

## VCXO Series (CMOS) SH-A3200 Series

### PRELIMINARY

#### Description

The **SH-A3200 Series** of voltage controlled quartz crystal oscillators provide frequency control by applying a voltage to Pin 1. This unit supplies a CMOS compatible output which are enabled when Pin 2 is set to a logic high or left open.

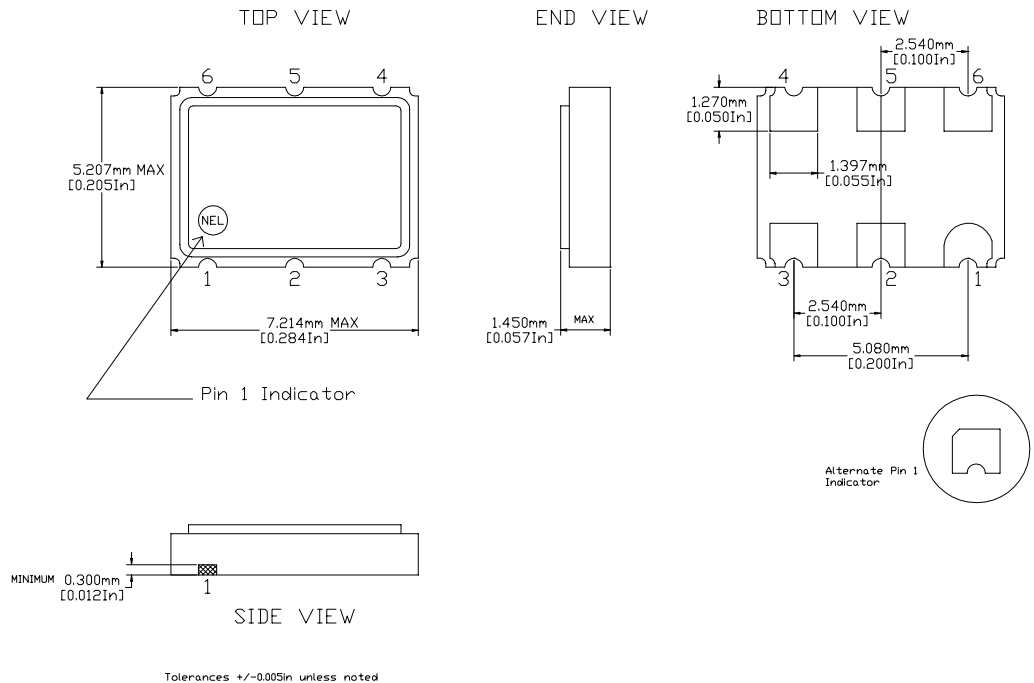
#### Features

- Wide frequency range 60.0MHz to 160.0MHz
- Will withstand vapor phase temperatures of 253°C for 4 minutes maximum
- Space-saving alternative to discrete component oscillators
- High shock resistance, to 1000g
- 3.3 or 2.5 volt operation
- Metal lid electrically connected to ground to reduce EMI
- Low Jitter - Wavecrest jitter characterization available
- High Reliability - NEL HALT/HASS qualified for crystal oscillator start-up conditions
- High Q Crystal actively tuned oscillator circuit
- Power supply decoupling internal
- No internal PLL avoids cascading PLL problems
- High frequencies due to proprietary design
- Gold plated pads
- RoHS Compliant, Lead Free Construction

#### Electrical Connection

Pad Connection

- |   |                 |
|---|-----------------|
| 1 | V <sub>CO</sub> |
| 2 | Enable          |
| 3 | Ground          |
| 4 | Output          |
| 5 | NC              |
| 6 | V <sub>DD</sub> |



SH-A3200 Series Continued  
VCXO (HCMOS)

Rev. -

## Operating Conditions and Output Characteristics

### Electrical Characteristics

Parameter	Symbol	Conditions	Min	Typical	Max
Frequency	-----	-----	60.0MHz	-----	160.0MHz
Duty Cycle	-----	@ V <sub>o</sub> /2	45/55%	-----	55/45%
Logic 0	V <sub>OL</sub>	-----	-----	-----	0.4V
Logic 1	V <sub>OH</sub>	-----	2.4V	-----	-----
Rise & Fall Time	tr,tf	0.8V-2.0V	-----	-----	1.6 ns
Jitter, cycle to cycle	-----	-----	-----	-----	100 psec
Absolute Pull Range	APR	V <sub>CO</sub> =0.3 to 3.0V	±100ppm	-----	-----
Vco input impedance	-----	50na dc current max	130K ohm	-----	-----
Vco linearity	-----	V <sub>CO</sub> =0.3 to 3.0V	-----	-----	10%
Transfer function <sup>(1)</sup>	-----	V <sub>CO</sub> =0.3 to 3.0V	-----	Positive	-----
Phase Noise	-----	@ 100Hz	-----	-----	-95 dBc/Hz
		@ 1kHz	-----	-----	-122 dBc/Hz
		@ 10kHz	-----	-----	-138 dBc/Hz

### General Characteristics

Parameter	Symbol	Conditions	Min	Typical	Max
Supply Voltage	V <sub>DD</sub>	3.3V±10%	2.97V	3.3V	3.63V
Supply Current	I <sub>DD</sub>	-----	-----	-----	20 mA
Output current	I <sub>O</sub>	-----	0.0 mA	-----	±8.5 mA
Operating temperature	T <sub>A</sub>	-----	0°C	-----	70°C
Storage temperature	T <sub>S</sub>	-----	-65°C	-----	150°C
Power Dissipation	P <sub>D</sub>	-----	-----	-----	73 mW
Lead temperature	T <sub>L</sub>	Soldering, 10 sec.	-----	-----	260°C
Load	-----	-----	-----	15pf	-----

### Environmental and Mechanical Characteristics

Mechanical Shock	Per MIL-STD-202, Method 213, Condition E
Thermal Shock	Per MIL-STD-833, Method 1011, Condition A
Vibration	0.060" double amplitude 10 Hz to 55 Hz, 35g's 55Hz to 2000 Hz
Soldering Condition	300°C for 10 seconds
Hermetic Seal	Leak rate less than 1 x 10 <sup>-8</sup> atm.cc/sec of helium

#### Footnotes:

- 1) Frequency increase with increase in control voltage and is monotonic
- 2) Phase noise characterization available

