

## LVPECL HF VCXO SH-X36JXXX-X Series

Rev. E

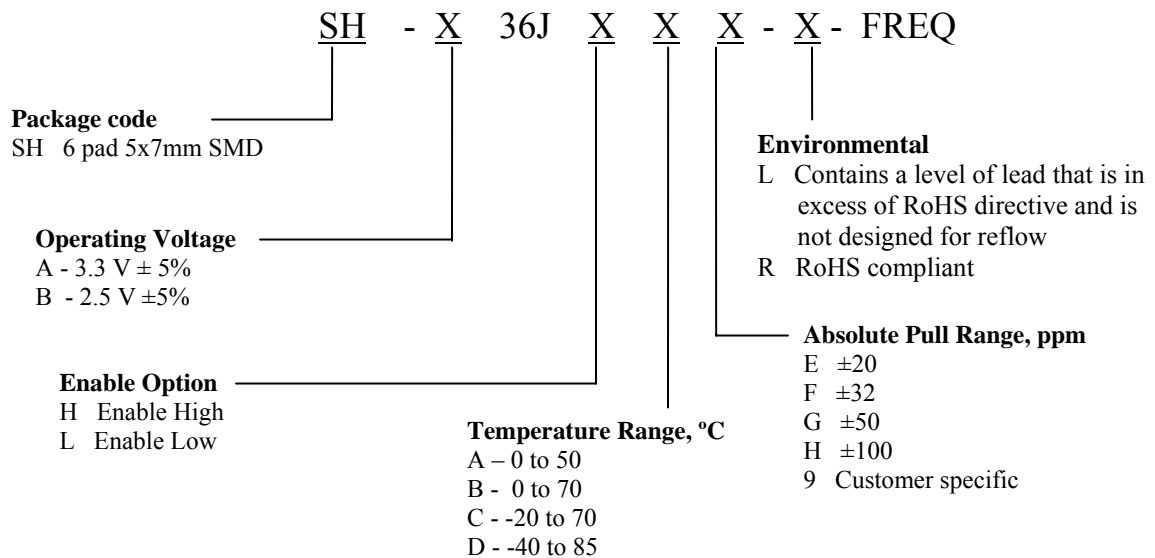
### Description

The **SH-X36JXXX Series** of voltage controlled crystal oscillators (VCXO) provides LVPECL complementary outputs. The outputs can be Tri-stated for test automation or combining multiple clocks. The device is based on fundamental crystal designs, minimizing phase jitter, and packaged in a miniature, low profile leadless ceramic SMD package with 6 gold plated pads.

### Applications and Features

- Wide frequency range – 10.0MHz to 180.000MHz
- Fiber Channel; 10 GbE; Infiniband; Network Processors; SOHO Routing
- High Reliability – NEL HALT/HASS qualified for crystal oscillator start-up conditions
- Low Phase Noise and Jitter
- High Shock Resistance, to 1000g
- High Frequency
- Absolute Pull Range (APR) to  $\pm 100$  ppm
- Grounded lid and internal by-pass capacitor reduce EMI
- COTS/Dual use

### Creating a Part Number



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### 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		10		180	MHz
Supply Voltage	Vcc	Code A	3.135	3.3	3.465	V
		Code B	2.375	2.5	2.625	
Supply current	Icc			80	100	mA
Output Logic Type				LVPECL		
Load		Output to Vcc-2V, or Thevenin equivalent		50		Ohm
Output Levels	Voh	Overall	Vcc-1.025		Vcc-1.620	mV
	Vol					
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 %		0.5	0.7	Ns
Jitter	Integrated	J	Integrated from Phase Noise, 12 KHz to 20 MHz, RMS			Ps
		Accumul., pk-to-pk		30	ps	
		Deterministic		0		ps
Phase Noise	£(Δf)	155.52 MHz	@ 10 Hz		-65	dBc/Hz
			@100 Hz		-95	
			@1 KHz		-125	
			@10KHz		-140	
			@100KHz		-145	
			@>1MHz		-148	
Frequency Stability	ΔF/F	Overall, including temperature, aging 10 years, shock and vibration @ Vc=Vcc/2		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	20,32, 50,100			ppm
Input Impedance	Zin	@ Fmod ≤ 100 KHz	10			KOhm
Modulation Bandwidth		At Vc = Vcc/2, -3dB	10			KHz
Enable High Option						
Pin 2 Enabled		CMOS logic 1 or N/C	0.7 Vcc		Vcc	V
Pin 2 Disabled		CMOS logic 0	0		0.3 Vcc	
Enable Low Option						
Pin 2 Disabled		CMOS logic 1 or N/C	0.7 Vcc		Vcc	V
Pin 2 Enabled		CMOS logic 0	0		0.3 Vcc	



