

High Frequency Low Jitter VCXO

CONNOR WINFIELD



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Description

The Connor-Winfield models V777, V778, V787 and V788 are 3.3V, Surface Mount 5.0x7.0mm, Voltage Controlled Crystal Oscillator (VCXO) with LVPECL differential outputs and enable/disable function. The V777, V778, V787 and V788 are designed for use with applications utilizing a PLL system requiring very high frequency and low jitter. The surface mount package is designed for high-density mounting and is optimum for mass production.



Features

- 3.3V Operation
- Absolute Pull Range (APR): ± 30 ppm
- Temperature Range: 0 to 70°C or -40 to 85°C
- Differential LVPECL Outputs
- Low Jitter 70fs RMS Typical
- Enable / Disable Function:
 - Models Vxx7: Enable Low
 - Models Vxx8: Enable High
- 5.0x7.0mm Surface Mount Package
- 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	-	4.6	Vdc	
Input Voltage (Vc)	-0.5	-	Vcc+0.5	Vdc	

Operating Specifications

Parameter	Minimum	Nominal	Maximum	Units	Notes
Center Frequency: (Fo)	150	-	710	MHz	
Operating Temperature Range:					
Models Vx7x:	0	-	70	°C	
Models Vx8x:	-40	-	85	°C	
Supply Voltage: (Vcc)	3.135	3.30	3.465	Vdc	
Supply Current (Icc)	-	-	100	mA	
Integrated Phase Jitter (BW=12kHz to 20MHz)	-	70	100	fs RMS	
Typical Phase Noise for Fo = 245.76 MHz					
SSB Phase Noise at 10Hz offset	-	-60	-	dBc/Hz	
SSB Phase Noise at 100Hz offset	-	-85	-	dBc/Hz	
SSB Phase Noise at 1KHz offset	-	-110	-	dBc/Hz	
SSB Phase Noise at 10KHz offset	-	-135	-	dBc/Hz	
SSB Phase Noise at 100KHz offset	-	-150	-	dBc/Hz	
SSB Phase Noise at 1MHz offset	-	-150	-	dBc/Hz	
SSB Phase Noise at 10MHz offset	-	-158	-	dBc/Hz	
Sub Harmonic Content					
@ 25% Fo	-	-45	-	dBc	
@ 50% Fo	-	-40	-	dBc	
@ 75% Fo	-	-45	-	dBc	
Harmonic Content @ 2xFo	-	-17	-	dBc	
Spurious Content	-	-	-70	dBc	

Input Characteristics

Parameter	Minimum	Nominal	Maximum	Units	Notes
Control Voltage Range (Vc)	0.3	1.65	3.0	Vdc	
Tuning Slope (Kv)	-	80	-	ppm/V	
Absolute Pull Range (APR)	± 30	-	-	ppm	1
Monotonic Linearity	-10	-	10	%	
Input Impedance	130K	180K	-	Ohm	
Modulation Bandwidth (3dB)	25	-	-	KHz	
Models: Vxx7 Enable / Disable Function					
Enable Input Voltage (Low) (Vil)	-	-	1.68	Vdc	
Disable Input Voltage (High) (Vih)	2.275	-	-	Vdc	2
Models: Vxx8 Enable / Disable Function					
Enable Input Voltage (High) (Vil)	2.275	-	-	Vdc	
Disable Input Voltage (Low) (Vih)	-	-	1.68	Vdc	2

LVPECL Output Characteristics

Parameter	Minimum	Nominal	Maximum	Units	Notes
Load	-	-	50	Ohms	3
Voltage (High) Voh	2.275	-	-	Vdc	
(Low) Vol	-	-	1.68	Vdc	
Duty Cycle at 50% Level	45	50	55	%	
Rise / Fall Time 20% to 80%	-	0.30	0.45	ns	



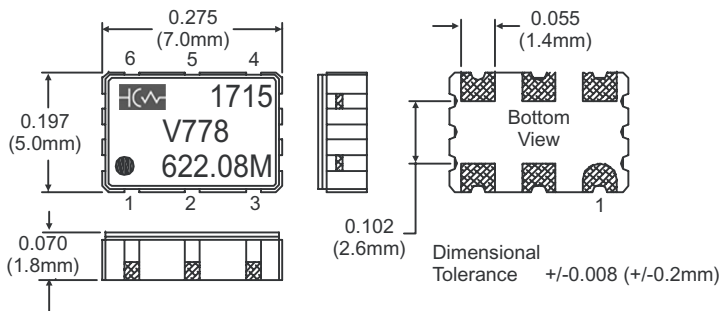
Packaging Characteristics

Package Hermetically sealed ceramic package with grounded metal cover.
Soldering Process RoHS compliant, lead free. See Solder Profile.

