

Surface Mount Quartz Crystal Oscillator PGF Series

CONNOR WINFIELD



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Description:

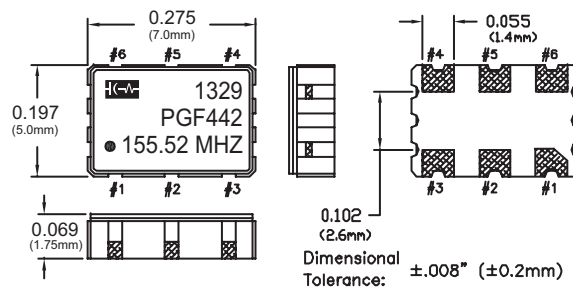
The Connor-Winfield's PGFxxx Series are 5.0x7.0 mm Surface Mount, LVPECL, Fixed Frequency Crystal Controlled Oscillators (XO) designed for applications requiring tight frequency stability, wide temperature range and low jitter. Operating at 2.5 or 3.3 Vdc supply voltage, the PGFxxx Series provides LVPECL output logic with Differential Outputs. Enable / disable function is available on pad 1 or 2. The surface mount package is designed for high-density mounting and is optimum for mass production.



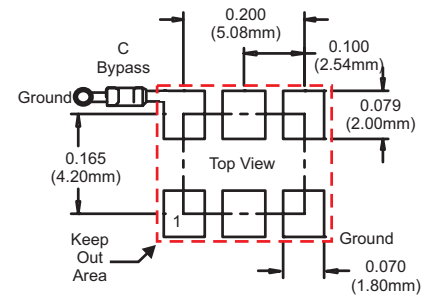
Features:

Frequency Range 10 MHz to 1.5 GHz
3.3 or 2.5 Vdc Operation
5x7 mm SMT Package
Frequency Stabilities Available:
±20 ppm, ±25 ppm, ±50 ppm
or ±100 ppm
Temperature Ranges Available:
0 to 70°C, -40 to 85°C, 0 to 85°C
or -20 to 70°C
Jitter: <1.5 ps RMS
Differential LVPECL Outputs
Tri-State Enable/Disable on Pad 1 or 2
Tape and Reel Packaging
RoHS Compliant / Lead Free

Package Outline



Suggested Pad Layout



Keep Out Area: Do not route any traces in the keep out area. It is recommended the next layer under the keep out area is to be ground plane.

Pad Connections

Models PGFxx2, PGFxx3

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

Pad Connections

Models PGFxx4, PGFxx5

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

Ordering Information

PGF	4	4	2	-155.52M
Oscillator Type	Temperature Range	Frequency Tolerance	Supply Voltage E/D Function	Output Frequency
LVPECL Clock Series 5x7 mm	1 = 0 to 70°C 2 = -40 to 85°C 3 = 0 to 85°C 4 = -20 to 70°C	4 = ±20 ppm 1 = ±25 ppm 2 = ±50 ppm 3 = ±100 ppm	2 = 2.5 Vdc, E/D Pad 1 3 = 3.3 Vdc, E/D Pad 1 4 = 2.5 Vdc, E/D Pad 2 5 = 3.3 Vdc, E/D Pad 2	Frequency Format -xxx.xM Min.* -xxx.xxxxxM Max*

*Amount of numbers after the decimal point.
M = MHz

Example Part Numbers:

PGF442-155.52M = 5x7 mm package, ±20 ppm, -20 to 70°C, 2.5 Vdc, LVPECL Output, E/D Pad 1, Output Frequency 155.52 MHz
PGF123-311.04M = 5x7 mm package, ±50 ppm, 0 to 70°C, 3.3 Vdc, LVPECL Output, E/D Pad 1, Output Frequency 311.04 MHz
PGF244-622.08M = 5x7 mm package, ±20 ppm, -40 to 85°C, 2.5 Vdc, LVPECL Output, E/D Pad 2, Output Frequency 622.08 MHz



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Date **10 Jul 2013**



Absolute Maximum Ratings

Parameter	Minimum	Nominal	Maximum	Units	Notes
Storage Temperature	-55	-	125	°C	
Supply Voltage (Vcc)	-0.5	-	4.2	Vdc	
Input Voltage	-0.5	-	Vcc+0.5	Vdc	

