



5x7mm Surface Mount LVPECL Clock Oscillator

CONNOR WINFIELD



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, -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	

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. Outputs must be terminated into 50 ohms to Vcc - 2V or Thevenin equivalent.
5. Duty cycle measured at 50% of output voltage swing.

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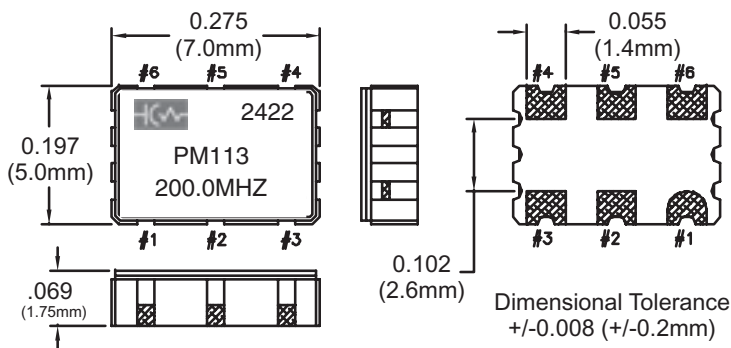
Package Characteristics

Package: Hermetically sealed ceramic package and metal cover
Moisture Sensitivity Level: MSL-1

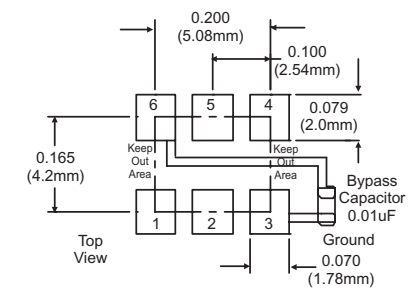
Environmental Characteristics

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 3.

Package Outline



Suggested Pad Layout



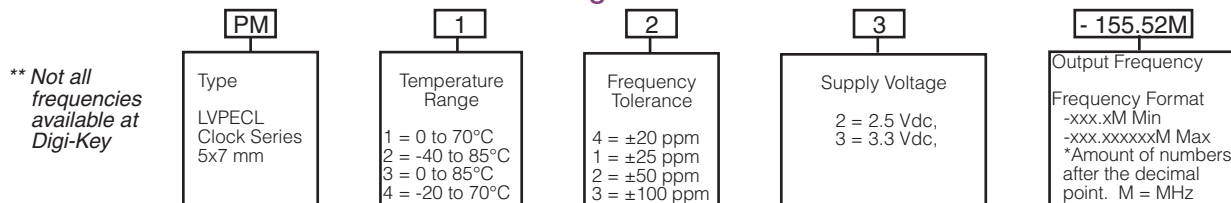
Enable / Disable Function

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 Q
6: Supply Voltage (Vcc)

Ordering Information



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

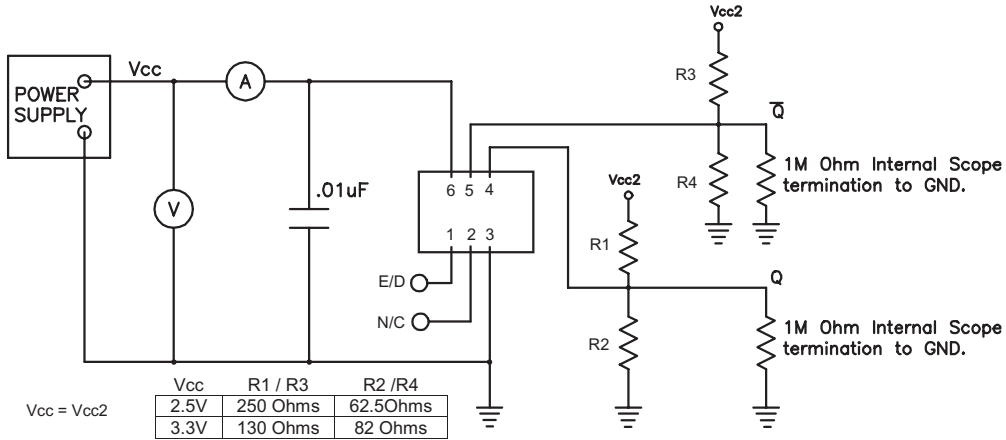
Model Matrix

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

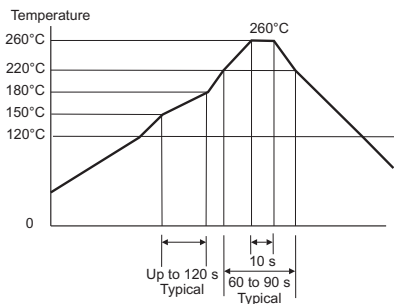
X = Models not available

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Test Circuit

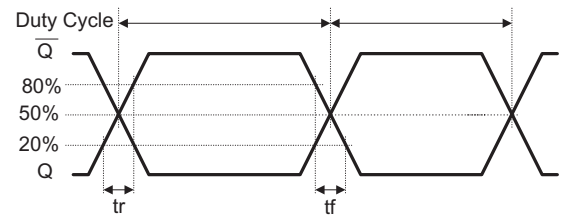


Solder Profile



Meets IPC/JEDEC J-STD-020C

Output Waveform



Tape and Reel Dimensions

