

# 5.0x7.0mm Surface Mount LVPECL Clock Oscillator Series



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## Description

The Connor Winfield Pxxx - Series is a 5x7.0mm Surface Mount, LVPECL, Fixed Frequency Crystal Controlled Oscillator (XO) designed for applications requiring tight frequency stability, wide temperature range and low jitter. Operating at 2.5V or 3.3V supply voltage, the Pxxx - Series provides an 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 Pxxx - Series

5.0 x7.0mm Surface Mount Package  
2.5V or 3.3V Operation  
LVPECL Output Logic  
Frequency Stabilities Available:  
P14x / P24x / P34x / P44x: +/-20ppm  
P11x / P21x / P31x / P41x: +/-25ppm  
P12x / P22x / P32x / P42x: +/-50ppm  
P13x / P23x / P33x / P43x: +/-100ppm  
Temperature Ranges Available:  
P1xx Series: 0 to 70°C  
P2xx Series: -40 to 85°C  
P3xx Series: 0 to 85°C  
P4xx Series: -20 to 70°C  
Low Jitter <1pS RMS  
Tri-State Enable/Disable  
Tape and Reel Packaging  
RoHS Compliant / Lead Free

## Model Specifications

### Absolute Maximum Ratings

Table 1.0

Parameter	Units	Minimum	Nominal	Maximum	Units	Note
Storage Temperature		-55	-	125	°C	
Supply Voltage	(Vcc)	-0.5	-	7.0	Vdc	
Input Voltage		-0.5	-	Vcc+0.5	Vdc	

### Operating Specifications

Table 2.0

Parameter		Minimum	Nominal	Maximum	Units	Note
Center Frequency	(Fo)	25	-	260	MHz	
Total Frequency Tolerance		(See Table 9 for full part number)				
Model Px4x (See Table 9)		-20	-	20	ppm	1
Model Px1x (See Table 9)		-25	-	25	ppm	1
Model Px2x (See Table 9)		-50	-	50	ppm	1
Model Px3x (See Table 9)		-100	-	100	ppm	1
Operating Temperature Range						
Model P1xx (See Table 9)		0	-	70	°C	
Model P4xx (See Table 9)		-20	-	70	°C	
Model P3xx (See Table 9)		0	-	85	°C	
Model P2xx (See Table 9)		-40	-	85	°C	
Supply Voltage	(Vcc)					
Model Pxx2 (See Table 9)		2.375	2.500	2.625	Vdc	
Model Pxx3 (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 (Fo >70M)		-	0.5	1.0	ps RMS	
Phase Jitter- BW=12kHz to 20MHz (Fo ≤ 70M)		-	1.5	2.0	ps RMS	
SSB Phase Noise at 10Hz offset		-	-60	-	dBc/Hz	
SSB Phase Noise at 100Hz offset		-	-90	-	dBc/Hz	
SSB Phase Noise at 1KHz offset		-	-125	-	dBc/Hz	
SSB Phase Noise at 10KHz offset		-	-140	-	dBc/Hz	
SSB Phase Noise at 100KHz offset		-	-145	-	dBc/Hz	
Startup Time		-	-	2	ms	

### 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
Enable Time		-	-	2	ms	
Disable Time		-	-	200	ns	
Standby Current (when part is Disabled)	(Icc)	-	-	30	uA	

### LVPECL Output Characteristics

Table 4.0

Parameter		Minimum	Nominal	Maximum	Units	Note
LOAD		-	-	50	Ohms	3
Voltage (Vcc = 2.5V) (High)	(Voh)	1.475	-	-	Vdc	
(Vcc = 2.5V) (Low)	(Vol)	-	-	0.880	Vdc	
Voltage (Vcc = 3.3V) (High)	(Voh)	2.275	-	-	Vdc	
(Vcc = 3.3V) (Low)	(Vol)	-	-	1.68	Vdc	
Duty Cycle		45	50	55	%	4
Rise / Fall Time 20% to 80%		-	0.5	1	ns	



Bulletin **Ec217**  
Page **1 of 2**  
Revision **06**  
Date **18 Apr 2008**

### 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

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

Example: P123-155.52M = 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	Q̄ Output
6	Vcc

