

**CMOS/LVCMOS Very Low Current  
S1-XD4XXX-X Series**

Rev. E

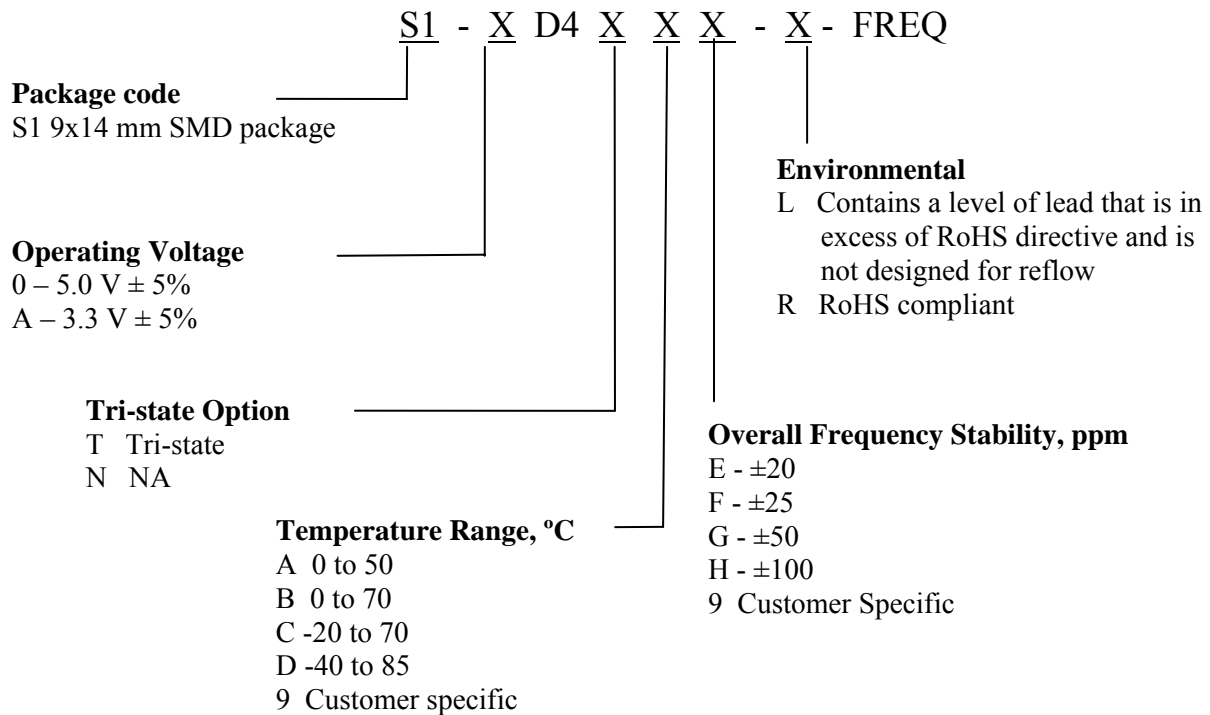
**Description**

The **S1-XD4XXX 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  $\pm 20$  ppm
- High Shock Resistance, to 1000g
- COTS/Dual use

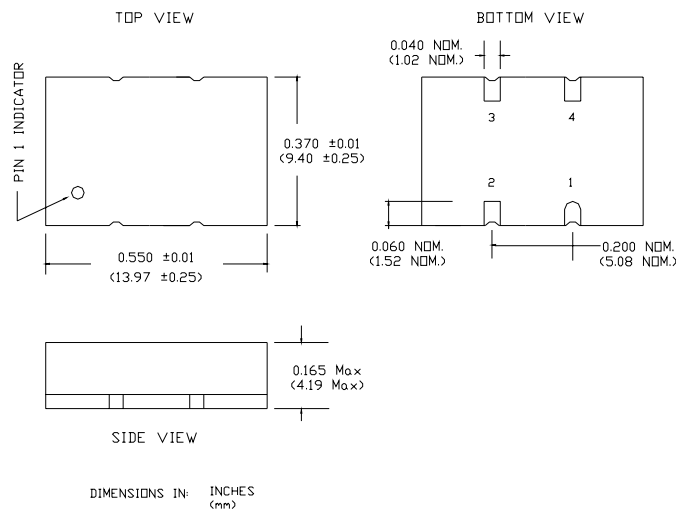
**Creating a Part Number**



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Drawing Specification



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 5.5	V
Enable/Disable Voltage	Ven/Dis	0 to Vcc	V

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### Electrical Parameters (2)

Parameter		Symb	Conditions, Note	MIN	TYP	MAX	Unit
Nominal Frequency		Fo		4.0		32	MHz
Supply Voltage		Vcc	Code 0 Code A	4.75 3.135	5.0 3.3	5.25 3.465	V
Supply current <sup>(1)</sup>		Icc	No load, Vcc=5.0V 10MHz		1.8	2.2	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		0.3	0.5	ps
			100Hz to 80KHz, RMS			0.8	
			50Khz to 80MHz		0.3		
	Wavecrest Characterized	Random period		2.5			
		Accumul, pk-to-pk		17			
		Deterministic		0			
Sub-harmonics					None		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.
- 2) All parameters, unless otherwise specified, are at nominal conditions, ie: T=25°C, Nominal Vcc & Nominal Load.

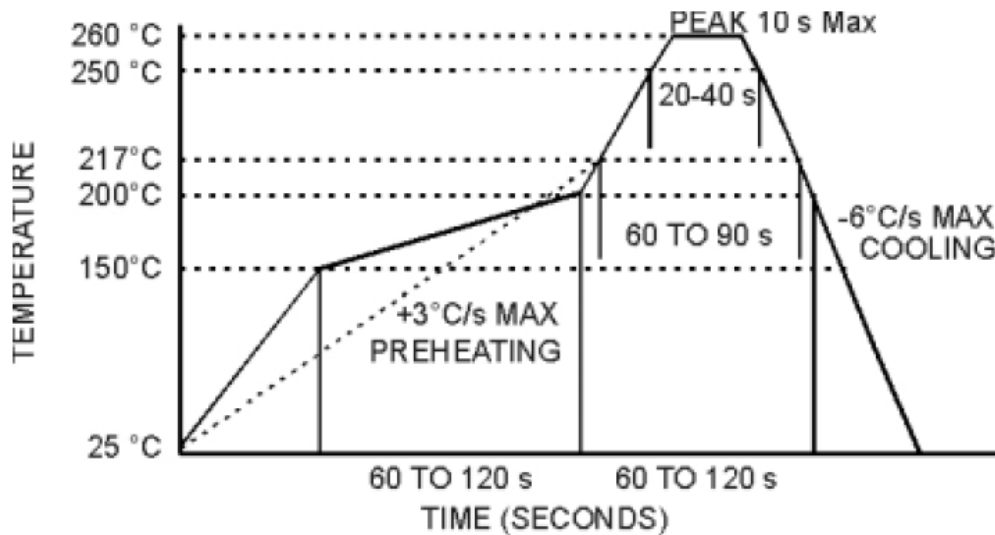
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**Environmental and Mechanical Characteristics**

<b>Operating temp. range</b>	See part number table
<b>Mechanical Shock</b>	Per MIL-STD-202, Method 213, Cond. A
<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 $5 \times 10^{-8}$ 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.
<b>Pin Out</b>	Pin 1 – N/C, Pin 2 – GND, Pin 3, Output, Pin 4 – Vcc

**MAX Reflow Profile**



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

