

# High Frequency 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

**Models: V777 / V778 / V787 / V788**

3.3V Operation

Absolute Pull Range (APR): +/-30ppm

Temperature Range: 0 to 70°C or -40 to 85°C

Differential LVPECL Outputs

Low Jitter 0.1ps RMS Typical

Enable / Disable Function:

Models: V777-V787: Enable Low

Models: V778-V788: Enable High

5.0x7.0mm Surface Mount Package

Tape and Reel Packaging

RoHS Compliant / Lead Free



## Specifications

### Absolute Maximum Ratings

Parameter	Symbol	Minimum	Nominal	Maximum	Units	Note
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	Symbol	Minimum	Nominal	Maximum	Units	Note
Center Frequency	(Fo)	300	-	800	MHz	
Operating Temperature Range						

Models: V777-V778	0	-	70	°C
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Models: V787-V788	-40	-	85	°C
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Supply Voltage	(Vcc)	3.135	3.3	3.465	Vdc
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Supply Current	(Icc)	-	-	100	mA
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Integrated Phase Jitter (BW=12kHz to 20MHz)		-	0.1	0.25	ps rms
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### Typical Phase Noise for Fo = 622.08 MHz

SSB Phase Noise at 10Hz offset		-	-45	-	dBc/Hz
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SSB Phase Noise at 100Hz offset		-	-85	-	dBc/Hz
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SSB Phase Noise at 1KHz offset		-	-110	-	dBc/Hz
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SSB Phase Noise at 10KHz offset		-	-130	-125	dBc/Hz
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SSB Phase Noise at 100KHz offset		-	-140	-130	dBc/Hz
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SSB Phase Noise at 1MHz offset		-	-145	-140	dBc/Hz
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SSB Phase Noise at 10MHz offset		-	-150	-145	dBc/Hz
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### Sub harmonic Content for Fo = 622.08 MHz

@ 155.52 MHz (25%Fo)		-	-45	-	dBc
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@ 311.04 MHz (50%Fo)		-	-40	-	dBc
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@ 466.56 MHz (75%Fo)		-	-45	-	dBc
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### Harmonic Content for Fo = 622.08 MHz

@ 1.244 GHz (2xFo)		-	-17	-	dBc
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Spurious Content		-	-	-70	dBc
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### Input Characteristics

Parameter	Symbol	Minimum	Nominal	Maximum	Units	Note
Control Voltage Range	(Vc)	0.3	1.65	3.0	Vdc	

Tuning Slope (Kv)		-	80	-	ppm/V	
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Absolute Pull Range: (APR)		±30	-	-	ppm	1
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Monotonic Linearity		-10	-	10	%	
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Input Impedance		130K	180K	-	Ohm	
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Modulation Bandwidth (3dB)		25	-	-	KHz	
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### Models: V777-V787 Enable / Disable Function

Enable Input Voltage (Low)	(Vil)	-	-	1.68	Vdc	2
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Disable Input Voltage (High)	(Vih)	2.275	-	-	Vdc	2
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### Models: V778-V788 Enable / Disable Function

Enable Input Voltage (High)	(Vil)	2.275	-	-	Vdc	2
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Disable Input Voltage (Low)	(Vih)	-	-	1.68	Vdc	2
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### LVPECL Output Characteristics

Parameter	Symbol	Minimum	Nominal	Maximum	Units	Note
LOAD		-	-	50	Ohms	3

Voltage (High)	(Voh)	2.275	-	-	Vdc	
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(Low)	(Vol)	-	-	1.68	Vdc	
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Duty Cycle at 50% Level		45	50	55	%	
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Rise / Fall Time 20% to 80%		-	0.30	0.45	ns	
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Bulletin	Vx605
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Date	05 Nov 2008

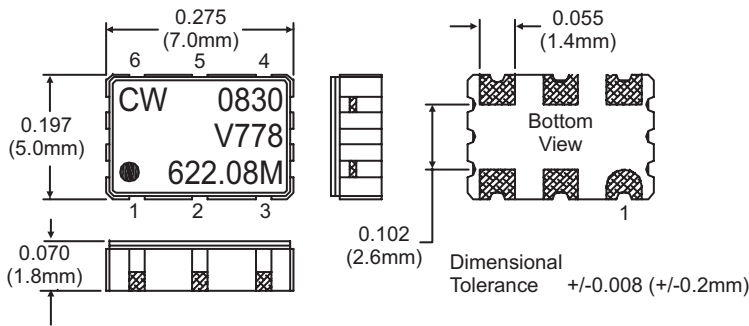
### Package Characteristics

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

### Notes

- 1.0 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.
- 2.0 Outputs are enabled with no connection on pad 2. When oscillator is disabled both outputs are in a high impedance state.
- 3.0 50 ohm termination into Vcc-2V or Thevein equivalent.

