

## SINE-WAVE UHF VCXO AB-A3A1XX Series

### Description

The **AB-A3A1XX 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 is packaged in a miniature, FR-4 based 9x14mm 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
- Extremely Low Phase Noise and Jitter
- High shock resistance, to 1000g
- Absolute Pull Range (APR) to  $\pm 1000$  ppm
- SONET  $\pm 20$  ppm overall free-run stability available
- RoHS Compliant, Lead Free Construction

Creating a Part Number	
<b>AB - A 3A1 X X - FREQ</b>	
<b>Package Code</b>	<b>Absolute Pull Range, ppm</b>
AB 6 pad 9x14 mm SMD	E $\pm 20$
	F $\pm 32$
	G $\pm 50$
	H $\pm 100$
	9 Customer specific
<b>Input Voltage</b>	<b>Temperature Range, °C</b>
0 5.0V $\pm 5\%$	A 0 to 50
A 3.3V $\pm 5\%$	B 0 to 70
	C -20 to 70
	D -40 to 85
	9 Customer specific



**AB-A3A1XX Series Continued  
SINE-WAVE UHF VCXO**

**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 4.5	V

**Electrical Parameters**

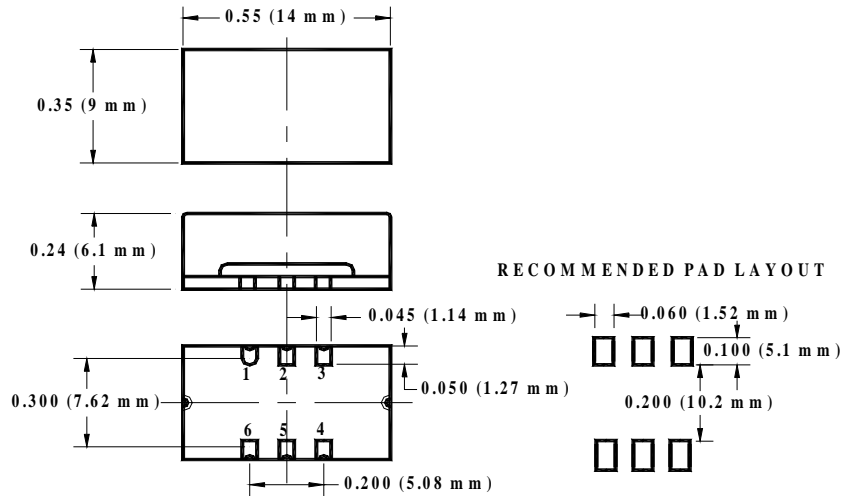
Parameter	Symb	Conditions, Note	MIN	TYP	MAX	Unit	
Nominal Frequency	Fo		200		1000	MHz	
Supply Voltage	Vcc	Code Code A	4.75 3.135	5.0 3.3	5.25 3.465	V	
Supply current	Icc	Vcc=3.3V, 50 Ohm load Vcc=5.0V, 50 ohms load		60 80	75 90	mA	
Output Power	Pout	Vcc=3.3V, 50 Ohm load Vcc=5.0V, 50 ohms load	0 +4	10	16	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
						1.0	ps
					0.3		ps
	Wavecrest characterized		Random period,		2.5		ps
			Accumul., pk- to-pk		25		ps
		Deterministic		1		ps	
Sub-Harmonics		@ 622.08MHz		-50	-46	dBc	
Phase Noise	£(Δf)	622.08 MHz, APR 50ppm 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	
Frequency Stability	ΔF/F	Overall, including initial calibration, 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	Over all conditions, see part # creation	20,32, 50,100			ppm	
Input Impedance	Zin	@ Fmod < 100 KHz	50			KOhm	
Modulation Bandwidth		At Vc = Vcc/2, -3dB	20			KHz	



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Continued

**Electrical Connection**

Pad	Connection
1	V <sub>co</sub>
2	N/C
3	Gnd
4	Output
5	N/C
6	V <sub>cc</sub>



**Environmental and Mechanical Characteristics**

<b>Operating temp. range</b>	see part # table
<b>Mechanical Shock</b>	Per MIL-STD-202, Method 213, Cond. E
<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 $1 \times 10^{-8}$ atm.cc/s of helium
<b>Soldering conditions</b>	See MAX reflow profile below

Maximum Reflow Profile