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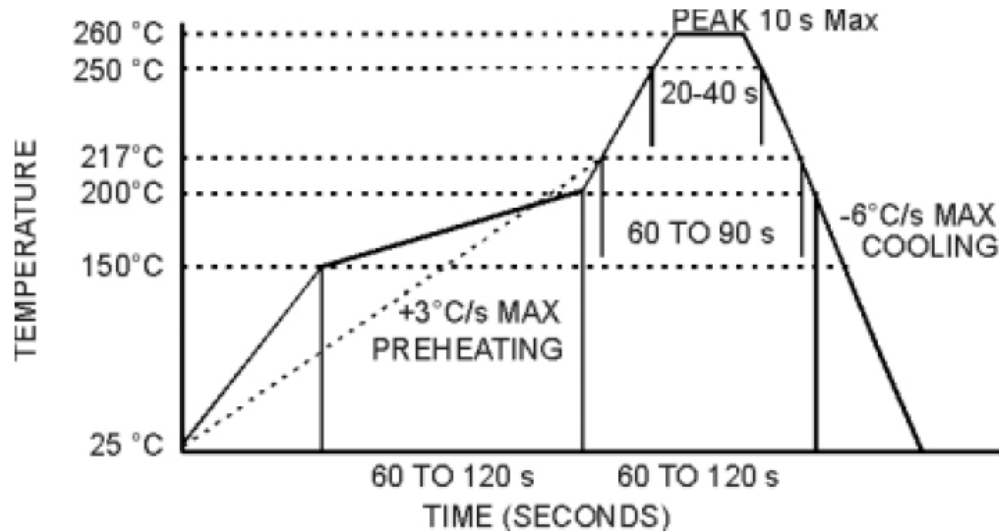
<b>Electrical Connection</b>	
Pin	Connection
1	V <sub>CO</sub>
2	Enable
3	V <sub>EE</sub>
4	Output
5	Output Complement
6	V <sub>CC</sub>

Tolerances +/- 0.127mm (0.005IN) unless noted

## Environmental and Mechanical Characteristics

<b>Operating temp. range</b>	see part # 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 $1 \times 10^{-8}$ atm.cc/s of helium
<b>Soldering conditions</b>	See MAX reflow profile below

## MAX Reflow Profile



Drawn by:	BLN	Date:	05/08/07
Tech Dir:	RB	Date:	05/08/07
Design Eng:	DTJ	Date:	05/08/07
Dir Eng:	JAL	Date:	05/08/07
VP Sales/Mktg:	CU	Date:	05/08/07

**REVISION HISTORY**

ECO	REV	DESCRIPTION	DRW	DSN ENG	VP Sales/ Mktg	Date
		Chgd to Word format per CU – Bev 06/05/07				
14157	A	Removed “initial calibration” from freq stability	BLN	DTJ	CU	07/30/07
14373	B	Added environmental to creating a p/n	BLN	DTJ	CU	11/07/07
14604	C	Added –FREQ to creating a p/n	BLN	SR	CU	03/13/08
14685	D	Added footprint	BLN	SR	CU	04/15/08
15591	E	Added COTS/Dual use to apps & features	BLN		Na	01/21/10