



# Surface Mount LVPECL Clock Oscillator Model Pxxx Series

# CONNOR WINFIELD



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## Description:

The Connor Winfield Pxxx Series are 5.0x7.0mm 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:

- 5.0 x7.0mm Surface Mount Package
- 2.5V or 3.3V Operation
- LVPECL Differential Outputs
- Frequency Stabilities Available:  
+/-20ppm, +/-25ppm, +/-50ppm, +/-100ppm
- 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 or 2
- 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	-	5.0	Vdc	
Input Voltage (Vc)	-0.5	-	Vcc + 0.5	Vdc	

## Operating Specifications

Parameter	Minimum	Nominal	Maximum	Units	Notes
Output Frequency (Fo)	25	-	312.5	MHz	
Total Frequency Tolerance	(See Ordering Information for full part number)				
Model Px4x	-20	-	20	ppm	1
Model Px1x	-25	-	25	ppm	1
Model Px2x	-50	-	50	ppm	1
Model Px3x	-100	-	100	ppm	1
Operating Temperature Range					
Model P1xx	0	-	70	°C	
Model P2xx	-40	-	85	°C	2
Model P3xx	0	-	85	°C	
Model P4xx	-20	-	70	°C	
Supply Voltage (Vcc)					
Model Pxx2, Pxx5	2.375	2.5	2.625	Vdc	
Model Pxx3, Pxx4	3.135	3.3	3.465	Vdc	
Supply Current (Icc)	-	60	90	mA	
Jitter:					
Period Jitter	-	3.0	5.0	ps RMS	
Integrated Phase Jitter (BW = 12 KHz to 20 MHz)					
25 ≤ Fo ≤ 60 MHz	-	1.3	2.0	ps RMS	
60 < Fo ≤ 80 MHz	-	0.80	1.0	ps RMS	
80 < Fo ≤ 100 MHz	-	0.60	0.80	ps RMS	
100 < Fo ≤ 160 MHz	-	0.40	0.50	ps RMS	
160 < Fo ≤ 200 MHz	-	0.30	0.40	ps RMS	
200 < Fo ≤ 312.5 MHz	-	0.20	0.30	ps RMS	
SSB Phase Noise					
@ 10 Hz offset	-	-60	-	dBc/Hz	
@ 100 Hz offset	-	-90	-	dBc/Hz	
@ 1 KHz offset	-	-115	-	dBc/Hz	
@ 10 KHz offset	-	-140	-	dBc/Hz	
@ 100 KHz offset	-	-145	-	dBc/Hz	
Start-Up Time	-	-	2	ms	

## Input Characteristics

Parameter	Minimum	Nominal	Maximum	Units	Notes
Enable / Disable Option:					
Models Pxx2, Pxx3 E/D Pad 1. N/C Pad 2					
Models Pxx4, Pxx5 E/D Pad 2. N/C Pad 1					
Enable Input Voltage - (High) - (Vih)	70%Vcc	-	-	Vdc	3
Disable Input Voltage - (Low) - (Vil)	-	-	30%Vcc	Vdc	3
Enable Time	-	-	2	ms	
Disable Time	-	-	200	ns	
Standby Current (When Osc. is disabled)	-	-	30	uA	

## LVPECL Output Characteristics

Parameter	Minimum	Nominal	Maximum	Units	Notes
Load	-	50	-	Ohm	4
Voltage (High) (Vcc = 2.5 V) (Voh)	1.475	-	-	V	
(Low) (Vcc = 2.5 V) (Vol)	-	-	0.880	V	
Voltage (High) (Vcc = 3.3 V) (Voh)	2.275	-	-	V	
(Low) (Vcc = 3.3 V) (Vol)	-	-	1.680	V	
Duty Cycle at 50% Level	45	50	55	%	5
Rise / Fall Time: 20% to 80%	-	0.5	1.0	ns	





**Notes:**

1. Includes calibration @ 25°C, frequency stability vs. change in temperature, supply voltage and load variations, shock and vibration and 20 years aging. Models P242, P243 P244 and P245 are not available above 260 MHz.
2. Models P242, P243 P244 and P245 are not available above 260 MHz.
3. When the oscillator is disabled the outputs are at high impedance. Outputs are enabled with no connection on E/D pad.
4. Outputs must be terminated into 50 ohms to Vcc – 2V or Thevenin equivalent.
5. Duty cycle measured at 50% of output voltage swing.

