5x7mm Surface Mount LVDS Clock Oscillator

CONNOR WINFIELD

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Description:

The Connor-Winfield LMxxx - Series are 5x7mm Surface Mount, LVDS, Fixed Frequency Crystal Controlled Oscillator (XO). The LMxxx - Series are designed for applications requiring tight frequency stability, wide temperature range, and low jitter. Operating at 2.5 or 3.3 Vdc supply voltage, the LMxxx - Series provides LVDS Differential Outputs with an enable / disable function. The design utilizes PLL multiplication to produce a high frequency output from a low frequency fundamental crystal.

Features:

Model LMxxx - Series
5 x7mm Surface Mount Package
2.5 or 3.3 Vdc Operation
LVDS Differential Outputs
Frequency Stabilities Available:
+/-20 ppm, +/-25 ppm, +/-50 ppm or +/-100 ppm
Temperature Ranges Available:
0 to 70°C, -40 to 85°C, 0 to 85°C or -20 to 70°C
Low Jitter <1ps RMS
Tri-State Enable/Disable on Pad 1
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	-0.5	-	Vcc + 0.5	Vdc	

Operating Specifications

Parameter	Minimum	Nominal	Maximum	Units	Notes
Output Frequency (Fo)	98	-	670	MHz	1
Total Frequency Tolerance	(See Ordering Information or Model Matrix for full part number)				
Model LMx4x	-20	-	20	ppm	2
Model LMx1x	-25	-	25	ppm	2
Model LMx2x	-50	-	50	ppm	2
Model LMx3x	-100	-	100	ppm	2
Operating Temperature Range	(See Ordering Information or Model Matrix for full part number)				
Model LM1xx	0	-	70	°C	
Model LM2xx	-40	-	85	°C	
Model LM3xx	0	-	85	°C	
Model LM4xx	-20	-	70	°C	
Supply Voltage (Vcc)	(See Ordering Information or Model Matrix for full part number)				
Model LMxx2	2.375	2.5	2.625	Vdc	
Model LMxx3	3.135	3.3	3.465	Vdc	
Supply Current (Icc)	-	70	75	mA	
Jitter:					
Period Jitter	-	3.0	5.0	ps RMS	
Integrated Phase Jitter	-	0.6	1.0	ps RMS	
SSB Phase Noise (Fo = 155.52 MHz)					
@ 10 Hz offset	-	-40	-	dBc/Hz	
@ 100 Hz offset	-	-75	-	dBc/Hz	
@ 1 KHz offset	-	-95	-	dBc/Hz	
@ 10 KHz offset	-	-110	-	dBc/Hz	
@ 100 KHz offset	-	-115	-	dBc/Hz	
Sub-Harmonics	-	-60	-50	dBc	
Start-Up Time	-	-	2	ms	

Enable / Disable Input Characteristics

Parameter	Minimum	Nominal	Maximum	Units	Notes
Enable Input Voltage - (High) -(Vih)	70%Vcc	-	-	Vdc	3
Disable Input Voltage - (Low) - (Vil)	-	-	30%Vcc	Vdc	3

LVDS Output Characteristics

Parameter	Minimum	Nominal	Maximum	Units	Notes
Load -	-	100	-	Ohm	
Output Differential Voltage (Vod)	250	-	450	mV	4
Duty Cycle at 50% Level	45	50	55	%	5
Rise / Fall Time: 20% to 80%	-	0.3	0.7	ns	

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.

RoHS COMPLIANT

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Notes:
1. *All output frequencies may not be available, please contact the factory with your output frequency requirements.*
2. *Includes calibration @ 25° C, frequency stability vs. change in temperature, supply voltage and load variations, shock and vibration and 20 years aging.*
3. *When the oscillator is disabled the outputs are at high impedance. Outputs are enabled with no connection on E/D pad 1.*
4. *Vod measured with a 100 ohm resistor between the true output and the complementary output.*
5. *Duty cycle measured at 50% of output voltage swing.*

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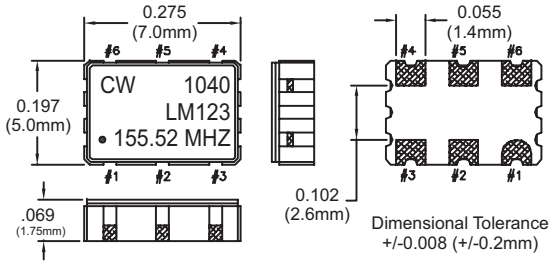
Ordering Information

