

5x7mm Surface Mount LVPECL Clock Oscillator

CONNOR WINFIELD



2111 Comprehensive Drive
Aurora, Illinois 60505
Phone: 630-851-4722
Fax: 630-851-5040
www.conwin.com
US Headquarters:
630-851-4722
European Headquarters:
+353-61-472221

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

| | | | | |
|--|---|--|--|---|
| PM | 1 | 2 | 3 | - 155.52M |
| 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

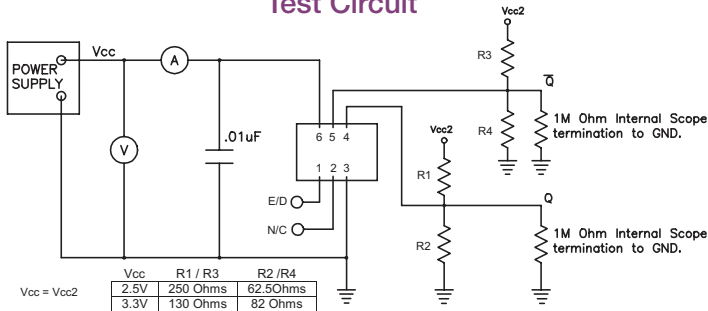
| Frequency Tolerance ±20 ppm | Frequency Tolerance ±25 ppm | Frequency Tolerance ±50 ppm | Frequency Tolerance ±100 ppm | Supply Voltage | Temperature Range |
|-----------------------------|-----------------------------|-----------------------------|------------------------------|----------------|-------------------|
| 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

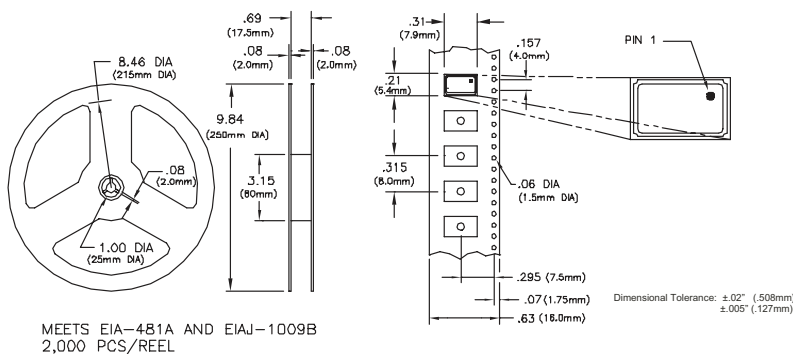
Enable / Disable Function

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

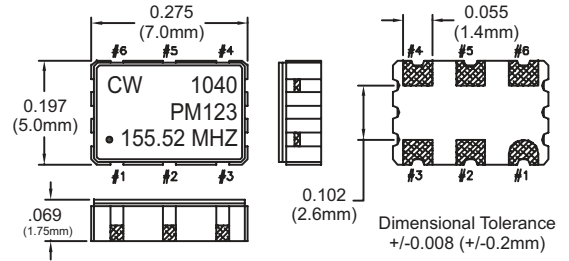
Test Circuit



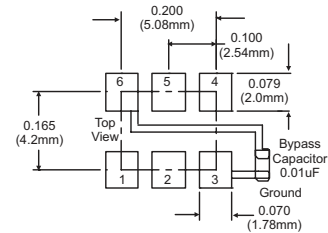
Tape and Reel Dimensions



Package Outline



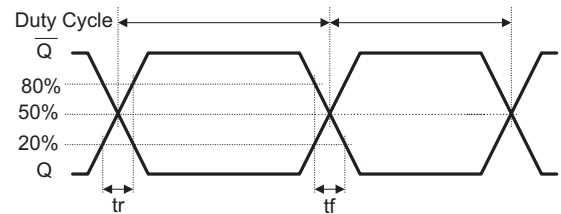
Suggested Pad Layout



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

