



## LVC MOS SC-C1420 Series

Rev. C

### Description

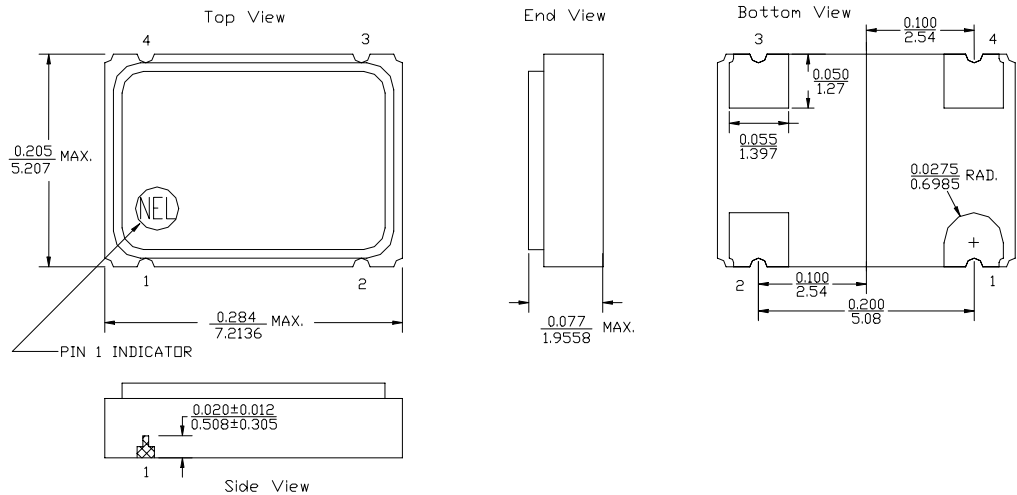
The **SC-C1420 Series** of quartz crystal oscillators provide enable/disable 3-state LVC MOS compatible signals for bus connected systems. Supplying Pin 1 of the SC-C1420 units with a logic "1" or open enables its Pin 3 output. In the disable mode, Pin 3 presents a high impedance to the load.

### Features

- Wide frequency range—4.0MHz to 70.0MHz
- User specified tolerance available
- Space-saving alternative to discrete component oscillators
- 1.8 Volt operation
- High shock resistance, to 1000g
- High Reliability - NEL HALT/HASS qualified for crystal oscillator start-up conditions
- Low Jitter - Wavcrest jitter characterization available
- No internal PLL avoids cascading PLL problems
- Metal lid electrically connected to ground to reduce EMI
- Gold plated pads
- RoHS Compliant, Lead Free Construction

### Electrical Connection

Pin	Connection
1	Enable/Disable
2	Ground
3	Output
4	V <sub>DD</sub>



ALL DIMENSIONS:  $\frac{\text{IN}}{\text{mm}}$   
 All tolerances are ±0.005 inches (±0.127 mm) unless otherwise specified.

SC-C1420 Series Continued  
LVCMOS

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### Operating Conditions and Output Characteristics

#### Electrical Characteristics

Parameter	Symbol	Conditions	Min	Typical	Max
Frequency	----	----	4.0MHz	----	70.0MHz
Duty Cycle	----	@ $V_{DD}/2$	45/55%	----	55/45%
Logic 0	$V_{OL}$	@ 600 $\mu$ A	----	----	0.2V
Logic 1	$V_{OH}$	@ 600 $\mu$ A	$V_{DD}-0.2V$	----	----
Rise & Fall Time	tr,tf	10-90% $V_O$	----	----	8.0 ns
Jitter, Integrated	J	Integrated from phase noise, 12kHz to 20MHz, RMS	----	0.1 ps	----
Jitter, Wavecrest Characterized <sup>(2)</sup>	----	Random Period	----	2.3ps	----
		Accum, pk-to-pk	----	26ps	----
Phase Noise <sup>(4)</sup>	$\epsilon(\Delta f)$	@ 10Hz	----	-70 dBc/Hz	----
		@ 100Hz	----	-105 dBc/Hz	----
		@ 1kHz	----	-130 dBc/Hz	----
		@ 10kHz	----	-145 dBc/Hz	----
		@ 100kHz	----	-150 dBc/Hz	----
		@ >1MHz	----	-150 dBc/Hz	----
$T_{pz}$	----	----	----	----	25 ns
Enable Voltage	----	----	2.0V	----	----
Disable Voltage	----	----	----	----	0.8V
Frequency Stability <sup>(1)</sup>	dF/F	Overall conditions including: voltage, calibration, temp.. 10 year aging, shock, vibration	-100ppm	----	+100ppm

#### General Characteristics

Parameter	Symbol	Conditions	Min	Typical	Max
Supply Voltage <sup>(3)</sup>	$V_{DD}$	1.8V $\pm$ 0.1V	1.7V	1.8V	1.9V
Supply Current	$I_{DD}$	No Load	0.0 mA	----	40 mA
Output current	$I_O$	Low level Output Current	0.0 mA	----	$\pm$ 16.0 mA
Operating temperature	$T_A$	----	0°C	----	70°C
Storage temperature	$T_S$	----	-55°C	----	125°C
Power Dissipation	$P_D$	----	----	----	76 mW
Load	----	----	----	----	15pf
Start-up Time	$t_s$	20MHz or greater	----	----	10 ms
		Less than 20MHz	----	----	2 ms

#### Environmental and Mechanical Characteristics

Mechanical Shock	Per MIL-STD-202, Method 213, Condition E
Thermal Shock	Per MIL-STD-883, Method 1011, Condition A
Vibration	0.060" double amplitude 10 Hz to 55 Hz, 35g's 55Hz to 2000 Hz
Hermetic Seal	Leak rate less than $1 \times 10^{-8}$ atm.cc/sec

#### Footnotes:

- Standard frequency stability ( $\pm$ 20, $\pm$ 25, $\pm$ 50ppm & others available)
- Jitter performance is frequency dependent. Please contact factory for full Wavecrest characterization.
- External high frequency power supply decoupling required.
- If phase noise data at a particular frequency is needed, contact factory.

Creating a Part Number	
<b>SC - C142X - FREQ</b>	
<b>Package Code</b>	<b>Tolerance/Performance</b>
SC 4 pad 5x7mm SMD	0 $\pm$ 100ppm 0-70°C
	1 $\pm$ 50ppm 0-70°C
	7 $\pm$ 25ppm 0-70°C
	9 Customer Specific
<b>Input Voltage</b>	A $\pm$ 20ppm 0-70°C
Code Specification	B $\pm$ 50ppm -40 to +85°C
A 3.3V	C $\pm$ 100ppm -40 to +85°C
B 2.5V	
C 1.8V	
5V	



**FREQUENCY  
CONTROLS, INC.**