AB-A3DCXXX-X Series
LVDS HF VCXO

Rev. K

Description

The AB-A3DCXXX Series of voltage controlled crystal oscillators (VCXO) provides high frequency with LVDS complementary outputs. The outputs can be disabled for test automation or combining multiple clocks. The device does not use any frequency multiplication, providing exceptionally low Phase Noise and Jitter and wide pull. Itôs packaged in a miniature, FR-4 based 9x14 mm SMD package

Applications and Features

- Wide frequency range ï 12.0MHz to 280.000MHz
- Fiber Channel; 10 GbE; Infiniband; Network Processors; SONET/SDH
- High Reliability ï NEL HALT/HASS qualified for crystal oscillator start-up conditions
- Extremely Low Phase Noise and Jitter
- High Shock Resistance, to 1000g
- No Multiplication
- Absolute Pull Range (APR) to ±1000 ppm
- SONET ± 20 ppm overall free-run stability available
- COTS/Dual use

Creating a Part Number

AB - A 3DC X X X - X - FREQ

Package code
AB 6 pad 9x14 mm SMD

Operating Voltage
A 3.3 V ± 5%

Enable Option
H Positive CMOS Level
N N/A

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 and is not designed for reflow
R RoHS compliant

NEL FREQUENCY CONTROLS, INC.

357 Beloit Street, Burlington, WI 53105 U.S.A. Phone 262/763-3591 FAX 262/763-2881

Email: nelsales@nelfc.com www.nelfc.com

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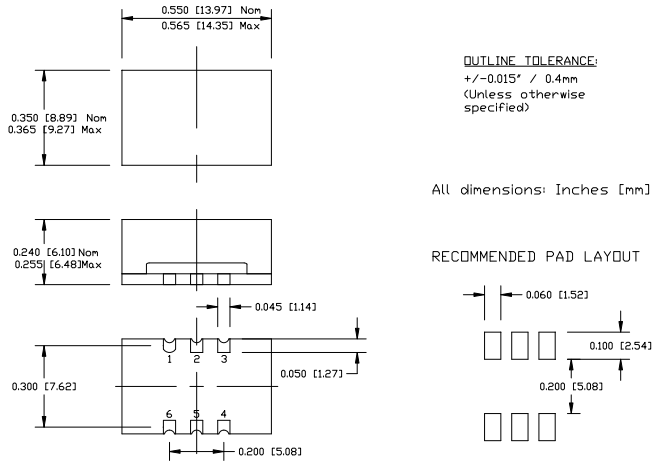
Drawing Specification



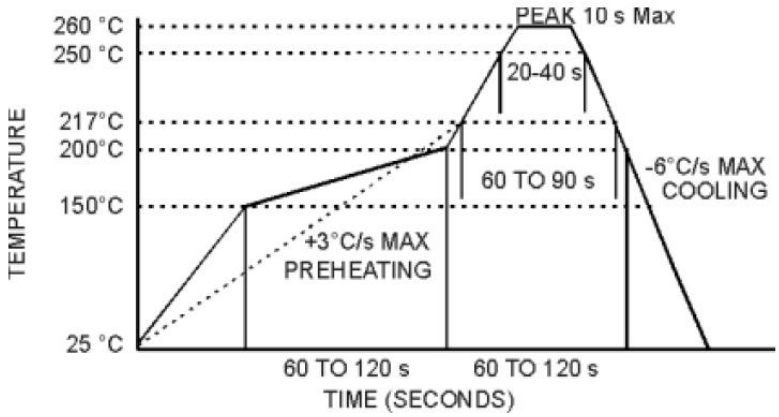
OUTLINE TOLERANCE:
±0.015" / 0.4mm
(Unless otherwise specified)

PIN FUNCTIONS:
[1] Vco
[2] ENABLE / DISABLE
[3] GROUND
[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

Electrical Parameters (1)

Parameter		Symb	Conditions, Note		MIN	TYP	MAX	Unit
Nominal Frequency		Fo			12		280	MHz
Supply Voltage		Vcc	Code A		3.135	3.3	3.465	V
Supply current		Icc				80	100	mA
Output Logic Type						LVDS		
Load			At receiving end between the outputs		90	100	110	Ohm
Output Levels		Vod	Differential amplitude		247	330	454	mV
			Amplitude error				50	mV
		Vof	Offset Voltage		1.125	1.25	1.375	V
			Offset voltage error				50	mV
Duty Cycle (Symmetry)			At outputs crossing, room temperature		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
			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			17		ps
			Deterministic			0		ps
Phase Noise		£(qpf)	155.52MHz, APR 50 ppm or less	@ 10 Hz @100 Hz @1 KHz @10KHz @100KHz @>1MHz		-75 -105 -128 -142 -147 -147	-70 -100 -125 -140 -145 -145	dBc/Hz
Sub-harmonics					None			dBc
Frequency Stability		qpF/F	Overall, including temperature, aging 10 years, shock and vibration @ Vc=Vcc/2; APR 50ppm, or less		±20	±30	0	ppm
Control Voltage Range		Vc			0V		Vcc	V
Setability		Vcs	Vc to set F at Fo; T, Vcc, load ï 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/Disable Option Pin 2 Enabled Pin 2 Disabled			 CMOS logic 1 or N/C CMOS logic 0		 0.7 Vcc 0		 Vcc 0.3 Vcc	V

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

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