

# Low Jitter VB7-Series LVPECL VCXO

# CONNOR WINFIELD



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## Description

The Connor-Winfield VB7 Series models are 3.3V SMT 5.0x7.0mm Voltage Controlled Crystal Oscillators (VCXOs) with ultra low jitter. With LVPECL differential outputs, the VB7 Series is designed for applications such as SONET, WiMax, Fiber Channel where high performance and low noise are needed.



## Features:

- 3.3V Operation
- Low Jitter 100fs RMS typical
- Absolute Pull Range: +/-50ppm
- Pin 1 Input Impedance 10M ohm
- 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	
Control Voltage (Vc)	-0.5	-	Vcc+0.5	Vdc	

## Operating Specifications

Parameter	Minimum	Nominal	Maximum	Units	Notes
Center Frequency (Fo)	70	-	200	MHz	
Operating Temperature Range	-40	-	85	°C	
Supply Voltage (Vcc)	3.135	3.3	3.465	Vdc	
Supply Current (Icc)	-	-	50	mA	
Period Jitter RMS	-	3	5	ps RMS	
Integrated Phase Jitter (BW=12kHz to 20MHz)					
Fo=80MHz		240		fs RMS	
Fo=100MHz		200		fs RMS	
Fo=125MHz		140		fs RMS	
Fo=155.52MHz		100		fs RMS	
Fo=161.13281MHz		90		fs RMS	
Typical Phase Noise for 161.13281MHz					
SSB Phase Noise at 10Hz offset	-	-60	-	dBc/Hz	
SSB Phase Noise at 100Hz offset	-	-88	-	dBc/Hz	
SSB Phase Noise at 1kHz offset	-	-115	-	dBc/Hz	
SSB Phase Noise at 10kHz offset	-	-140	-	dBc/Hz	
SSB Phase Noise at 100kHz offset	-	-152	-	dBc/Hz	
SSB Phase Noise at 1MHz offset	-	-157	-	dBc/Hz	
SSB Phase Noise at 10MHz offset	-	-158	-	dBc/Hz	

## Input Characteristics

Parameter	Minimum	Nominal	Maximum	Units	Notes
Control Voltage Range (Vc)	0.3	1.65	3.0	Vdc	
Typical Slope (Vc=1.65Vdc)	-	75	-	ppm/V	
Absolute Pull Range (APR)	±50	-	-	ppm	1
Monotonic Linearity	-10	-	10	%	
DC Input Resistance (Pad 1)	-	10M	-	Ohm	
Modulation Bandwidth (3dB)	25	-	-	kHz	
Enable / Disable Function					
Enable Input Voltage - High (Vih)	2.275	-	-	Vdc	2
Disable Input Voltage - Low (Vil)	-	-	1.68		

## LVPECL Output Characteristics

Parameter	Minimum	Nominal	Maximum	Units	Notes
Load	-	-	50	Ohms	3
Voltage High (Voh)	2.275	-	-	Vdc	
Voltage Low (Vol)	-	-	1.68	Vdc	
Duty Cycle at 50% Level	45	50	55	%	
Rise / Fall Time 20% to 80%	-	0.3	0.5	nS	

## Notes:

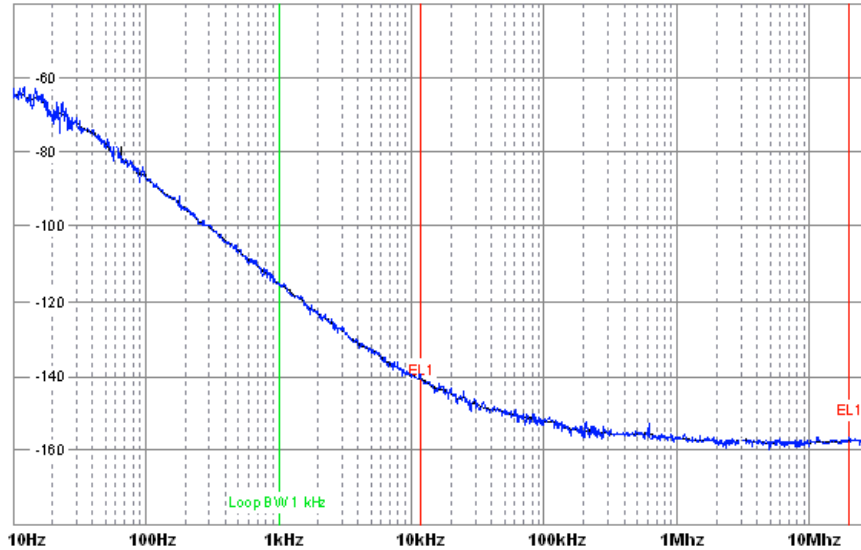
1. Absolute pull range (APR) is the minimum guaranteed pull range of the VCXO under all conditions over the lifetime operation. Including calibration @ 25°C, frequency vs. change in temperature, frequency vs. change in supply voltage, frequency vs. change in load, shock and vibration and aging for ten 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 a high impedance state.
3. 50 ohm termination into Vcc-2V or Thevein equivalent.



## Package Characteristics

Package	Hermetically sealed, ceramic package with grounded metal cover.
Soldering Process	RoHS compliant / lead free, see solder profile on page 3.

