LVCMOS-X Very Low Current
S1-XD3XXX Series

Rev. D

Description

The S1-XD3XXX Series of quartz crystal oscillators provide LVCMOS output with very low power consumption. The device is packaged in a miniature, FR4 based 9x14mm SMD package.

Applications and Features

- Battery powered equipment
- High Reliability – NEL HALT/HASS qualified for crystal oscillator start-up conditions
- Extremely Low Power consumption
- Frequency stability from ±20 ppm
- High Shock Resistance, to 1000g
- COTS/Dual use

Creating a Part Number

S1 - X D3 X X X - X - FREQ

Package code
S1 9x14 mm SMD package

Operating Voltage
B – 2.5 V ± 5%
C – 1.8V ± 5%

Tri-state Option
T Tri-state
N NA

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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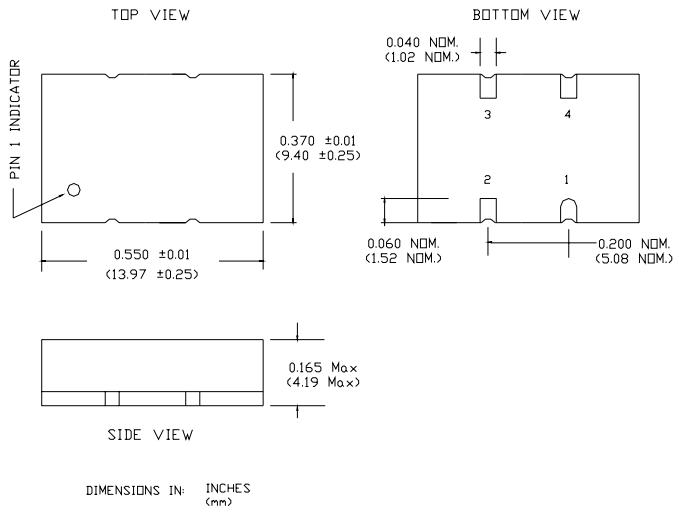
Drawing Specification



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

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Electrical Parameters

Parameter		Symb	Conditions, Note		MIN	TYP	MAX	Unit
Nominal Frequency		Fo			8.0		52	MHz
Supply Voltage		Vcc	Code B Code C		2.375 1.71	2.5 1.8	2.625 1.89	V
Supply current (1)		Icc	No load, Vcc = 2.5V 10MHz,			1.8	2.0	mA
Output Logic Type						CMOS		
Load						15 pF/10 KOhm		Ohm
Output Levels		Voh Vol	overall		0.9Vcc		0.1 Vcc	V
Duty Cycle (Symmetry)			At 50% Vcc		45/55	50/50	55/45	%
Rise/Fall Time		Tr/Tf	0.2Vcc to 0.8 Vcc			5	10	ns
Jitter @ 10MHz	Integrated, RMS	J	Integrated from Phase Noise, 12KHz to 20MHz, RMS			0.2	0.3	ps
			100Hz to 80KHz, RMS				0.7	
			50Khz to 80MHz			0.2		
	Wavecrest Characterized		Random period			2.5		
			Accumul, pk-to-pk			17		
			Deterministic			0		
Sub-harmonics						0		Ps
Phase Noise		£(Δf)	10MHz	@10Hz @100Hz @1kHz @10kHz @100Khz @>1MHz		-85 -115 -145 -145 -145 -145		Dbc/Hz
Enable			Pin 2 = High, or Floating		Enabled			
Disable			Pin 2 = Low		Tri-stated, output – high Z			

Note:
1) Supply current depends on frequency and supply voltage. It's roughly proportional to the frequency of operation, and supply voltage squared. One can estimate the current for particular application using above information. If more detailed information is needed – please consult factory.

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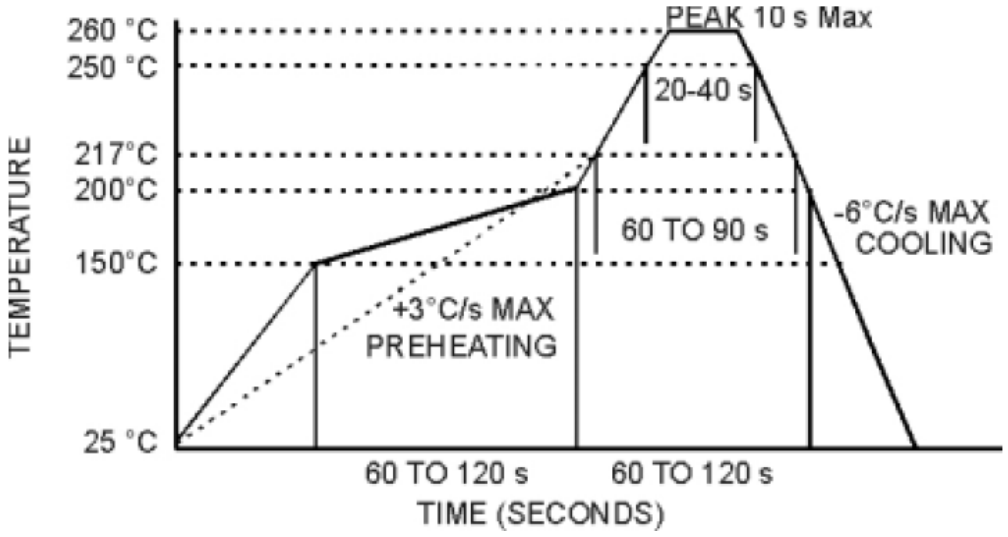
Environmental and Mechanical Characteristics

Operating temp. range	See part number 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 $5x10^{-8}$ 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.
Pin Out	Pin 1 – N/C, Pin 2 – GND, Pin 3, Output, Pin 4 – Vcc

MAX Reflow Profile



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