LM	1	2	3	- 155.52M
Type LVDS Clock Series 5x7 mm	Temperature Range 1 = 0 to 70°C 2 = -40 to 85°C 3 = 0 to 85°C 4 = -20 to 70°C	Frequency Tolerance 4 = ±20 ppm 1 = ±25 ppm 2 = ±50 ppm 3 = ±100 ppm	Supply Voltage 2 = 2.5 Vdc, 3 = 3.3 Vdc,	Output Frequency Frequency Format -xxx.xM Min -xxx.xxxxxxM Max *Amount of numbers after the decimal point. M = MHz

Example Part Number:
LM123-155.52M = LVDS Output, 0 to 70°C, +/-50ppm, 3.3Vdc, E/D Pad 1, Output Frequency 155.52 MHz

Note: Not all temperature and frequency tolerance combinations are available.
See Model Matrix below for available models

Package Outline

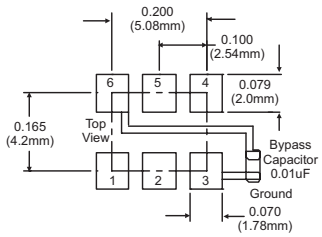


Model Matrix

Frequency Tolerance ±20 ppm	Frequency Tolerance ±25 ppm	Frequency Tolerance ±50 ppm	Frequency Tolerance ±100 ppm	Supply Voltage	Temperature Range
LM142	LM112	LM122	LM132	2.5 Vdc	0 to 70°C
LM442	LM412	LM422	LM432	2.5 Vdc	-20 to 70°C
LM342	LM312	LM322	LM332	2.5 Vdc	0 to 85°C
X	X	LM222	LM232	2.5 Vdc	-40 to 85°C
LM143	LM113	LM123	LM133	3.3 Vdc	0 to 70°C
LM443	LM413	LM423	LM433	3.3 Vdc	-20 to 70°C
LM343	LM313	LM323	LM333	3.3 Vdc	0 to 85°C
X	X	LM223	LM233	3.3 Vdc	-40 to 85°C

X = Models not available

Suggested Pad Layout



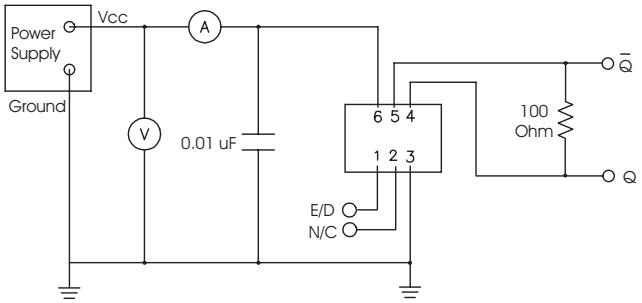
Enable / Disable Function

Pad 1 Input:	Output State:
Low:	Disabled (High Impedance)
High or Open:	Enabled

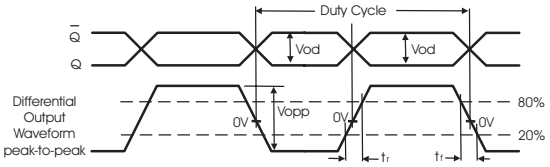
Pad Connections

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

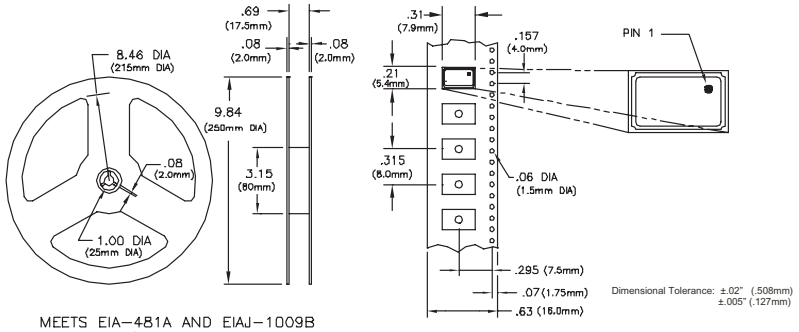
Test Circuit



Output Waveform

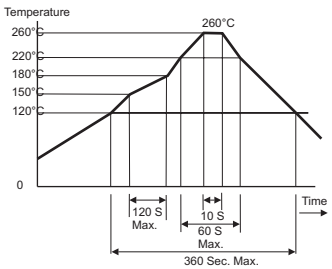


Tape and Reel Dimensions



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

Solder Profile



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