

# Surface Mount 5x7mm LVDS Clock Oscillator

# CONNOR WINFIELD



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## Description:

The Connor Winfield Lxxx - Series are 5.0x7.0mm Surface Mount, LVDS, Fixed Frequency Crystal Controlled Oscillator (XO) designed for applications requiring tight frequency stability, wide temperature range and low jitter. Operating at 2.5V or 3.3V supply voltage, the Lxxx - Series provides an LVDS Differential Outputs with enable / disable function. The surface mount package is designed for high-density mounting and is optimum for mass production.



## Features:

### Model Lxxx - Series

5.0 x7.0mm Surface Mount Package  
2.5V or 3.3V Operation  
LVDS Output Logic  
Frequency Stabilities Available:  
+/-20ppm, +/-25ppm, +/-50ppm, +/-100ppm  
Temperature Ranges Available:  
0 to 70°C, -40 to 85°C, 0 to 85°C, -20 to 70°C  
Low Jitter <1pS RMS  
Tri-State Enable/Disable on Pad 1 or 2  
Tape and Reel Packaging  
RoHS Compliant / Lead Free

## Absolute Maximum Ratings

Parameter	Minimum	Nominal	Maximum	Units	Notes
Storage Temperature	-55	-	125	°C	
Supply Voltage (Vcc)	-0.5	-	4.6	Vdc	
Input Voltage (Vc)	-0.5	-	Vcc + 0.5	Vdc	

## Operating Specifications

Parameter	Minimum	Nominal	Maximum	Units	Notes
Output Frequency (Fo)	19.44	-	312.5	MHz	
Total Frequency Tolerance	(See Ordering Information for full part number)				
Model Lx4x	-20	-	20	ppm	1
Model Lx1x	-25	-	25	ppm	1
Model Lx2x	-50	-	50	ppm	1
Model Lx3x	-100	-	100	ppm	1
Operating Temperature Range					
Model L1xx	0	-	70	°C	
Model L2xx	-40	-	85	°C	2
Model L3xx	0	-	85	°C	
Model L4xx	-20	-	70	°C	
Supply Voltage (Vcc)					
Model Lxx2 E/D Pad 1	2.375	2.5	2.625	Vdc	
Model Lxx3 E/D Pad 1	3.135	3.3	3.465	Vdc	
Model Lxx4 E/D Pad 2	2.375	2.5	2.625	Vdc	
Model Lxx5 E/D Pad 2	3.135	3.3	3.465	Vdc	
Supply Current (Icc)	-	45	65	mA	
Jitter:					
Period Jitter	-	2.5	3.5	ps RMS	
Integrated Phase Jitter (BW = 12 KHz to 20 MHz)					
Fo ≥ 100 MHz	-	0.5	0.7	ps RMS	
80 MHz ≤ Fo ≤ 100 MHz	-	0.8	1.0	ps RMS	
Fo < 80 MHz	-	1.5	2.5	ps RMS	
SSB Phase Noise					
@ 10 Hz offset	-	-60	-	dBc/Hz	
@ 100 Hz offset	-	-90	-	dBc/Hz	
@ 1 KHz offset	-	-115	-	dBc/Hz	
@ 10 KHz offset	-	-140	-	dBc/Hz	
@ 100 KHz offset	-	-145	-	dBc/Hz	
Start-Up Time	-	5	10	ms	

## Input Characteristics

Parameter	Minimum	Nominal	Maximum	Units	Notes
Enable Input Voltage - (High) - (Vih)	70%Vcc	-	-	Vdc	2
Disable Input Voltage - (Low) - (Vil)	-	-	30%Vcc	Vdc	2
Enable Time	-	-	500	us	
Disable Time	-	-	200	ns	
Standby Current (When Osc. is disabled)	-	-	30	uA	

## LVDS Output Characteristics

Parameter	Minimum	Nominal	Maximum	Units	Notes
Load	-	100	-	Ohm	
Output Differential Voltage (Vod)	250	-	450	mV	3
Output Swing (Dif. Output Pk to Pk)	500	700	900	mV	
Duty Cycle at 50% Level	45	50	55	%	4
Differential Rise / Fall Time: 20% to 80%	-	0.3	0.7	ns	

## Notes:

- Includes calibration @ 25°C, frequency stability vs. change in temperature, supply voltage and load variations, shock and vibration and 20 years aging. Models L242, L243, L244 and L245 are not available above 260 MHz.
- Models L242, L243, L244 and L245 are not available above 260 MHz.
- When the oscillator is disabled the outputs are at high impedance. Outputs are enabled with no connection on E/D pad.
- Vod is measured with a 100 ohm resistor between the true and the complementary outputs.
- Duty cycle measured at 50% of output voltage swing.

