5.0x7.0mm Surface Mount LVPECL Clock Oscillator Series

CONNOR WINFIELD

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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 ✓RoHS

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	

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

P	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: 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	$\overline{Q}$ Output
6	Vcc

Table 8.0

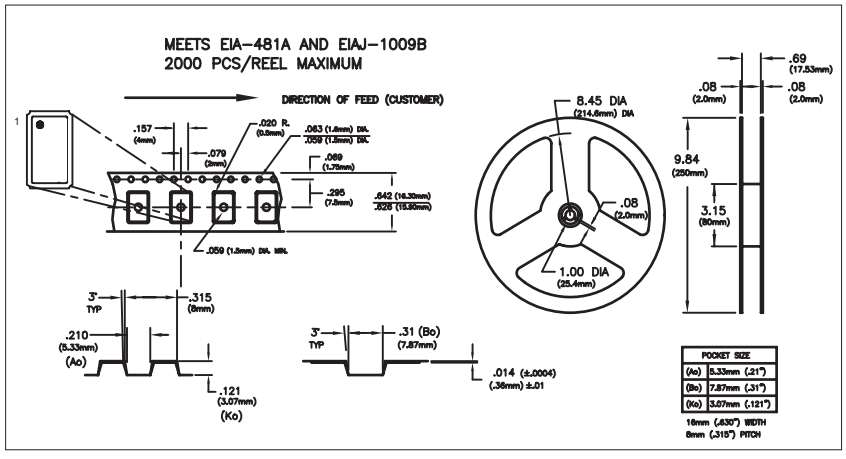
Enable / Disable Function (Pad 1)	Output
High or Open	Enable
Low	Disable (High Impedance)

Model Matrix

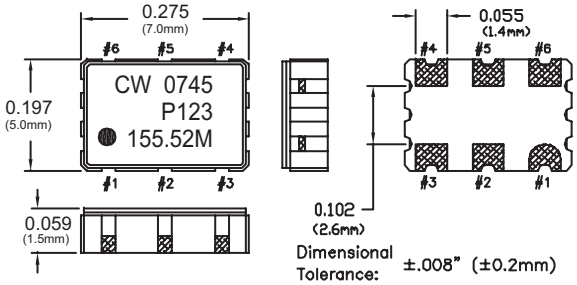
Table 9.0

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

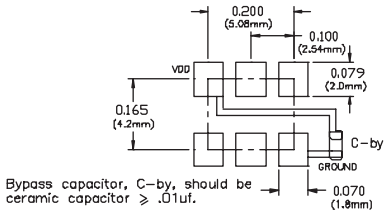
Tape and Reel Specifications



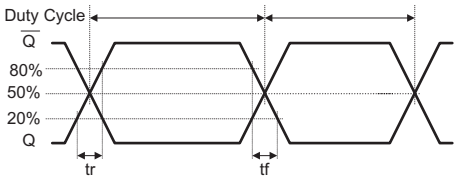
Package Outline



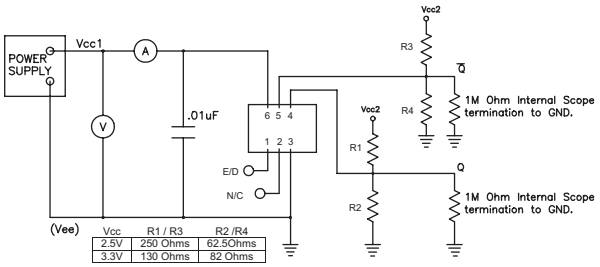
Suggested Pad Layout



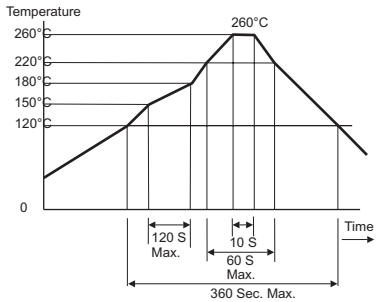
LVPECL Output Waveform



Test Circuit



Solder Profile



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