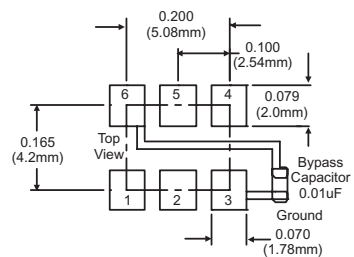
Notes

1. Absolute pull range (APR) is the minimum guaranteed pull range of the VCXO under all conditions over the lifetime operation. Including calibration @ 25°C, frequency vs. change in temperature, frequency vs. change in supply voltage, frequency vs. change in load, shock and vibration and aging for ten years. The APR is referenced to Fo. Positive Transfer Function.
2. Outputs are enabled with no connection on pad 2. When oscillator is disabled both outputs are in high impedance state.
3. 50 ohm termination into Vcc-2V or Thevin equivalent.

Package Layout



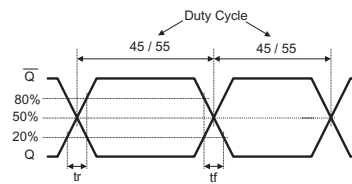
Suggested Pad Layout



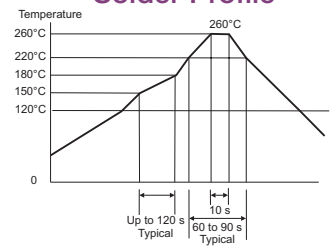
Pad Connections

Pad	Connection
1:	Control Voltage
2:	Enable / Disable
3:	Ground (Case)
4:	Output Q
5:	Output Q̄
6:	Vcc

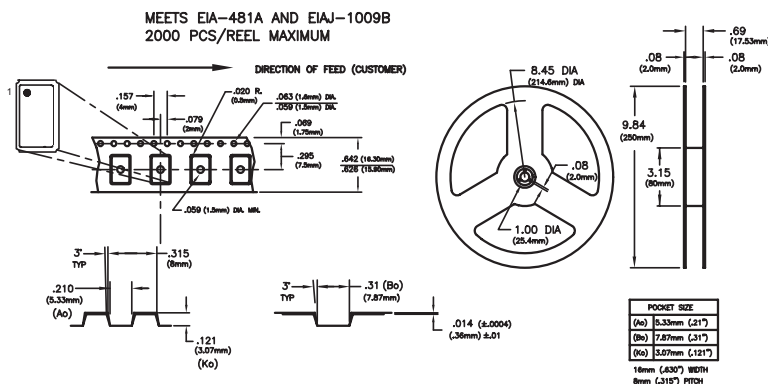
Output Waveform



Solder Profile



Tape and Reel



Ordering Information

V7	7	8	622.08M
Type V7 = LVPECL 5 x 7mm VCXO Series	Temperature Range 7 = 0 to 70°C 8 = -40 to 85°C APR: ±30ppm	Enable/Disable 7 = Enable Low 8 = Enable High Supply Voltage 3.3Vdc	Output Frequency: Frequency Format -xxx.xM Min* -xxx.xxxxxM Max* *Amount of numbers after the decimal point. M = MHz

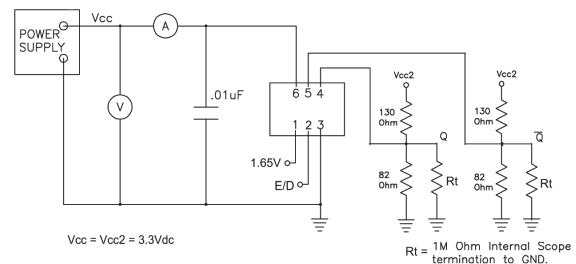
Example:
V778-622.08M = 5x7mm, LVPECL, VCXO
3.3Vdc, 0 to 70°C, ±30APR,
Output Frequency 622.08MHz

Enable / Disable Function

Models: Vxx7	Enable / Disable Function (Pad 2)	Output
	No Connection	Enable
	Low	Enable
	High	Disable (High Impedance)

Models: Vxx8	Enable / Disable Function (Pad 2)	Output
	No Connection	Enable
	High	Enable
	Low	Disable (High Impedance)

Test Circuit



Phase Noise Plot

