltage controlled crystal oscillators (VCXO) provides ultra high frequency with a single-ended sine-wave output. 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 9x14 mm SMD package

Applications and Features

- Wide frequency range – 200.0MHz to 1.000GHz
- Fiber Channel; 10 GbE; Infiniband; Network Processors; SONET/SDH
- High Reliability – NEL HALT/HASS qualified for crystal oscillator start-up conditions
- Ultra Low Phase Noise and Jitter
- High Shock Resistance, to 1000g
- Absolute Pull Range (APR) to ±1000 ppm
- SONET ± 20 ppm overall free-run stability available
- COTS/Dual use

Creating a Part Number

AB - X 3A1 X X - X - FREQ

Package code
AB 6 pad 9x14 mm SMD

Operating Voltage
0 5.0V ± 5%
A 3.3V ± 5%

Temperature Range, ºC
A 0 to 50
B 0 to 70
C -20 to 70
D -40 to 85
9 Customer Specific

Absolute Pull Range, ppm
E ±20
F ±32
G ±50
H ±100
9 Customer specific

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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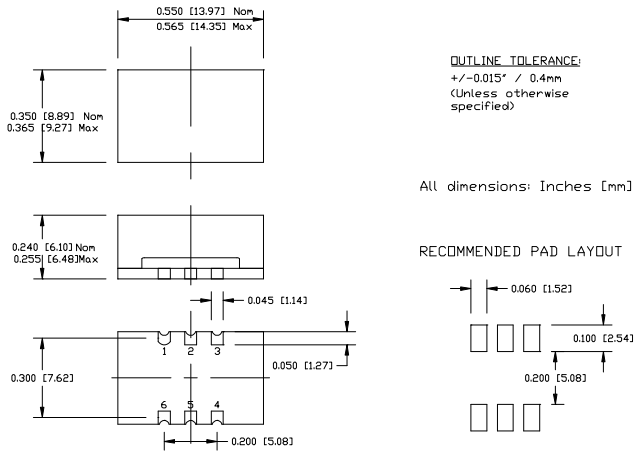
Drawing Specification



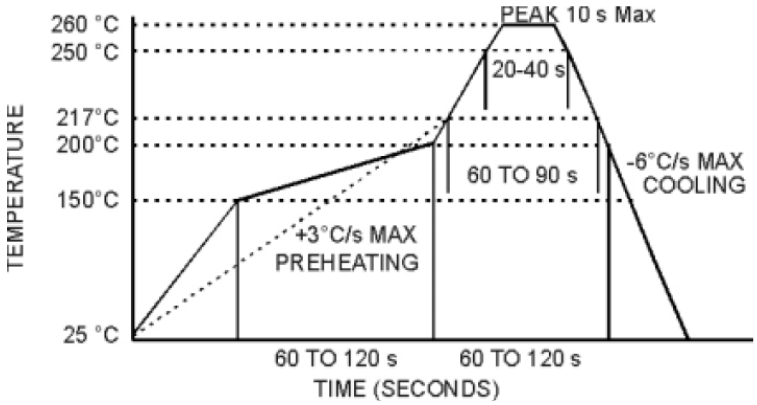
OUTLINE TOLERANCE:
±0.015" / 0.4mm
(Unless otherwise specified)

PIN FUNCTIONS:
[1] Vco
[2] N/C
[3] Gnd
[4] OUTPUT
[5] N/C
[6] Vcc

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 $1x10^{-8}$ atm.cc/s of helium
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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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 4.5	V

Electrical Parameters (1)

Parameter		Symb	Conditions, Note		MIN	TYP	MAX	Unit
Nominal Frequency		Fo			200		1000	MHz
Supply Voltage		Vcc	Code 0 Code A		4.75 3.135	5.0 3.3	5.25 3.465	V
Supply current		Icc	Vcc=3.3V, 50 ohm load Vcc=5.0V, 50 ohm load			60 80	75 90	mA
Output Power		Pout	Vcc=3.3V, 50 ohm load </=400MHz Vcc=5.0V, 50 ohm load </=400MHz		0 4	3 7	16	dBm
Output Power		Pout	Vcc=3.3V, 50 ohm load >400MHz Vcc=5.0V, 50 ohm load >400MHz		-5 0	0 5	5	dBm
Load			Internally AC coupled		45	50	55	Ohm
Output Impedance						50		Ohm
Return Loss						10		dB
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
			Deterministic.			1		ps
Phase Noise		£(Δf)	622.08MHz, APR 50 ppm or less	@ 10 Hz @100 Hz @1 KHz @10KHz @100KHz @>1MHz		-65 -90 -118 -145 -150 -155	-60 -85 -113 -140 -145 -150	dBc/Hz
Sub-harmonics			@ 622.08MHz			-50	-46	dBc
Frequency Stability		ΔF/F	Overall, including temperature, aging 10 years, shock and vibration @ Vc=Vcc/2; APR 50ppm, or less		±20	±30		ppm
Control Voltage Range		Vc			0V		Vcc	V
Setability		Vcs	Vc to set F at Fo; T, Vcc, load – nominal as shipped		0.4 Vcc	0.5 Vcc	0.6 Vcc	V
Absolute Pull Range		APR	Overall conditions, see part # creation		20,32, 50,100			ppm
Input Impedance		Zin	@ Fmod < 100kHz		50			KOhm
Modulation Bandwidth			At Vc = Vcc/2, -3dB		20			KHz

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

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