### Package Layout



### Enable / Disable Function

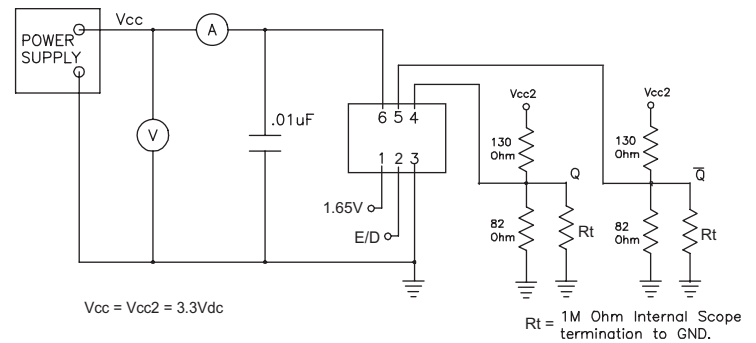
#### Models: V777-V787

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

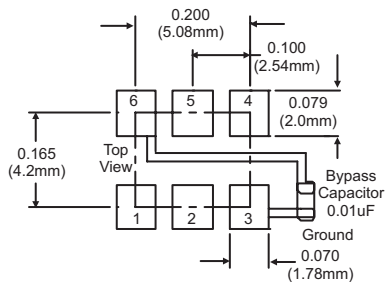
#### Models: V778-V788

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

### Test Circuit



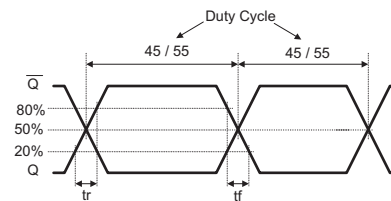
### Suggested Pad Layout



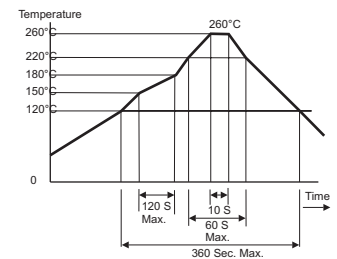
### Pad Connections

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

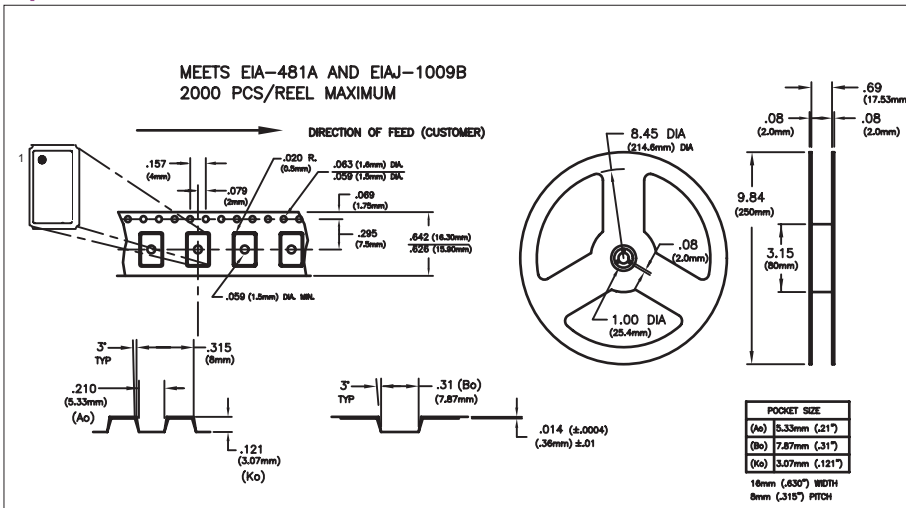
### Output Waveform



### Solder Profile



### Tape and Reel Information



### Ordering Information

V 7	7	8	-	622.08M
Type: 5x7mm LVPECL High Frequency VCXO	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, -40 to 85C, +/-30APR,  
Output Frequency 622.08MHz

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