

**LVPECL HF/UHF CLOCK (XO)  
AA-X29LXXX-X Series**

**Description**

The **AA-X29LXXX Series** of quartz crystal oscillators provides ultra high frequency with LVPECL complementary outputs. The outputs can be disabled for test automation or combining multiple clocks. The device is based on low noise analog harmonic multiplication, and packaged in a miniature, low profile leadless FR4 based package with gold plated pads, which enhances compatibility with PCB material.

**Applications and Features**

- Ultra High Frequency – 10.0MHz to 625.000MHz
- 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 -  $\pm 20$  ppm overall available
- Low cost
- COTS/Dual use

Creating a Part Number			
AA - X 29L X X X - X - FREQ			
<b>Package Code</b>	AA	6 pad 7.5x 5.2mm SMD	
<b>Input Voltage</b>	A	3.3V $\pm 5\%$	
	B	2.5V $\pm 5\%$	
<b>Enable Option</b>	L	Enable Low	
	N	N/C	
		<b>Temperature Range, °C</b>	
		A	0 to 50
		B	0 to 70
		C	-20 to 70
		D	-40 to 85
		9	Customer specific
		<b>Environmental</b>	
		L	Contains level of lead that is in excess of RoHS directive and is not designed for reflow
		R	RoHS compliant
		<b>Overall Frequency Stability, ppm</b>	
		E	$\pm 20$
		F	$\pm 25$
		G	$\pm 50$
		H	$\pm 100$
		9	Customer specific



**AA-X29LXXX-X Series Continued  
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**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	Sym	Conditions, Note	MIN	TYP	MAX	Unit	
Nominal Frequency	Fo		10		625	MHz	
Supply Voltage	Vcc	Code A Code B	3.135 2.375	3.3 2.5	3.465 2.625	V	
Supply current	Icc			80	100	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 % 125 to 625MHz 10 to 125MHz		0.35 0.5	0.4 0.7	ns	
<b>Jitter</b>	Integrated	J	Integrated from Phase Noise, 12 KHz to 20 MHz , RMS		0.2	ps	
	Wavecrest characterized		Random period,	2.5 2.5		ps	
			Accumul., pk-to-pk		25		ps
			Deterministic		3	6	
Phase Noise	£(Δf)	212.5 MHz	@ 10 Hz @100 Hz @1 KHz @10KHz @100KHz @>1MHz	-65 -95 -125 -140 -145 -148		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	

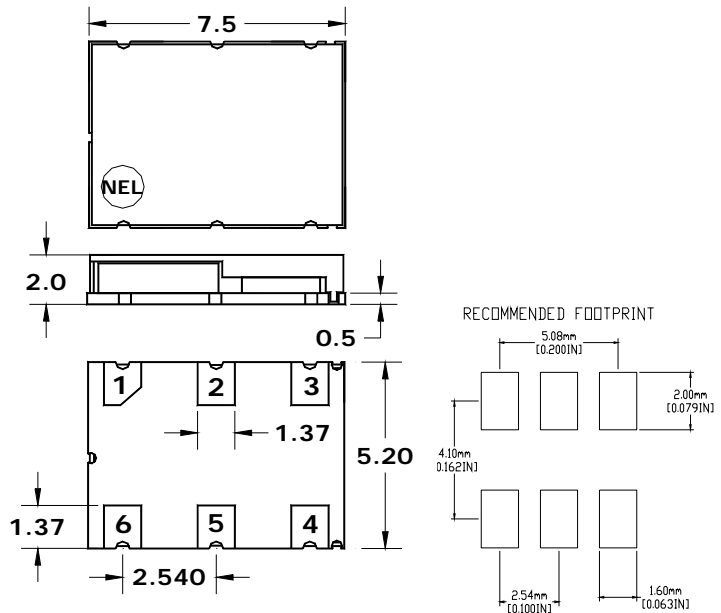


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**Electrical Connection**

Pin	Connection
1	Enable/Disable or No Connect
2	N.C. or Gnd
3	Gnd
4	Output
5	/Output
6	V <sub>CC</sub>

Dimensions are typical in mm

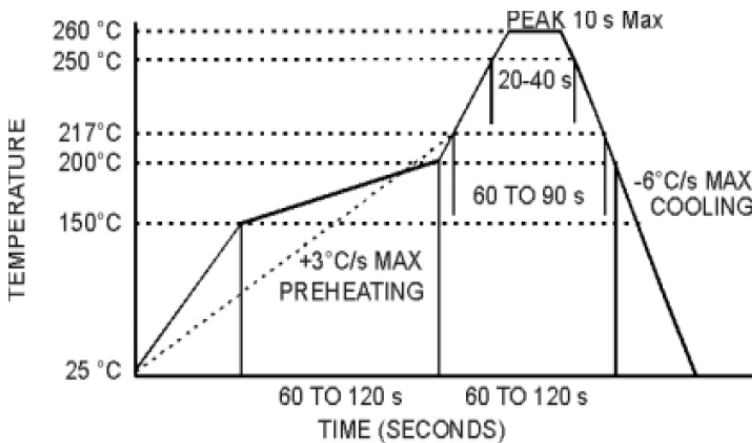


Based on IPC7351

**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; The device may be reflowed once. Reflowing upside down is not allowed. NO CLEAN assembly is recommended

**Maximum Reflow Profile**



The device may be reflowed once. Reflowing upside down is not allowed. NO CLEAN assembly is recommended

