

CMOS/LVCMOS HF VCXO SU-X32AXXX Series

Description

The **SU-X32AXXX Series** of voltage controlled crystal oscillators (VCXO) provides high frequency with CMOS/LVCMOS outputs. The outputs can be Tri-stated for test automation or combining multiple clocks. The device does not use any frequency multiplication, providing exceptionally low Phase Noise and Jitter. It is packaged in a miniature, FR-4 based 9x14 mm SMD package.

Applications and Features

- Wide frequency range – 12.0MHz to 250.000MHz
- Fiber Channel; 10 GbE; Infiniband; Network Processors; SONET/SDH
- High Reliability - NEL HALT/HASS qualified for crystal oscillator start-up conditions
- Extremely Low Phase Noise, Low Jitter
- No Multiplication
- SONET ± 20 ppm overall free-run stability available
- Absolute Pull Range (APR) to ± 100 ppm
- High shock resistance, to 1000g
- RoHS Compliant, Lead Free Construction

Creating a Part Number	
SU - X 32A X X X - FREQ	
Package Code	Absolute Pull Range, ppm
SU 6 pad 9x14mm SMD	E ± 20
	F ± 32
	G ± 50
	H ± 100
	9 Customer specific
Input Voltage	
5.0V $\pm 5\%$	
A 3.3V $\pm 5\%$	
B 2.5V $\pm 5\%$	
Tri-State Option	Temperature Range, °C
T Tri-state	A 0 to 50
N N/A	B 0 to 70
	C -20 to 70
	D -40 to 85
	9 Customer specific



SU-X32AXXX Series Continued
CMOS/LVCMOS HF VCXO

Rev. D

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		Symb	Conditions, Note	MIN	TYP	MAX	Unit
Nominal Frequency		Fo		12		250	MHz
Supply Voltage		Vcc	Code Code A Code B	4.75 3.135 2.375	5.0 3.3 2.5	5.25 3.465 2.625	V
Supply current		Icc	No load, Vcc=3.3V 40MHz			80	mA
Output Logic Type					CMOS		
Load					15pf/10 KOhm		Ohm
Output Levels		Voh Vol	overall	0.9Vcc		0.1Vcc	V
Duty Cycle (Symmetry)			At 50 % Vcc	45/55	50/50	55/45	%
Rise/Fall Time		Tr/Tf	0.2Vcc to 0.8 Vcc; F<70 MHz 70 MHz<F<125MHz 125MHz<F<250MHz		321.5	532.5	ns
Jitter	Integrated	J	Integrated from Phase Noise, 12 KHz to 20 MHz , RMS		0.1	0.15	ps
			10 Hz to 80 KHz, RMS			0,8	ps
			50 Khz to 80 Mhz		0,2		ps
	Wavecrest characterized		Random period,		2.5		ps
			Accumul., pk-to-pk		17		ps
			Deterministic		0		ps
Sub-harmonics					None		dBc
Phase Noise		£(Δf)	155.52 MHz. APR 50ppm or less	@ 10 Hz @100 Hz @1 KHz @10KHz @100KHz @>1MHz	-75 -105 -135 -160 -165 -165	-70 -100 -130 -155 -160 -160	dBc/Hz
Frequency Stability, usually not specified - unless necessary, APR is specified to incorporate stability		ΔF/F	Overall, including initial calibration, temperature, aging 10 years, shock and vibration @ Vc=Vcc/2; APR 50ppm, or less	±20	±30		ppm
Control Voltage Range		Vc		0V		Vcc	V
Setability		Vcs	Vc to set F at Fo; T, Vcc, load - nominal, as shipped	0.4 Vcc	0.5 Vcc	0.6 Vcc	V
Absolute Pull Range		APR	Over all conditions, see part # creation	2e+08			ppm
Input Impedance		Zin	@ Fmod < 100 KHz	50			KOhm
Modulation Bandwidth			At Vc = Vcc/2, -3dB	20			KHz
Enable			Pin 2 = High, or floating	Enabled			V
Disable			Pin 2 = Low	Tri-stated, output - High Z			V

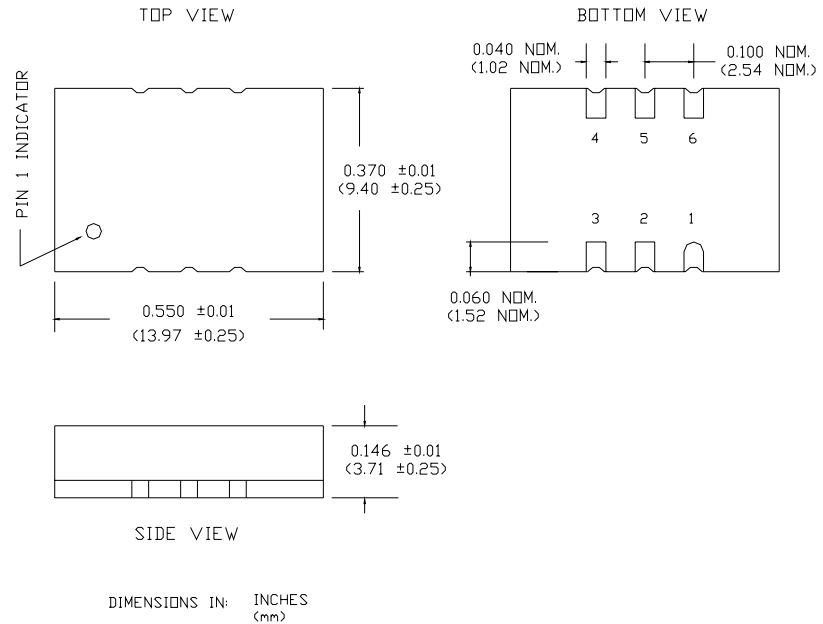


SU-X32AXXX Series Continued CMOS/LVCMOS HF VCXO

Rev. D

Electrical Connection

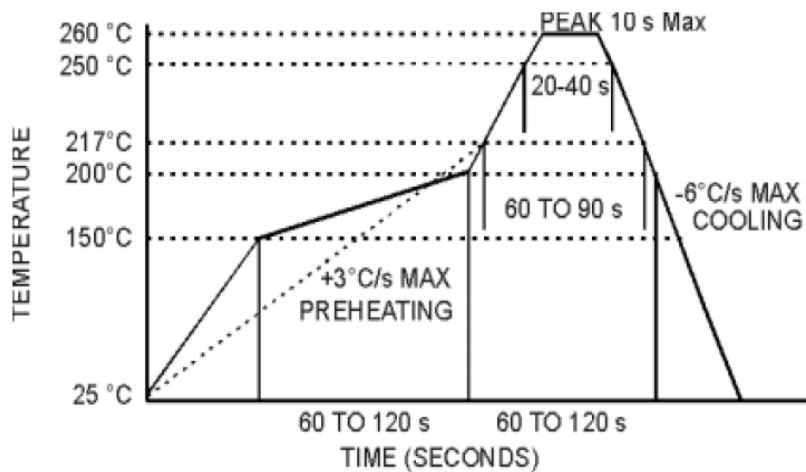
Pin	Connection
1	V _{co}
2	Enable/Disable
3	Gnd
4	Output
5	NC
6	V _{cc}



Environmental and Mechanical Characteristics

Operating temp. range	see part # table
Mechanical Shock	Per MIL-STD-202, Method 213, Cond. E
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 1×10^{-8} atm.cc/s of helium
Soldering conditions	See MAX reflow profile below

Maximum Reflow Profile



**FREQUENCY
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