Table 8.0

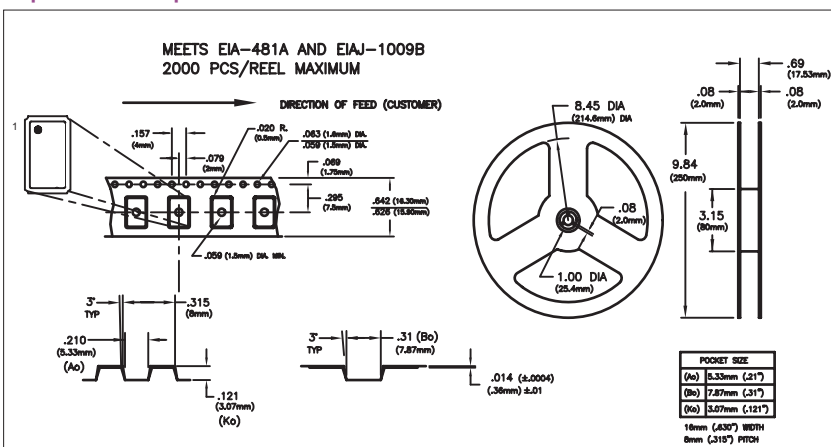
Enable / Disable Function (Pad 1)	Output
High or Open	Enable
Low	Disable (High Impedance)

### Model Matrix

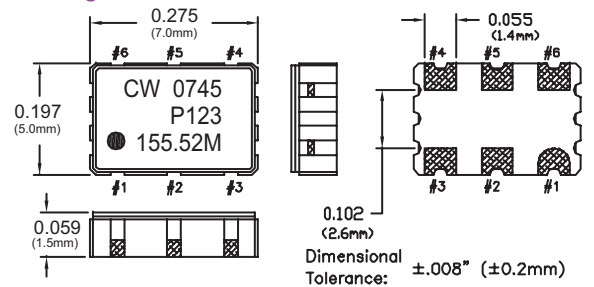
Table 9.0

Frequency Tolerance ±20ppm	Frequency Tolerance ±25ppm	Frequency Tolerance ±50ppm	Frequency Tolerance ±100ppm	Supply Voltage	Temperature Range
P142	P112	P122	P132	2.5Vdc	0 to 70°C
P442	P412	P422	P432	2.5Vdc	-20 to 70°C
P342	P312	P322	P332	2.5Vdc	0 to 85°C
P242	P212	P222	P232	2.5Vdc	-40 to 85°C
P143	P113	P123	P133	3.3Vdc	0 to 70°C
P443	P413	P423	P433	3.3Vdc	-20 to 70°C
P343	P313	P323	P333	3.3Vdc	0 to 85°C
P243	P213	P223	P233	3.3Vdc	-40 to 85°C

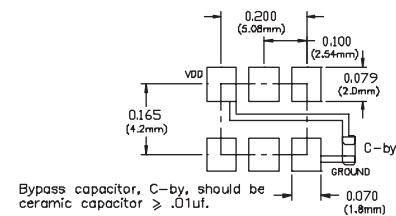
### Tape and Reel Specifications



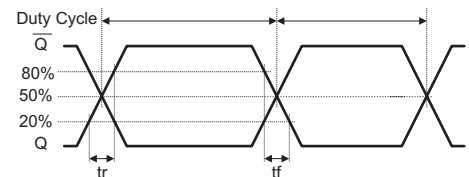
### Package Outline



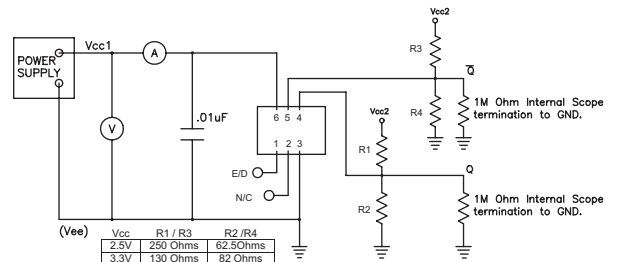
### Suggested Pad Layout



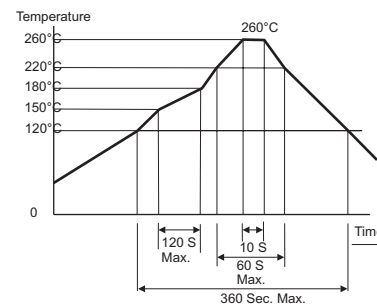
### LVPECL Output Waveform



### Test Circuit



### Solder Profile



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Bulletin	Ec217
Page	2 of 2
Revision	06
Date	18 Apr 2008