AB-X36DXX-X Series
PECL/LVPECL UHF VCXO

Rev. M

Description

The AB-X36DXX 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'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
- Extremely 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
- RoHS compliant, Lead Free Construction
- COTS/Dual use

Creating a Part Number

AB - X 36D X X - X - FREQ

Package code
AB 6 pad 9x14 mm SMD

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

Temperature Range, °C
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 and is not designed for reflow
R RoHS compliant

Note: Not all combinations are available.

NEL FREQUENCY CONTROLS, INC.
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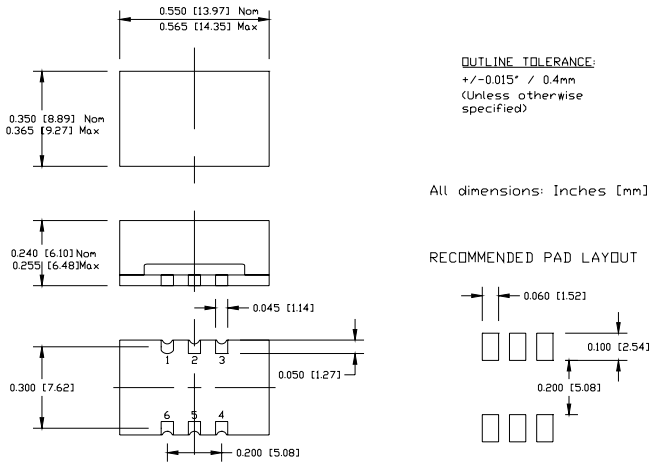
Drawing Specification



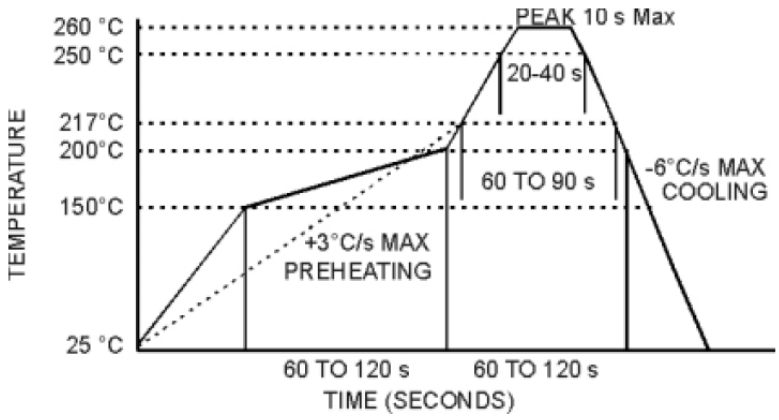
OUTLINE TOLERANCE:
±0.015" / 0.4mm
(Unless otherwise specified)

PIN FUNCTIONS:
[1] Vco
[2] ENABLE / DISABLE
[3] V_{EE}
[4] OUTPUT
[5] OUTPUT COMPL
[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 5.5	V
Enable/Disable Voltage	Ven/dis	0 to Vcc	V
Control Voltage	Vc	-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 Code B		4.75 3.135 2.375	5.0 3.3 2.5	5.25 3.465 2.625	V
Supply current		Icc				60	80	mA
Output Logic Type						LVPECL		
Load			Ouutput 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
Jitter	Integrated	J	Integrated from Phase Noise, 12 KHz to 20 MHz , RMS			0.1	0.2	ps
			10Hz 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		-60 -90 -118 -135 -140 -145	-55 -85 -113 -130 -135 -140	dBc/Hz
Sub-harmonics			@ 622.08MHz			-50	-46	dBc
Frequency Stability usually not specified unless necessary. APR is specified to incorporate 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
Enable			Pin 2 = Low, 0 to Vcc-1.62V; or floating		Enabled			V
Disable			Pin 2 = High, Vcc-1.025V to Vcc		Disabled, Pin 4 = Logic “1”, Pin 5 = Logic “0”			V

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

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