Operating Specifications

Parameter	Minimum	Nominal	Maximum	Units	Notes
Center Frequency: (Fo)	10	-	1500	MHz	
Operating Temperature Range: (See Ordering Information)					
Temperature Code 1	0	-	70	°C	
Temperature Code 2	-40	-	85	°C	
Temperature Code 3	0	-	85	°C	
Temperature Code 4	-20	-	70	°C	
Total Frequency Tolerance: (See Ordering Information)					
Tolerance Code 4	-20.0	-	20.0	ppm	1
Tolerance Code 1	-25.0	-	25.0	ppm	1
Tolerance Code 2	-50.0	-	50.0	ppm	1
Tolerance Code 3	-100.0	-	100.0	ppm	1
Supply Voltage: (Vcc)					
Supply Voltage Code 2 or 4	2.375	2.5	2.625	Vdc	±5%
Supply Voltage Code 3 or 5	3.135	3.3	3.465	Vdc	±5%
Supply Current	-	30	50	mA	
Start-Up Time:	-	-	10	ms	

Jitter / Phase Noise Characteristics

Parameter	Minimum	Nominal	Maximum	Units	Notes
Jitter					
Period Jitter	-	3.0	5.0	ps RMS	
Integrated Phase Jitter	-	1.1	1.5	ps RMS	
SSB Phase Noise for Fo = 320.6296 MHz					
@ 10 Hz offset	-	-45	-	dBc/Hz	
@ 100 Hz offset	-	-75	-	dBc/Hz	
@ 1 KHz offset	-	-105	-	dBc/Hz	
@ 10 KHz offset	-	-110	-	dBc/Hz	
@ 100 KHz offset	-	-110	-	dBc/Hz	
@ 1 MHz offset	-	-128	-	dBc/Hz	
@ 10 MHz offset	-	-138	-	dBc/Hz	

Input Characteristics

Parameter	Minimum	Nominal	Maximum	Units	Notes
Enable / Disable Function Option: Models PGFxx2, PGFxx3 E/D Pad 1, N/C Pad 2 Models PGFxx4, PGFxx5 E/D Pad 2, N/C Pad 1					
Enable Voltage (VIH)	70% Vcc	-	-	Vdc	
Disable Voltage (VIL)	-	-	30% Vcc	Vdc	2
Enable Time	-	-	200	ns	
Disable Time	-	-	50	ns	

Enable / Disable Function

Function: (Pad 1 or 2)	Output
Low or Open:	Disabled (High Impedance)
High	Enabled

LVPECL Output Characteristics

Parameter	Minimum	Nominal	Maximum	Units	Notes
Load	-	50	-	pF	3
Output Voltage: Vcc = 2.5 Vdc					
High (VOH)	1.475	-	-	V	
Low (VOL)	-	-	0.880	V	
Output Voltage: Vcc = 3.3 Vdc					
High (VOH)	2.275	-	-	V	
Low (VOL)	-	-	1.680	V	
Duty Cycle at 50% of output voltage swing	45	50	55	%	
Rise / Fall Time: 20% to 80%	-	200	350	ps	

Package Characteristics

Package	Hermetically sealed ceramic package and metal cover
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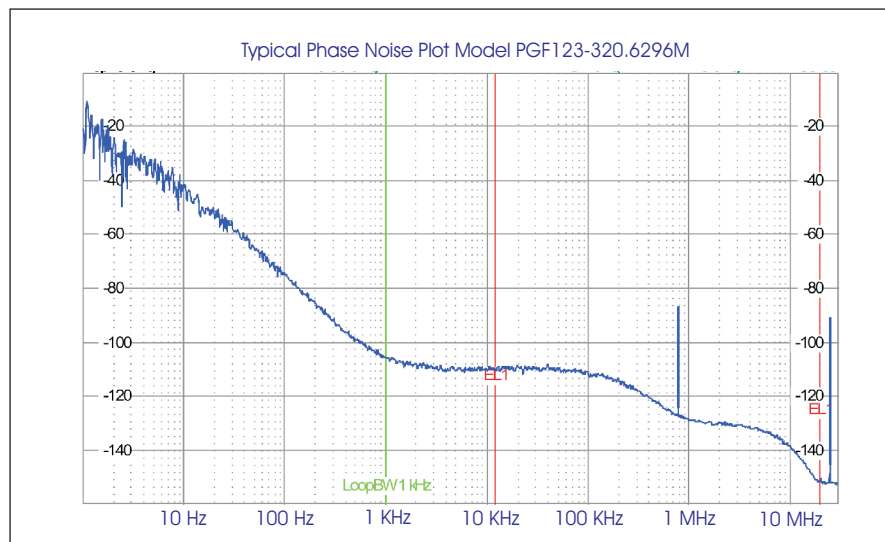
Environmental Characteristics

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 4.

