AA-X53AXXX Series
LVCMOS XO

Rev. B

Description

The AA-X53AXXX Series of crystal oscillators (XO) provides customer selectable four frequency LVCMOS output in wide frequency range up to 250 MHz. The output 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 250 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 53A 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
H Enable High
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.
357 Beloit Street, P.O. Box 457, Burlington, WI 53105-0457 U.S.A. Phone 262/763-3591 FAX 262/763-2881
Email: nelsales@nelfc.com www.nelfc.com

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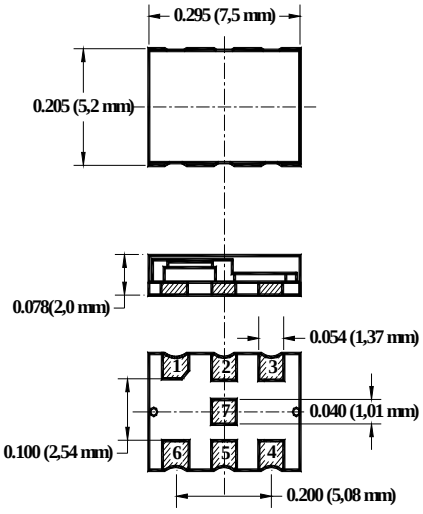
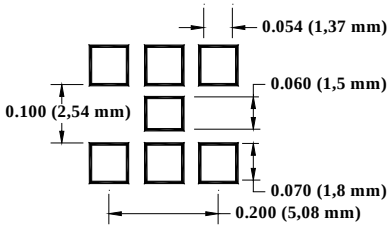
Drawing Specification





Recommended solder pads layout

OUTLINE TOLERANCE:
Dimension are typical in mm

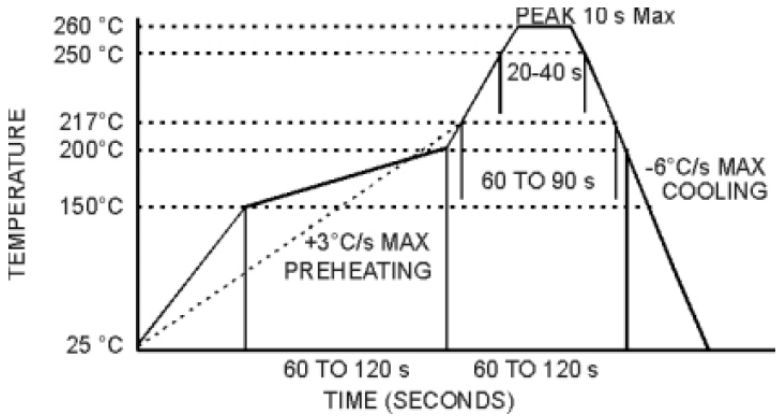
PIN FUNCTIONS:
[1] EN / DIS or N/C
[2] Fsel1
[3] Gnd
[4] OUTPUT
[5] Fsel2
[6] Vcc
[7] N/C

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		F1,F2, F3, F4			10		250	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						LVCMOS		
Load						15 pF in parallel with 10 KOhm		
Output Levels		Voh Vol	overall		0.9Vcc		 0.1Vcc	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 %			2.0	3	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)	125.00 MHz	@1 KHz @10KHz @100KHz @1MHz @10 MHz		-112 -122 -125 -145 -152		dBc/Hz
			156.25 MHz	@1 KHz @10KHz @100KHz @1MHz @10 MHz		-110 -118 -122 -138 -150		dBc/Hz
			212.5 MHz	@1 KHz @10KHz @100KHz @1MHz @10 MHz		-107 -115 -118 -135 -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 High Option Disabled Enabled			 CMOS Logic "0" CMOS Logic "1" or floating		 0 0.7Vcc		 0.1 Vcc Vcc	V

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