

5.0x7.0mm Surface Mount LVPECL Clock Oscillator Series



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Description

The Connor-Winfield PMxxx - Series are 5x7.0mm Surface Mount, LVPECL, Fixed Frequency Crystal Controlled Oscillator (XO). Through the use of multiplication, the PMxxx - Series are designed for applications requiring tight frequency stability, wide temperature range and low jitter. Operating at 2.5V or 3.3V supply voltage, the PMxxx - Series provides LVPECL Differential Outputs with enable / disable function. The surface mount package is designed for high-density mounting and is optimum for mass production.



Features:

Model PMxxx - Series

5.0 x7.0mm Surface Mount Package
2.5V or 3.3V Operation
LVPECL Output Logic
Frequency Stabilities Available:
PM14x / PM34x / PM44x: +/-20ppm
PM11x / PM31x / PM41x: +/-25ppm
PM12x / PM22x / PM32x / PM42x: +/-50ppm
PM13x / PM23x / PM33x / PM43x: +/-100ppm
Temperature Ranges Available:
PM1xx Series: 0 to 70°C
PM2xx Series: -40 to 85°C
PM3xx Series: 0 to 85°C
PM4xx Series: -20 to 70°C
Low Jitter <1pS RMS
Tri-State Enable/Disable
Tape and Reel Packaging
RoHS Compliant / Lead Free ✓RoHS

Absolute Maximum Ratings

Table 1.0

Parameter	Units	Minimum	Nominal	Maximum	Units	Note
Storage Temperature		-55	-	125	°C	
Supply Voltage	(Vcc)	-0.5	-	4.6	Vdc	
Input Voltage		-0.5	-	Vcc+0.5	Vdc	

Operating Specifications

Table 2.0

Parameter		Minimum	Nominal	Maximum	Units	Note
Center Frequency	(Fo)	98	-	670	MHz	
Total Frequency Tolerance		(See Table 9 for full part number)				
Model PMx4x (See Table 9)		-20	-	20	ppm	1
Model PMx1x (See Table 9)		-25	-	25	ppm	1
Model PMx2x (See Table 9)		-50	-	50	ppm	1
Model PMx3x (See Table 9)		-100	-	100	ppm	1
Operating Temperature Range						
Model PM1xx (See Table 9)		0	-	70	°C	
Model PM4xx (See Table 9)		-20	-	70	°C	
Model PM3xx (See Table 9)		0	-	85	°C	
Model PM2xx (See Table 9)		-40	-	85	°C	
Supply Voltage (Vcc)						
Model PMx2 (See Table 9)		2.375	2.500	2.625	Vdc	
Model PMx3 (See Table 9)		3.135	3.3	3.465	Vdc	
Supply Current	(Icc)	-	60	90	mA	
Period Jitter		-	3	5	ps RMS	
Phase Jitter- BW=12kHz to 20MHz		-	0.6	1.0	ps RMS	
SSB Phase Noise at 10Hz offset		-	-40	-	dBc/Hz	
SSB Phase Noise at 100Hz offset		-	-75	-	dBc/Hz	
SSB Phase Noise at 1KHz offset		-	-95	-	dBc/Hz	
SSB Phase Noise at 10KHz offset		-	-110	-	dBc/Hz	
SSB Phase Noise at 100KHz offset		-	-115	-	dBc/Hz	
Sub-Harmonics		-	-60	-50	dBc	

Input Characteristics

Table 3.0

Parameter		Minimum	Nominal	Maximum	Units	Note
Disable Input Voltage (Low)	(Vil)	-	-	0.3Vcc	Vdc	2
Enable Input Voltage (High)	(Vih)	0.7Vcc	-	-	Vdc	2

LVPECL Output Characteristics

Table 4.0

Parameter		Minimum	Nominal	Maximum	Units	Note
LOAD						
Voltage (0 to 70°C) (High)	(Voh)	Vcc-1.025	-	Vcc-0.880	Vdc	
(-40 to 85°C) (High)	(Voh)	Vcc-1.085	-	Vcc-0.880	Vdc	
Voltage (0 to 70°C) (Low)	(Vol)	Vcc-1.810	-	Vcc-1.620	Vdc	
(-40 to 85°C) (Low)	(Vol)	Vcc-1.830	-	Vcc-1.555	Vdc	
Voltage Swing	(Vswing)	0.6	-	1.0	V	Peak to Peak
Duty Cycle		45	50	55	%	4
Rise / Fall Time 20% to 80%		-	-	0.6	ns	



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Date **11 Aug 2009**

Notes

Notes

- 1) Includes initial tolerance, deviation over temperature, supply and load variations, shock, vibration and 20 years aging.
- 2) When the oscillator is disabled, the outputs are at High Impedance. Output is enabled with no connection on pad 1.
- 3) Output must be terminated into 50 ohms to $V_{cc} - 2V$ or Thevenin equivalent.
- 4) Duty Cycle measured at 50% of output swing.

