

# AB-X3A1XX-X Series SINEWAVE UHF VCXO

Rev. Q

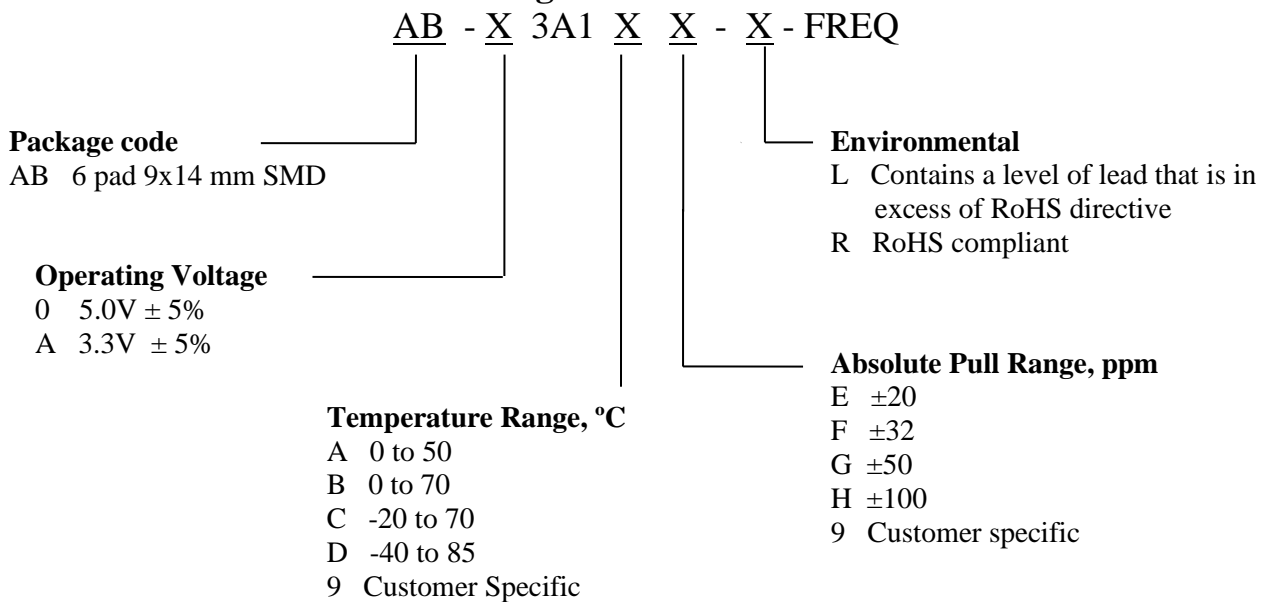
## Description

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



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**Drawing Specification**

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

**PIN FUNCTIONS:**  
[1] V<sub>co</sub>  
[2] N/C  
[3] Gnd  
[4] OUTPUT  
[5] N/C  
[6] V<sub>cc</sub>

**OUTLINE TOLERANCE:**  
+/-0.015" / 0.4mm  
(Unless otherwise specified)

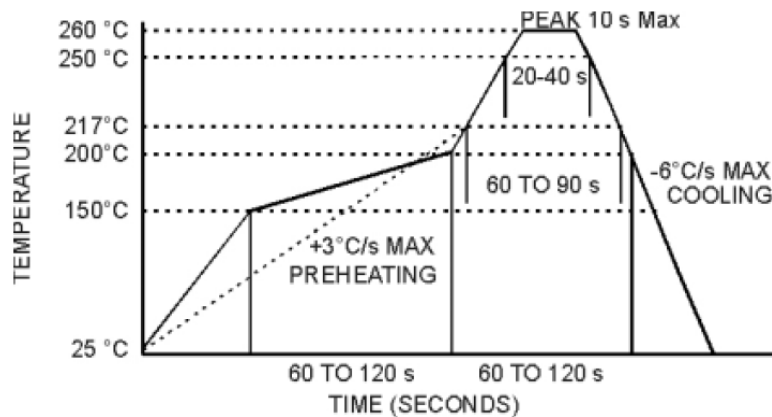
All dimensions: Inches [mm]

**RECOMMENDED PAD LAYOUT**

**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 1x10 <sup>-8</sup> atm.cc/s of helium
<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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**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

**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	
<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	
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.

