Rev. A

AA-X29RXXX Series
LVPECL XO

Description

The AA-X29RXXX Series of crystal oscillators (XO) provides ultra low phase noise floor LVPECL complementary outputs. The outputs can be disabled for test automation or combining multiple clocks. The device packaged in a miniature, low profile, leadless FR-4 based package with gold plated pads, which enhances compatibility with PCB material.

Applications and Features

- Ultra Low Phase Noise (-160dBc/Hz)
- Fiber Channel; 10 GbE; Infiniband; Network Processors; SOHO Routing
- High Reliability – NEL HALT/HASS qualified for crystal oscillator start-up conditions
- Fast Rise and Fall times
- Tight frequency stability - ±20 ppm overall available
- RoHS compliant, Lead Free Construction
- Low cost

Creating a Part Number

AA - X 29R X X X

Package code
AA 6 pad 7.5x5.2mm SMD

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

Enable Option
L Enable Low
N N/C

Overall Frequency Stability, ppm
E ±20
F ±25
G ±50
H ±100
9 Customer specific

Temperature Range, ºC
A 0 to 50
B 0 to 70
C -20 to 70
D -40 to 85
9 Customer Specific

NEL FREQUENCY CONTROLS, INC.

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Rev. A

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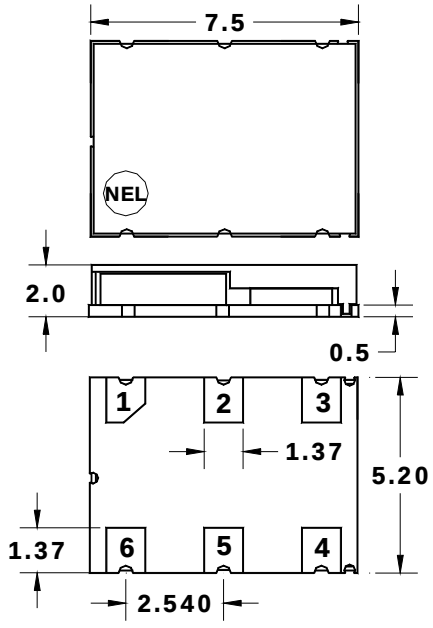
Drawing Specification



OUTLINE TOLERANCE:
Dimension are typical in mm

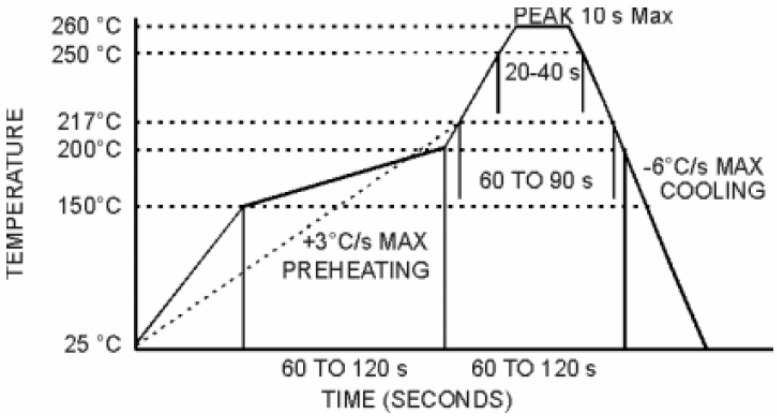
PIN FUNCTIONS:
[1] EN / DIS or N/C
[2] N/C
[3] Gnd
[4] OUTPUT
[5] /OUTPUT
[6] Vcc

MARKING (EXAMPLE):
AA-XXXX

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 , crystal only.
Soldering conditions	See MAX reflow profile below

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

Parameter		Symb	Conditions, Note		MIN	TYP	MAX	Unit
Nominal Frequency		Fo			10		125	MHz
Supply Voltage		Vcc	Code 0 Code A		3.135 2.375	3.3 2.5	3.465 2.625	V
Supply current		Icc				50	60	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
Jitter	Integrated	J	Integrated from Phase Noise, 12 KHz to 20 MHz , RMS			0.1		ps
	Wavecrest characterized		Random period,			2.5		ps
			Accumul., pk-to-pk			25		ps
			Determin.			0		ps
Phase Noise		£(Δf)	106.250MHz	@ 10 Hz @100 Hz @1 KHz @10KHz @100KHz @>1MHz		-75 -105 -135 -150 -160 -160		dBc/Hz
Frequency Stability		ΔF/F	Overall, including initial calibration, temperature, aging 10 years, shock and vibration		See "Creating a Part Number" Not all combinations available, consult factory			ppm
Enable Low Option Disabled Enabled			 PECL Logic "1" PECL Logic "0" or floating		 Vcc-1 0		 Vcc Vcc-1.6	V

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