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# 5x7mm Surface Mount LVPECL Clock Oscillator

# CONNOR WINFIELD



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## Description:

The Connor-Winfield PMxxx - Series are 5x7mm Surface Mount, LVPECL, Fixed Frequency Crystal Controlled Oscillator (XO). The PMxxx - 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 PMxxx - Series provides LVPECL 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 PMxxx - Series

5x7mm Surface Mount Package  
2.5 or 3.3 Vdc Operation  
LVPECL 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	-	673	MHz	1
Total Frequency Tolerance	(See Ordering Information or Model Matrix for full part number)				
Model PMx4x	-20	-	20	ppm	2
Model PMx1x	-25	-	25	ppm	2
Model PMx2x	-50	-	50	ppm	2
Model PMx3x	-100	-	100	ppm	2
Operating Temperature Range	(See Ordering Information or Model Matrix for full part number)				
Model PM1xx	0	-	70	°C	
Model PM2xx	-40	-	85	°C	
Model PM3xx	0	-	85	°C	
Model PM4xx	-20	-	70	°C	
Supply Voltage (Vcc)	(See Ordering Information or Model Matrix for full part number)				
Model PMxx2	2.375	2.5	2.625	Vdc	
Model PMxx3	3.135	3.3	3.465	Vdc	
Supply Current (Icc)	-	85	95	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

## LVPECL Output Characteristics

Parameter	Minimum	Nominal	Maximum	Units	Notes
Load	-	50	-	Ohm	4
Voltage (High) (Voh)	Vcc-1.025	-	-	V	
(Low) (Vol)	-	-	Vcc-1.620	V	
Duty Cycle at 50% Level	45	50	55	%	5
Rise / Fall Time: 20% to 80%	-	0.3	0.6	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:

- All output frequencies may not be available, please contact the factory with your output frequency requirements.
- Includes calibration @ 25°C, frequency stability vs. change in temperature, supply voltage and load variations, shock and vibration and 20 years aging.
- When the oscillator is disabled the outputs are at high impedance. Outputs are enabled with no connection on E/D pad 1.
- Outputs must be terminated into 50 ohms to Vcc - 2V or Thevenin equivalent.
- 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 **01**  
Date **10 Mar 2011**



## Ordering Information

<b>PM</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>- 155.52M</b>
Type LVPECL 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.xxxxxM Max *Amount of numbers after the decimal point. M = MHz

### Example Part Number:

PM123-155.52M = LVPECL 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

## Model Matrix

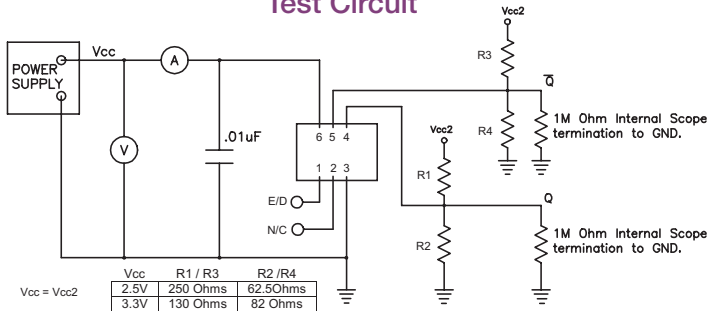
Frequency Tolerance ±20 ppm	Frequency Tolerance ±25 ppm	Frequency Tolerance ±50 ppm	Frequency Tolerance ±100 ppm	Supply Voltage	Temperature Range
PM142	PM112	PM122	PM132	2.5 Vdc	0 to 70°C
PM442	PM412	PM422	PM432	2.5 Vdc	-20 to 70°C
PM342	PM312	PM322	PM332	2.5 Vdc	0 to 85°C
X	X	PM222	PM232	2.5 Vdc	-40 to 85°C
PM143	PM113	PM123	PM133	3.3 Vdc	0 to 70°C
PM443	PM413	PM423	PM433	3.3 Vdc	-20 to 70°C
PM343	PM313	PM323	PM333	3.3 Vdc	0 to 85°C
X	X	PM223	PM233	3.3 Vdc	-40 to 85°C

X = Models not available

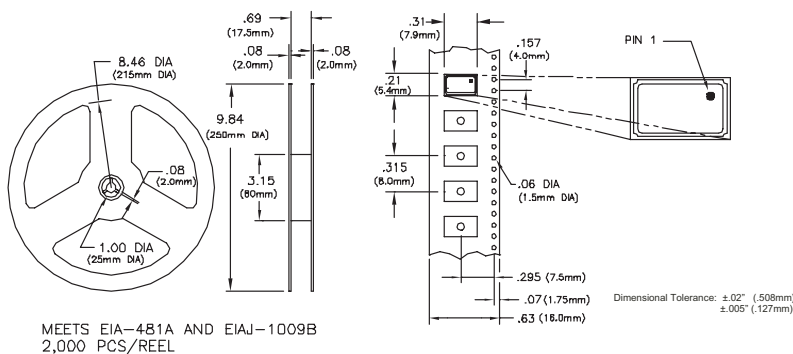
## Enable / Disable Function

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

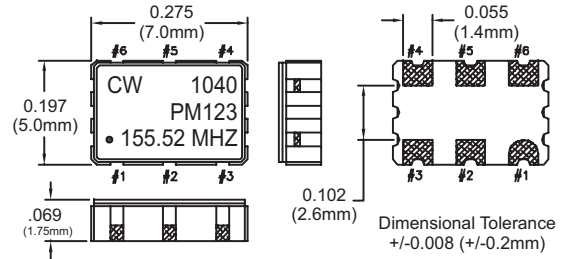
## Test Circuit



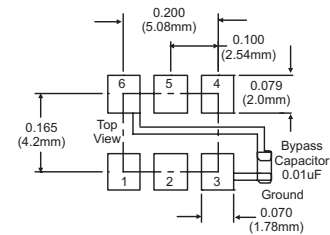
## Tape and Reel Dimensions



## Package Outline



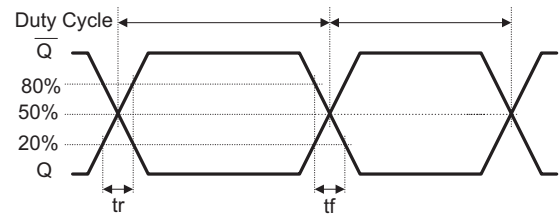
## Suggested Pad Layout



## Pad Connections

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

## Output Waveform



## Solder Profile