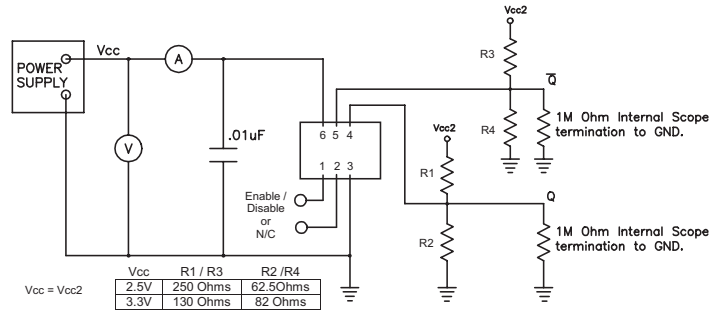
Notes:

1. Includes calibration @ 25°C, frequency stability vs. change in temperature, supply voltage and load variations, shock and vibration and 20 years aging.
2. When the oscillator is disabled the outputs go to tri-state level (high impedance) which floats to VOL. Outputs are enabled with no connection on E/D pad.
3. Outputs must be terminated into 50 ohms to Vcc - 2V or Thevenin equivalent.

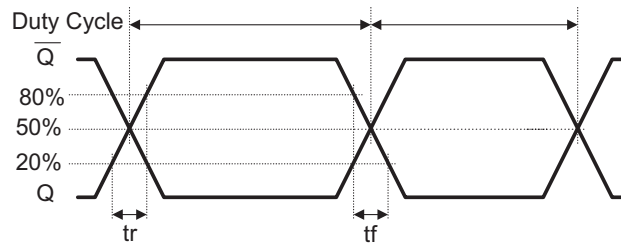
Phase Noise Plot



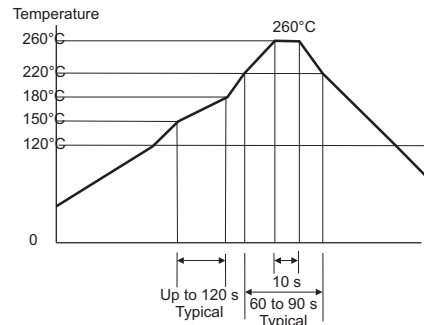
Test Circuit



Output Waveform

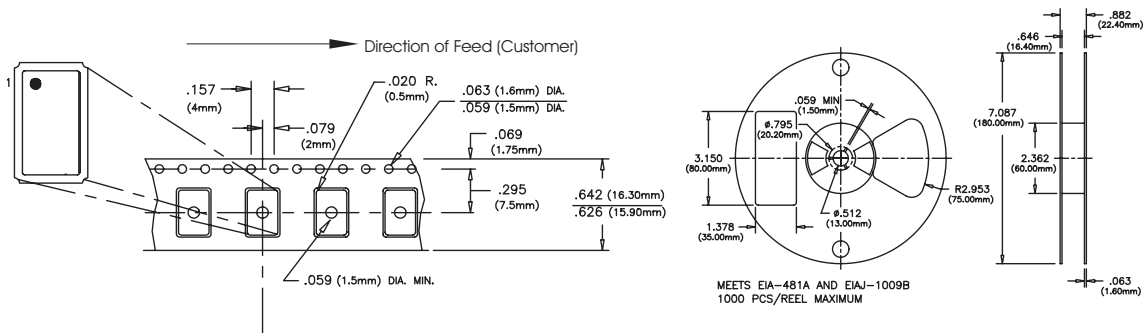


RoHS Solder Profile



Meets IPC/JEDEC J-STD-020C

Tape and Reel Dimensions



Revision History

Revision 00	Data sheet released 07/09/13
Revision 01	Corrected supply voltage code, page 2. 07/10/13.

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