5.0x7.0mm Surface Mount LVPECL Clock Oscillator Series

CONNOR WINFIELD

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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 PMxx2 (See Table 9)		2.375	2.500	2.625	Vdc	
Model PMxx3 (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			-	-	50	Ohms	3
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	

RoHS COMPLIANT

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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 Vcc – 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.xxxxxxM 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	$\overline{Q}$ Output
6	Vcc

Table 8.0

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

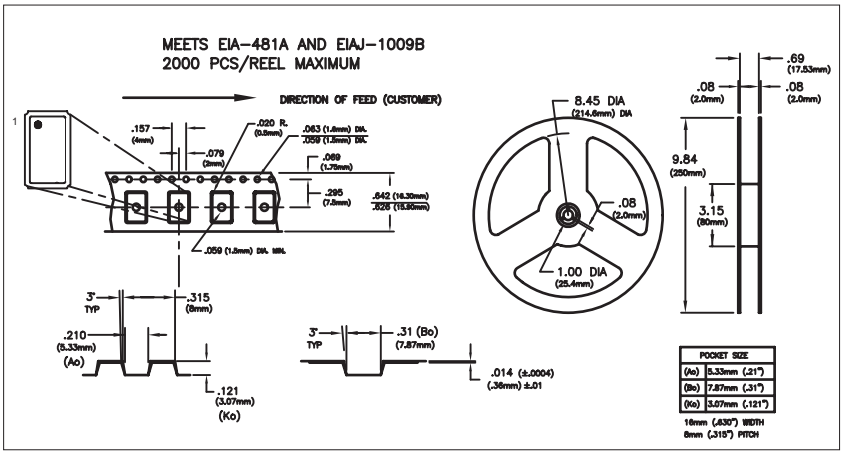
Model Matrix

Table 9.0

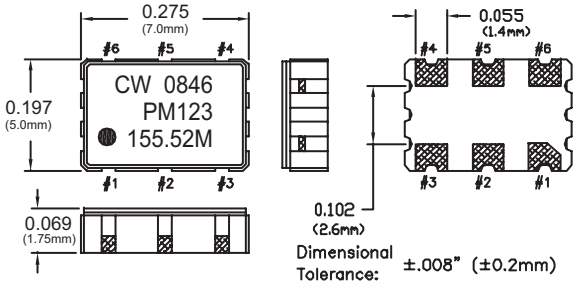
Frequency Tolerance ±20ppm	Frequency Tolerance ±25ppm	Frequency Tolerance ±50ppm	Frequency Tolerance ±100ppm	Supply Voltage	Temperature Range
PM142	**PM112**	**PM122**	**PM132**	2.5Vdc	0 to 70°C
PM442	**PM412**	**PM422**	**PM432**	2.5Vdc	-20 to 70°C
PM342	**PM312**	**PM322**	**PM332**	2.5Vdc	0 to 85°C
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

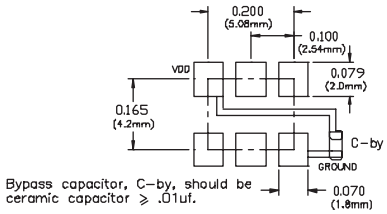
Tape and Reel Specifications



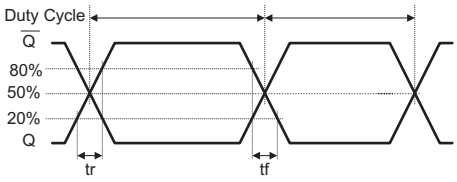
Package Outline



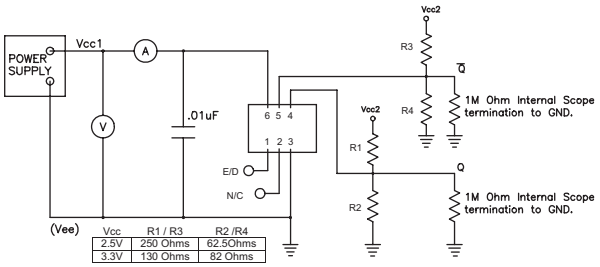
Suggested Pad Layout



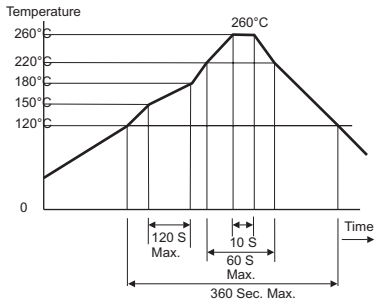
LVPECL Output Waveform



Test Circuit



Solder Profile



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