Ordering Information

PM	1	2	3	-	155.52M
Type: LVPECL Clock Series 5x7mm	Temperature Range: 1 = 0 to 70° C 2 = -40 to 85° C 3 = 0 to 85° C 4 = -20 to 70° C	Frequency Stability: 4 = +/-20 ppm 1 = +/-25 ppm 2 = +/-50 ppm 3 = +/-100 ppm	Supply Voltage: 2 = 2.5Vdc. 3 = 3.3Vdc.		Output Frequency: Frequency Format -xxx.xM Min.* -xxx.xxxxxM Max.* *Amount of numbers after the decimal point M = MHz

Example: PM123-155.52M = LVPECL Clock, 0 to 70°C, +/-50ppm, 3.3Vdc @ 155.52 MHZ

Package Characteristics

Table 5.0

Package	Hermetically sealed ceramic package and metal cover.
Soldering Process	RoHS compliant, see solder profile on page 2.

Environmental Characteristics

Table 6.0

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:	SMD product suitable for Convection Reflow soldering. Peak temperature 260°C. Maximum time above 220°C, 60 seconds.
Solderability	Solderability per Mil Std 883E Method 2003

Pad Connections - Enable / Disable Function

Table 7.0

Pad	Connection
1	Enable / Disable
2	N/C
3	Ground
4	Q Output
5	$\bar{Q}$ Output
6	V _{cc}

Table 8.0

Enable / Disable Function (Pad 1)	Output
High or Open	Enable
Low	Disable (High Impedance)

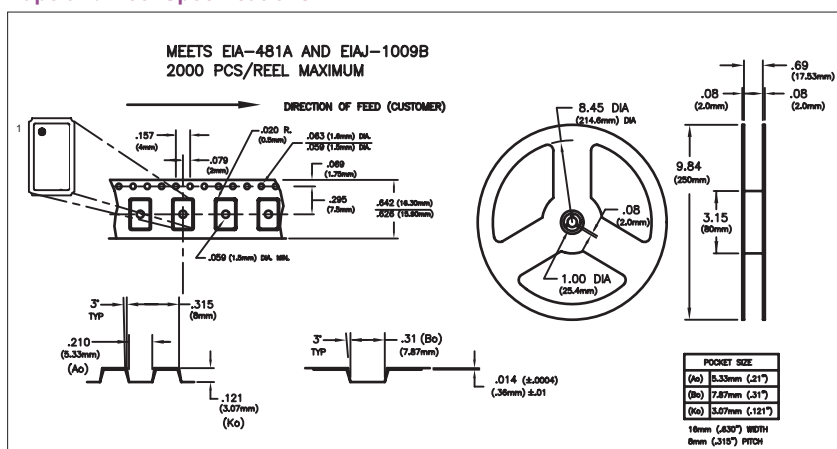
Model Matrix

Table 9.0

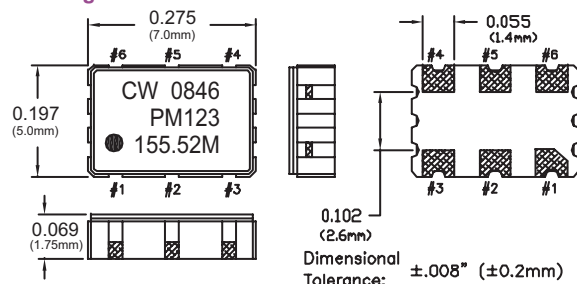
Frequency Tolerance ±20ppm	Frequency Tolerance ±25ppm	Frequency Tolerance ±50ppm	Frequency Tolerance ±100ppm	Supply Voltage	Temperature Range
PM142	PM112	PM122	PM132	2.5Vdc	0 to 70°C
PM442	PM412	PM422	PM432	2.5Vdc	-20 to 70°C
PM342	PM312	PM322	PM332	2.5Vdc	0 to 85°C
x	x	PM222	PM232	2.5Vdc	-40 to 85°C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

X = Models currently not available

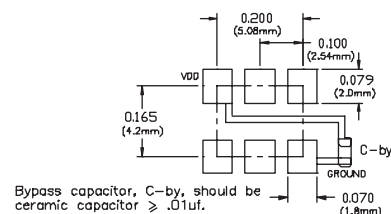
Tape and Reel Specifications



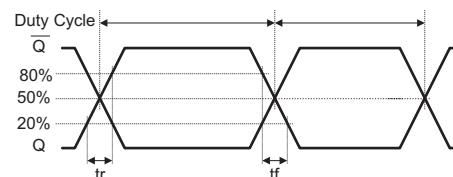
Package Outline



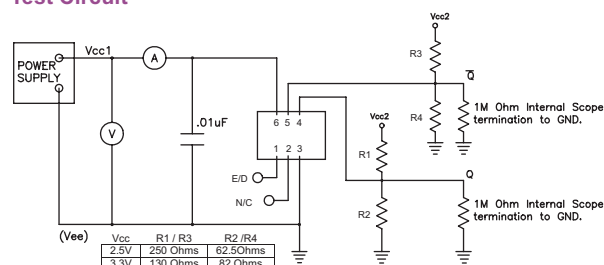
Suggested Pad Layout



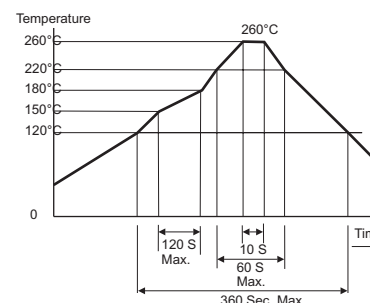
LVPECL Output Waveform



Test Circuit



Solder Profile



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