

# SH-A368X Series



## Size, Low Profile, mm

5 x 7 x 1.45

## I/O

6 pad

## Supply Voltage

3.3V

# VCXO Series (PECL)

## SH-A368X Series *Rev B*

Frequency Range: 60.0 MHz to 200.0 MHz

### Description

The **SH-A368X Series** of voltage controlled quartz crystal oscillators provide frequency control by applying a voltage to Pin 1. This unit supplies DPECL compatible outputs which are enabled when Pin 2 is set to a logic low or left open.

### Features

- Frequency range—60.0MHz to 200.0MHz
- Wide Absolute Pull Range
- Will withstand SMD reflow temperatures of 253°C for 4 minutes maximum
- Space-saving alternative to discrete component oscillators
- High shock resistance, to 1000g
- 3.3 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

### Creating a Part Number

#### SH - A368X - FREQ

#### Package Code

SH 6 pad 5x7mm SMD

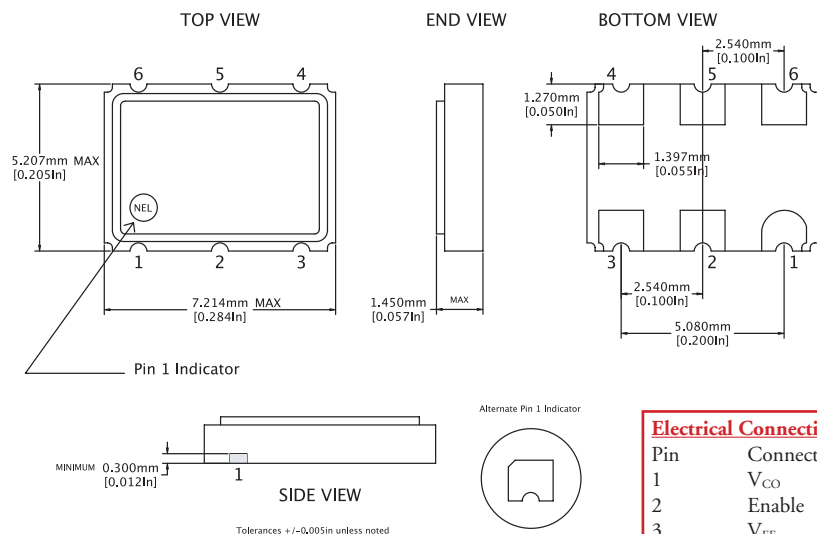
#### Input Voltage

Code Specification  
A 3.3 V

#### APR/Performance

1 ±50 ppm 0-70°C  
9 Customer Specific  
B ±50 ppm -40 to +85°C

### Drawing Specifications



#### Electrical Connections

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



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Frequency Range: 60.0 MHz to 200.0 MHz

### Operating Conditions and Output Characteristics

#### Electrical Characteristics

Parameter	Symbol	Conditions	Min	Typical	Max
Frequency	—	—	60.0 MHz	—	200.0 MHz
Duty Cycle	—	@V <sub>O</sub> /2	45/55%	—	55/45%
Logic 0	V <sub>OL</sub>	—	V <sub>CC</sub> -1.810 Vdc	—	V <sub>CC</sub> -1.620 Vdc
Logic 1	V <sub>OH</sub>	—	V <sub>CC</sub> -1.200 Vdc	—	V <sub>CC</sub> -0.880 Vdc
Rise & Fall Time	t <sub>r</sub> , t <sub>f</sub>	20-80% V <sub>O</sub>	—	—	1.25 ns
Jitter, RMS <sup>(1)</sup>	—	—	—	3 psec	—
Absolute Pull Range <sup>(4)</sup>	APR	V <sub>CO</sub> = 0.3 to 3.0V	—	±100ppm	—
V <sub>CO</sub> Input Impedance	—	50na dc current max	100K ohm	—	—
V <sub>CO</sub> Linearity	—	V <sub>CO</sub> = 0.3 to 3.0V	—	—	10%
Transfer Function <sup>(2)</sup>	—	V <sub>CO</sub> = 0.3 to 3.0V	—	Positive	—

#### General Characteristics

Parameter	Symbol	Conditions	Min	Typical	Max
Supply Voltage	V <sub>CC</sub> -V <sub>EE</sub>	3.3V ±5%	3.135 V	3.3 V	3.465 V
Supply Current	I <sub>CC</sub>	—	—	—	120 mA
Output Current	I <sub>O</sub>	—	0.0 mA	—	±50.0 mA
Operating Temperature	T <sub>A</sub>	—	0°C	—	70°C
Storage Temperature	T <sub>S</sub>	—	-55°C	—	125°C
Power Dissipation	P <sub>D</sub>	—	—	—	416 mW
Lead Temperature	T <sub>L</sub>	Soldering, 10 sec.	—	—	300°C
Load	50 ohm to V <sub>CC</sub> -2V or Thevenin Equivalent, Bias Required				

#### 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 55 Hz 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) Jitter performance is frequency dependent. Please contact factory for full Wavecrest characterization. RMS jitter bandwidth of 12kHz to 20MHz.
- 2) Frequency increase with increase in control voltage and is monotonic.
- 3) Logic levels are dependant on specified load of 50 ohms to V<sub>CC</sub>-2 volts
- 4) Pullability is frequency dependant. Consult factory.