AA-X56AXXX Series
LVPECL XO

Rev. B

Description

The AA-X56XXX Series of crystal oscillators (XO) provides customer selectable four frequency LVPECL complementary outputs in very wide frequency range up to 1.5 GHz. 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

- Customer selectable output frequency up to 1,500 MHz
- 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
- Low cost
- COTS/Dual use

Creating a Part Number

AA - X 56A X X X - X - F1/F2/F3/F4, MHz

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

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

Overall Frequency Stability, ppm
E ±20
F ±25
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.
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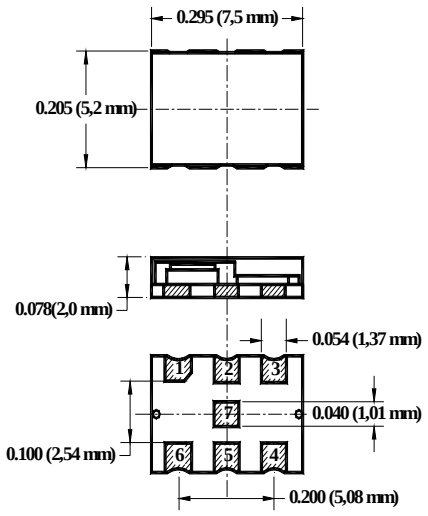
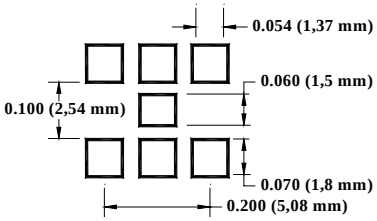
Drawing Specification



Recommended solder pads layout



OUTLINE TOLERANCE:
Dimension are typical in mm

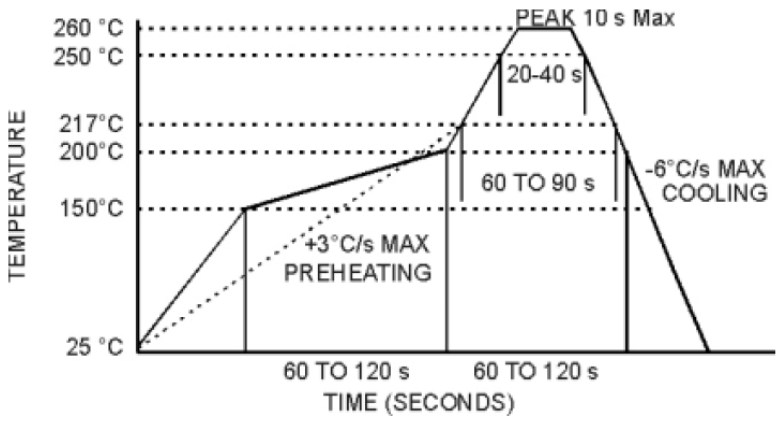
PIN FUNCTIONS:
[1] EN / DIS or N/C
[2] Fsel1
[3] Gnd
[4] OUTPUT
[5] /OUTPUT
[6] Vcc
[7] Fsel2

MARKING (EXAMPLE):
XX-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; 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 3.6	V
Enable/Disable Voltage	Ven/dis	0 to Vcc	V

Electrical Parameters

Parameter	Symb	Conditions, Note		MIN	TYP	MAX	Unit
Nominal Frequency	Fo			10		1,500	MHz
Supply Voltage	Vcc	Code A Code B		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 %			0.3	0.5	ns
Fsel Function		Fsel1=HIGH,Fsel2=HIGH Fsel1=LOW, Fsel2=HIGH Fsel1=HIGH,Fsel2=LOW Fsel1=LOW, Fsel2=LOW			F1 F2 F3 F4		
Jitter Integrated	J	Integrated from Phase Noise, 12 KHz to 20 MHz , RMS				1.0	ps
Phase Noise	£(Δf)	106.250MHz	@1 KHz @10KHz @100KHz @1MHz @10 MHz		-115 -125 -125 -130 -145		dBc/Hz
		622.08 MHz	@1 KHz @10KHz @100KHz @1MHz @10 MHz		-100 -105 -110 -125 -142		dBc/Hz
		1,000 MHz	@1 KHz @10KHz @100KHz @1MHz @10 MHz		-95 -103 -105 -125 -142		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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