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.

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.

RoHS COMPLIANT

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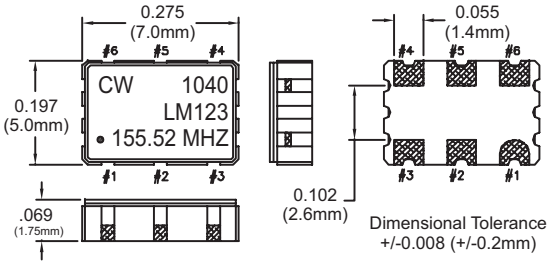
Ordering Information

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

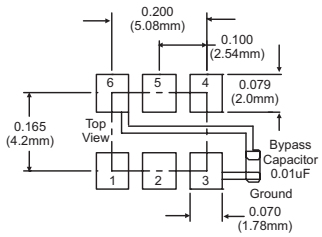


Model Matrix

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



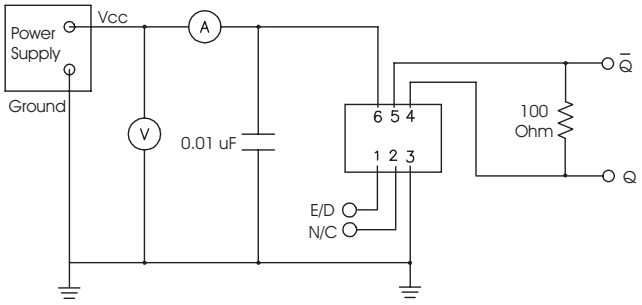
Enable / Disable Function

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

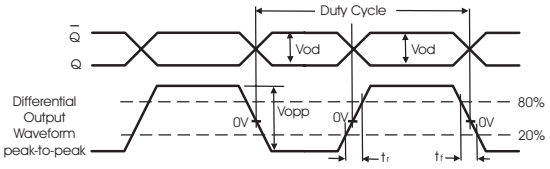
Pad Connections

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

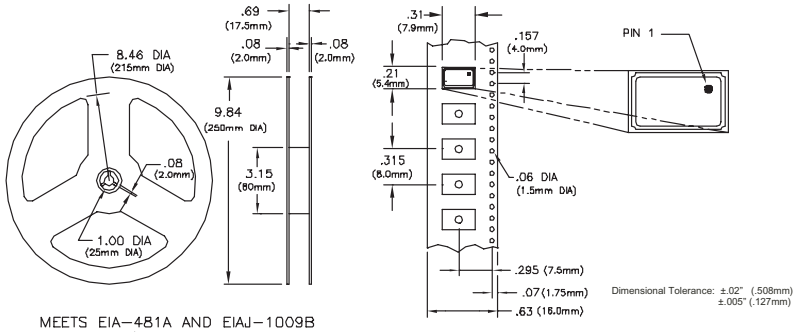
Test Circuit



Output Waveform

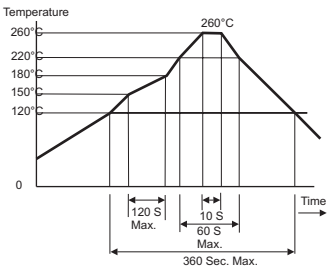


Tape and Reel Dimensions



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

Solder Profile



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