

VKB-Series 5.0x7.5mm LVCMOS 3.3V Surface Mount VCXO

CONNOR WINFIELD



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The Connor-Winfield RoHS compliant, VKB-Series are hermetically sealed surface mount 3.3V Voltage Controlled Crystal Oscillators (VCXO) with a tri-state enable / disable function. The VKB-Series are designed for phased lock loop applications requiring low jitter and tight frequency stability. The surface mount package is designed for high-density mounting and is optimum for mass production.



Features

Model: VKB-Series

1.0 to 52 MHz

3.3V / LVCMOS

Frequency Tolerances Available:

+/-25ppm, +/-50ppm or +/-100ppm

Temperature Ranges Available:

0 to 70°C or -40 to 85°C

Low Jitter <1pS RMS

Tri-State Enable / Disable Function:

Pad 2 or Pad 5

Tape and Reel Packaging

RoHS Compliant / Lead Free

Absolute Maximum Ratings

Parameter	Units	Minimum	Nominal	Maximum	Units	Note
Storage Temperature		-55	-	125	°C	
Supply Voltage	(Vcc)	-0.5	-	7	Vdc	
Control Voltage	(Vc)	-0.5	-	Vcc+0.5	Vdc	

Operating Specifications

Parameter	Units	Minimum	Nominal	Maximum	Units	Note
Frequency Range	(Fo)	1.0	-	52	MHz	
Frequency Tolerance:						
Model VKB51Bx, VKB61Bx		-25	-	25	ppm	
Model VKB52Bx, VKB62Bx		-50	-	50	ppm	1
Model VKB53Bx, VKB63Bx		-100	-	100	ppm	
Operating Temperature Range						
VKB5x-Series		0	-	70	°C	
VKB6x-Series		-40	-	85	°C	
Supply Voltage	(Vcc)	3.0	3.3	3.6	Vdc	
Supply Current						
1.0 to 29.999 MHz	(Icc)	-	-	15	mA	
30 to 52 MHz	(Icc)	-	-	25	mA	
Jitter						
Period Jitter		-	3	5	ps rms	
Phase Jitter (BW=12kHz to 20MHz)		-	0.5	1	ps rms	
Phase Noise (Fo = 20 MHz)						
SSB Phase Noise at 10Hz offset		-	-80	-	dBc/Hz	
SSB Phase Noise at 100Hz offset		-	-105	-	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		-	-150	-	dBc/Hz	
SSB Phase Noise at 1MHz offset		-	-155	-	dBc/Hz	

Input Characteristics

Parameter	Units	Minimum	Nominal	Maximum	Units	Note
Control Voltage Range	(Vc)	0.15	1.65	3.15	Vdc	
Frequency Pull Range		±100	-	-	ppm	2
Monotonic Linearity		-10	-	10	%	
DC Input Impedance		90K	100K	110K	Ohm	
Modulation Bandwidth (3dB)		10	-	-	KHz	
Tri-State Enable / Disable Function						
Enable Input Voltage	(High) (Vih)	2.7	-	-	Vdc	3
Disable Input Voltage	(Low) (Vil)	-	-	0.3	Vdc	3

LVCMOS Output Characteristics

Parameter	Units	Minimum	Nominal	Maximum	Units	Note
LOAD		-	-	15	pf	
Voltage (High)	(Voh)	2.7	-	-	Vdc	
Voltage (Low)	(Vol)	-	-	0.33	Vdc	
Current (High)	(Ioh)	-4	-	-	mA	
Current (Low)	(Iol)	-	-	4	mA	
Duty Cycle at 50% of Vcc		45	50	55	%	
Rise / Fall Time 10% to 90%		-	-	5	nS	
Start-up Time		-	-	10	mS	



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Package Characteristics

Package	Hermetically sealed, ceramic leadless package.
Soldering Process	RoHS compliant, lead free. See solder profile on page 2.

Note:

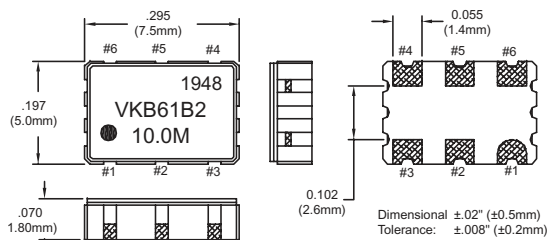
- Control voltage = 1.65Vdc, referenced to Fo. Inclusive of calibration, frequency vs. temperature stability, supply voltage change, load change, shock and vibration, 15 years aging.
- Measured at 25°C, referenced to Fo. Positive Slope.
- The Output is enabled with no connection on the enable pin.