## Ordering Information

<b>P</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>- 155.52M</b>
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 Stability 4 = ±20 ppm 1 = ±25 ppm 2 = ±50 ppm 3 = ±100 ppm	Supply Voltage 2 = 2.5 Vdc, E/D Pad 1 3 = 3.3 Vdc, E/D Pad 1 4 = 3.3 Vdc, E/D Pad 2 5 = 2.5 Vdc, E/D Pad 2	Output Frequency Frequency Format -xxx.xM Min -xxx.xxxxxM Max * Minimum 1 and Maximum 6 digits after the decimal point. (M=MHz)

Example: Part Number

P123-155.52M = LVPECL Output, 0 to 70, ±50ppm, 3.3Vdc, E/D Pad 1, Output Frequency 155.52MHz

Attention: Models P242, P243, P244 and P245 are not available above 260 MHz.

## Package Characteristics

Package

Hermetically sealed ceramic package and metal cover

## Environmental Characteristics

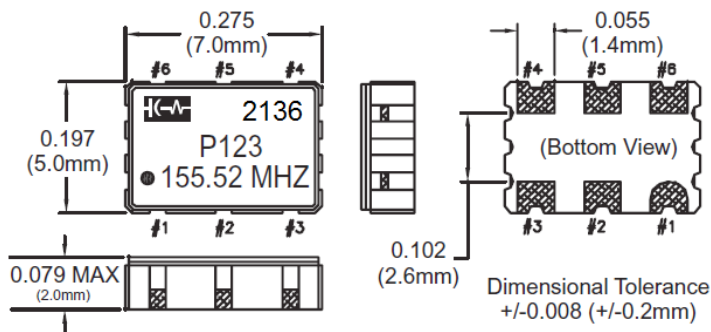
Vibration: Vibration per Mil Std 883E Method 2007.3 Test Condition A.  
Shock: Mechanical Shock per Mil Std 883E Method 2002.4 Test Condition B.  
Soldering Process; RoHS compliant lead free. See soldering profile on page 3.

