

**PECL/LVPECL UHF VCXO  
AB-X36DXXX Series**

**Description**

The **AB-X36DXXX Series** of voltage controlled crystal oscillators (VCXO) provides ultra high frequency with PECL/LVPECL complementary outputs. The outputs can be disabled for test automation or combining multiple clocks. 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 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
- Extremely Low Phase Noise, Low Jitter
- SONET ±20ppm overall free-run stability available
- Absolute Pull Range (APR) to ±1000 ppm
- High shock resistance, to 1000g
- RoHS Compliant, Lead Free Construction

Creating a Part Number			
<b>AB - X 36D X X X - FREQ</b>			
<b>Package Code</b>			<b>Absolute Pull Range, ppm</b>
AB	6 pad 9x14mm SMD		E ±20
			F ±32
			G ±50
			H ±100
			9 Customer specific
<b>Input Voltage</b>			
0	5.0V±5%		
A	3.3V±5%		
<b>Enable Option</b>			<b>Temperature Range, °C</b>
H	Enable High		A 0 to 50
L	Enable Low		B 0 to 70
			C -20 to 70
			D -40 to 85
			9 Customer specific



**AB-X36DXXX Series** Continued  
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Rev. C

### 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
Enable/Disable Voltage	Ven/dis	0 to Vcc	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			60	80	mA		
Output Logic Type				LVPECL				
Load		Output to Vcc-2V, or Thevenin Equivalent		50		Ohm		
Output Levels	Voh Vol	overall	Vcc- 1.025		Vcc- 1.620	V		
Duty Cycle (Symmetry)		At 50% of output voltage swing	45/55	50/50	55/45	%		
Rise/Fall Time	Tr/Tf	20 to 80, 80 to 20 %		0.5	0.7	ns		
<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)	622.080 MHz, APR 50ppm or less	@ 10 Hz @ 100 Hz @ 1 KHz @ 10KHz @ 100KHz @ >1MHz	-60 -90 -118 -135 -140 -145	-55 -85 -113 -130 -135 -140	dBc/Hz		
Frequency Stability, usually not specified - unless necessary, APR is specified to incorporate 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		
Enable		Pin 2 = Low, 0 to Vcc- 1.62V	Enabled			V		
Disable		Pin 2 = High, Vcc-1.025V to Vcc	Disabled, Pin 4 = Logic "1", Pin 5 = Logic "0"			V		



FREQUENCY  
CONTROLS, INC.

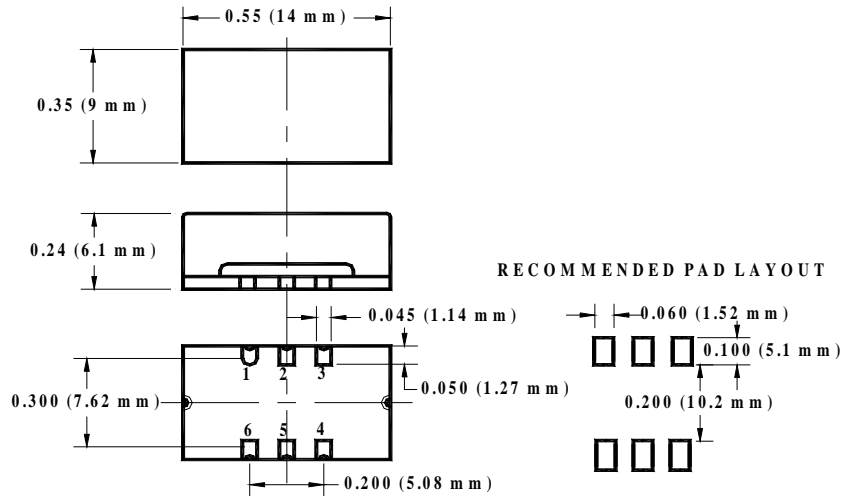
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**Electrical Connection**

Pin	Connection
1	V <sub>CO</sub>
2	Enable/Disable
3	V <sub>EE</sub>
4	Output
5	Output Complement
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**