Ordering Information

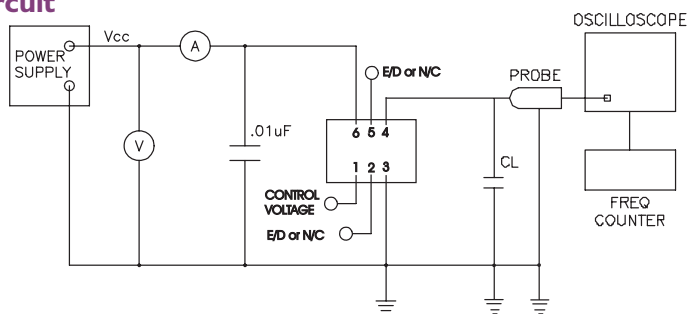
VKB	6	1	B2	010.0M
Type: LVCMOS VCXO 5.0x7.5mm Package 3.3 Vdc	Temperature Range: 5 = 0 to 70° C 6 = -40 to 85° C	Frequency Tolerance 1 = ± 25 ppm 2 = ± 50 ppm 3 = ± 100 ppm	Enable / Disable Pad B2 = Pad 2 B5 = Pad 5	Output Frequency: Frequency Format -xxx.xM Minimum* -xxx.xxxxxM Maximum* *Amount of numbers after the decimal point. M = MHz

Example: To order an VKB51B5 with an output frequency of:
1.0 MHz = VKB51B5-001.0M
25 MHz = VKB51B5-025.0M
44.736 MHz = VKB51B5-044.736M

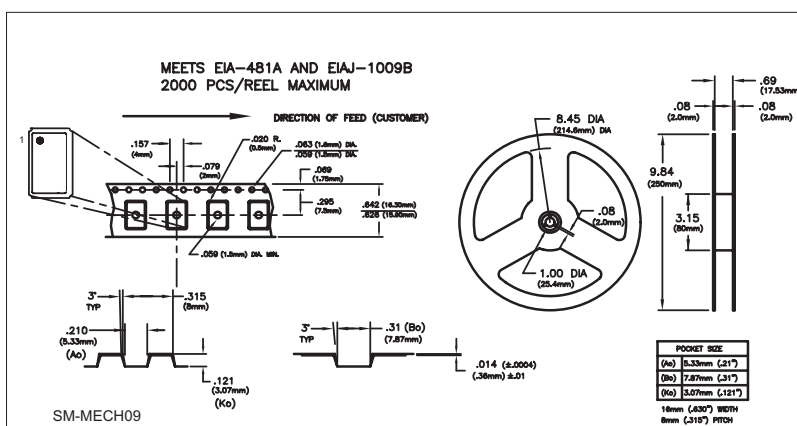
Package Layout



Test Circuit



Tape and Reel Information



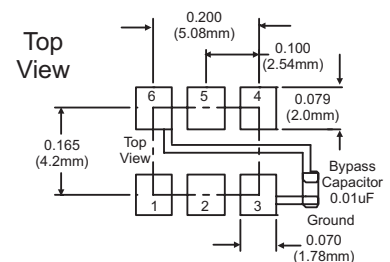
Pad Connections

Pad	Function
1	Control Voltage
2	VKBxxB2 Models: Enable / Disable VKBxxB5 Models: N/C
3	Ground (Case)
4	Output Q
5	VKBxxB5 Models: Enable / Disable VKBxxB2 Models: N/C
6	Vcc

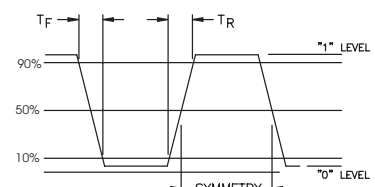
Enable / Disable Function

Enable / Disable Function	Output
High or no connection	Enable
Low	Disable (High Impedance)

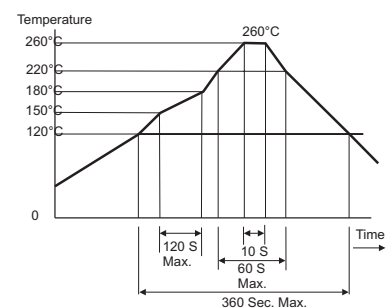
Suggested Pad Layout



Output Waveform



Solder Profile



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