## Typical Phase Noise Plot for VB762-161.13281M



## Ordering Information

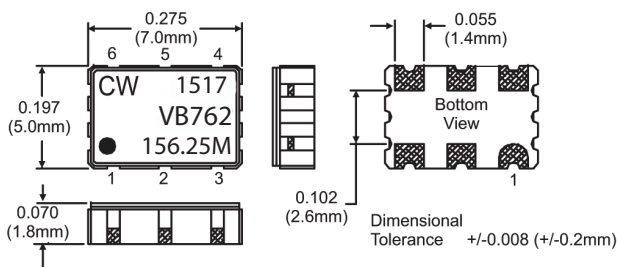
<b>VB7</b>	<b>6</b>	<b>2</b>	<b>155.25M</b>
Type LVPECL VCXO 5.0x7.0mm Package	Temperature Range -40 to 85°C Enable / Disable Function 6 - Enable = High	APR and Supply Voltage 2 = ±50 ppm 3.3 Vdc	Output Frequency Frequency Format -xxx.xM Minimum* -xxx.xxxxxM Maximum* *Amount of numbers after the decimal point. M = MHz

Example: To order an VB762 with an output frequency of:  
100.0 MHz = VB762-100.0M  
155.52 MHz = VB762-155.52M

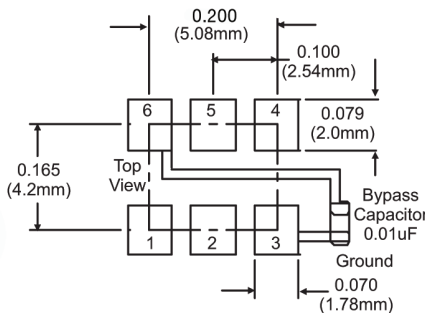
## Enable / Disable Function

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

## Package Layout



## Suggested Pad Layout

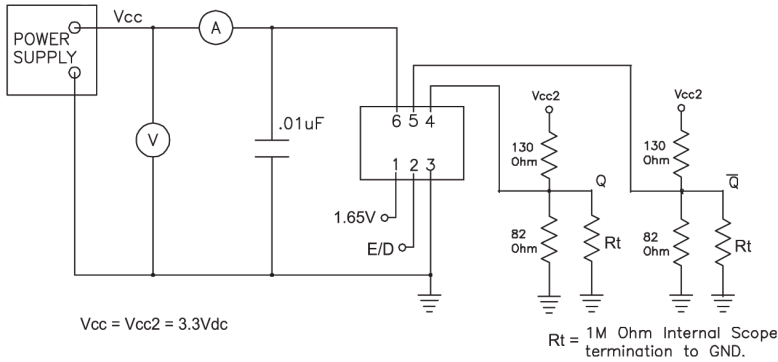


## Pad Connections

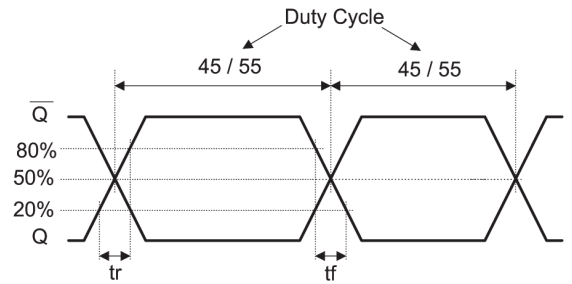
1:	Control Voltage
2:	Enable / Disable
3:	Ground (Case)
4:	Output Q
5:	Output Q̄
6:	Vcc

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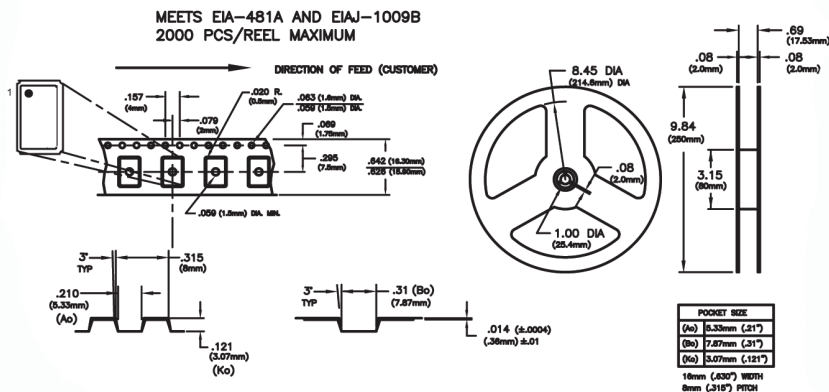
## Test Circuit



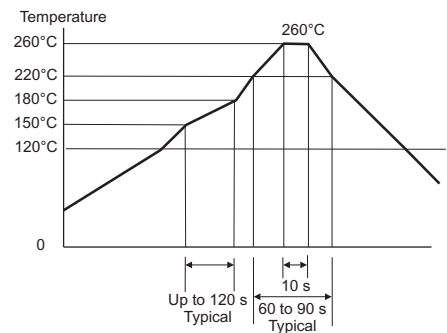
## Output Waveform



## Tape and Reel Dimensions



## Solder Profile



Meets IPC/JEDEC J-STD-020C