Specifications subject to change without notice. All dimensions in inches. © Copyright 2010 The Connor-Winfield Corporation



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Revision **09**  
Date **22 Mar 2010**



## Ordering Information

<b>L</b>	<b>1</b>	<b>4</b>	<b>3</b>	<b>- 155.52M</b>
Type LVDS Clock Series 5x7mm	Temperature Range 1 = 0 to 70°C 2 = -40 to 85°C 3 = 0 to 85°C 4 = -20 to 70°C	Frequency Stability 4 = ±20 ppm 1 = ±25 ppm 2 = ±50 ppm 3 = ±100 ppm	Supply Voltage 2 = 2.5 Vdc, E/D Pad 1 3 = 3.3 Vdc, E/D Pad 1 4 = 2.5 Vdc, E/D Pad 2 5 = 3.3 Vdc, E/D Pad 2	Output Frequency Frequency Format -xxx.xM Min -xxx.xxxxxM Max *Amount of numbers after the decimal point. M = MHz

Example: Part Number  
L143-155.52M = LVDS Output,  
0 to 70, +/-20ppm, 3.3Vdc, E/D Pad 1, Output Frequency 155.52MHz  
To order an L143 with an output frequency of:  
25 MHz = L143-025.0M  
44.736 MHz = L143-044.736M  
155.52 MHz = L143-155.52M

**Attention: Models L242, L243, L244 and L235 are not available above 260 MHz.**

## Package Characteristics

Package Hermetically sealed ceramic package and metal cover

## Environmental Characteristics

Vibration: Vibration per Mil Std 883E Method 2007.3 Test Condition A.  
Shock: Mechanical Shock per Mil Std 883E Method 2002.4 Test Condition B.  
Soldering Process; RoHS compliant lead free. See soldering profile on page 2.  
Solderability; Solderability per Mil Std 883E Method 2003.

## Enable / Disable Function

Function: Output  
Low: Disabled (High Impedance)  
High or Open: Enabled

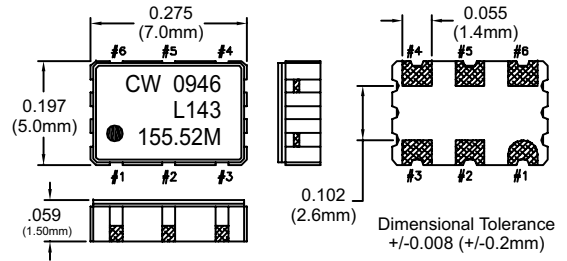
### Models: Lxx2, Lxx3

1: Enable / Disable  
2: N/C  
3: Ground  
4: Output Q  
5: Complementary Output  $\bar{Q}$   
6: Supply Voltage (Vcc)

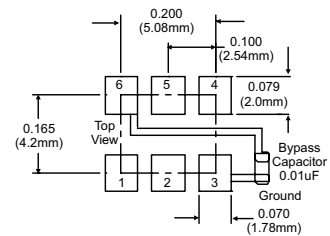
### Models: Lxx4, Lxx5

1: N/C  
2: Enable / Disable  
3: Ground  
4: Output Q  
5: Complementary Output  $\bar{Q}$   
6: Supply Voltage (Vcc)

## Package Outline

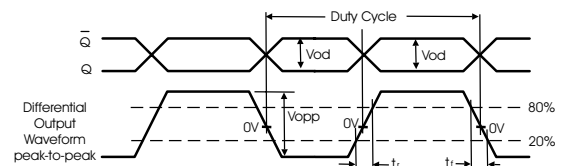


## Suggested Pad Layout

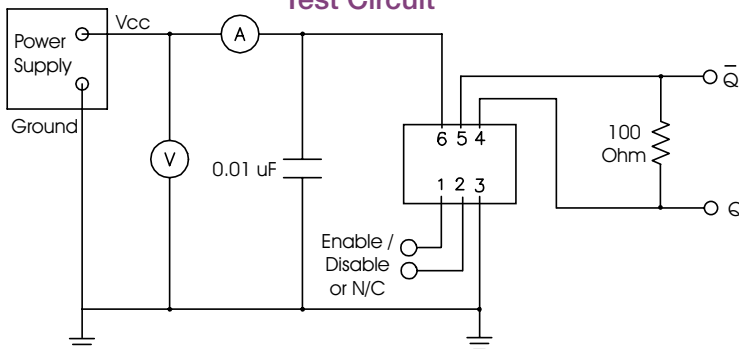


## Pad Connections

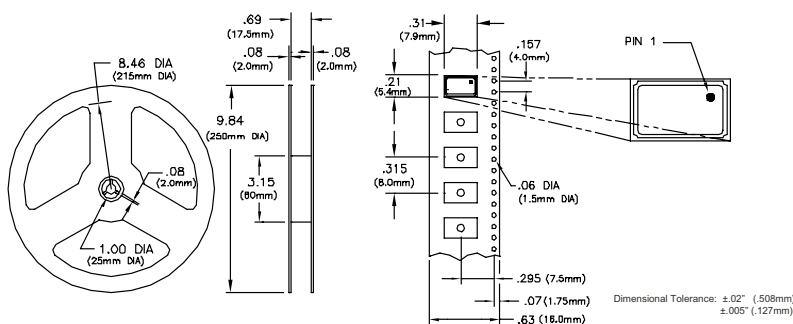
## Output Waveform



## Test Circuit



## Tape and Reel Dimensions



MEETS EIA-481A AND EIAJ-1009B  
2,000 PCS/REEL

## Solder Profile