## Enable / Disable Function

Function: Output  
Low: Disabled (High Impedance)  
High or Open: Enabled

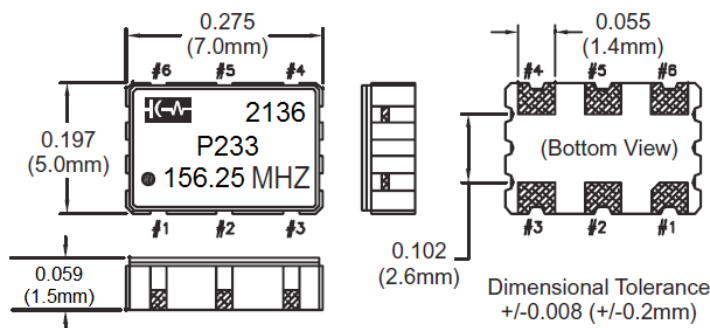
## Package Outline 1

For frequencies other than 100.0, 125.0 and 156.25MHz

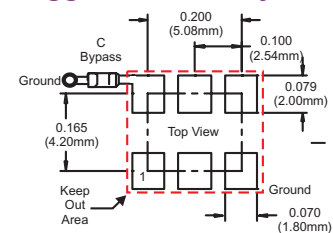


## Package Outline 2

For frequencies 100.0, 125.0 and 156.25MHz



## Suggested Pad Layout



## Pad Connections

Models: Pxx2, Pxx3

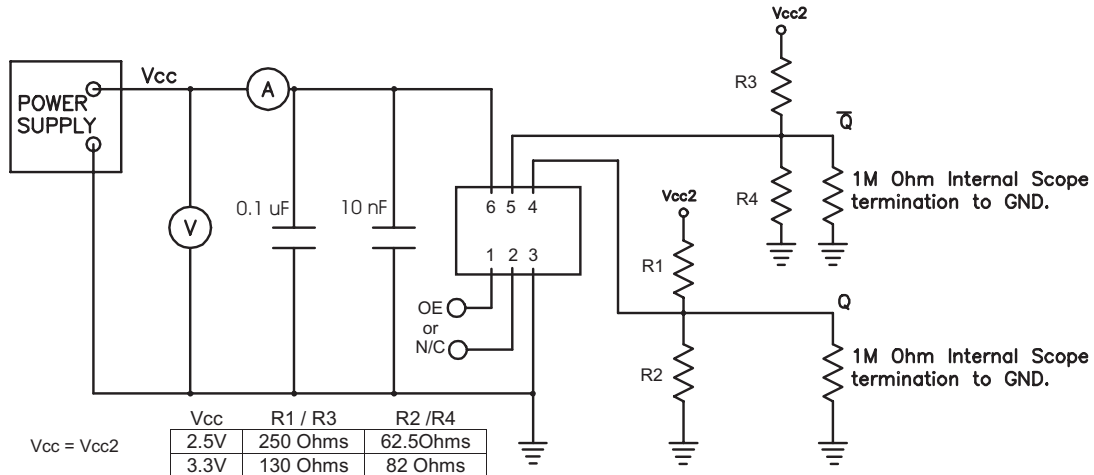
- 1: Enable / Disable
- 2: N/C
- 3: Ground
- 4: Output Q
- 5: Complementary Output  $\bar{Q}$
- 6: Supply Voltage (Vcc)

Models Pxx4, Pxx5

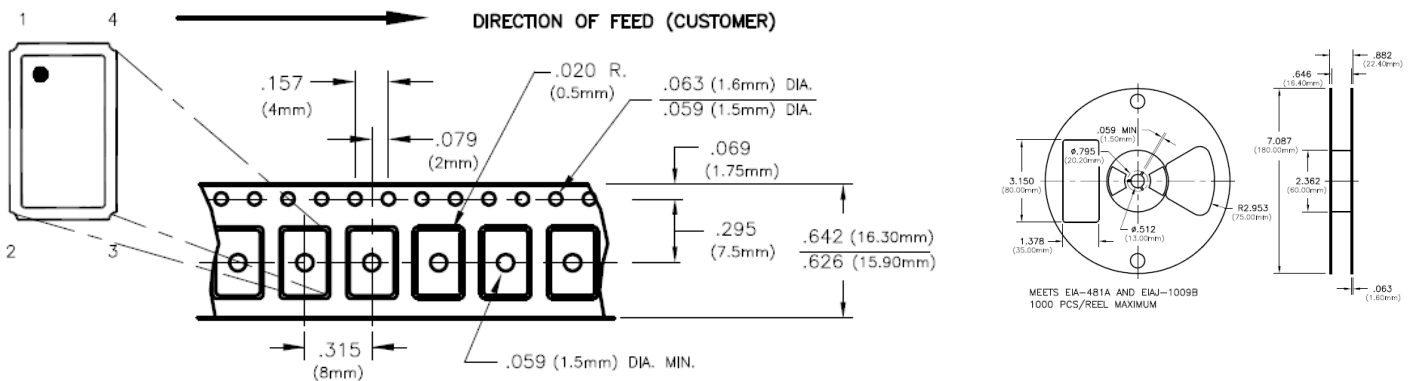
- 1: N/C
- 2: Enable / Disable
- 3: Ground
- 4: Output Q
- 5: Complementary Output  $\bar{Q}$
- 6: Supply Voltage (Vcc)

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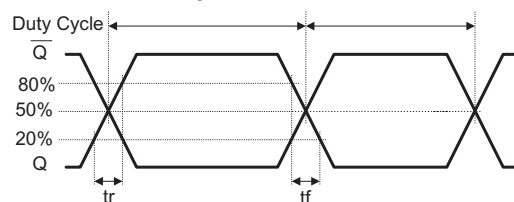
## Test Circuit



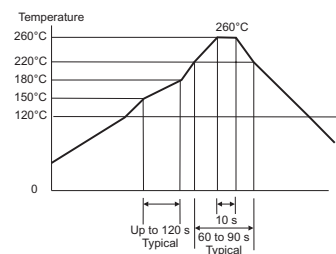
## Tape and Reel Dimensions



## Output Waveform



## Solder Profile



Meets IPC/JEDEC J-STD-020C