

5.0V Surface Mount 5.0mm x 7.5mm Oscillators VKA51A5, VKA52A5, VKA53A5

CONNOR WINFIELD



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VCXO

The Connor-Winfield, RoHS compliant, VKA51A5, VKA52A5, and VKA53A5 are hermetically sealed, Surface Mount, 5.0V Voltage Controlled Crystal Oscillators (VCXO) with the enable/disable function on pad 5. The VKA51A5, VKA52A5, and VKA53A5 are designed for phased lock loop applications requiring low jitter and tight stability. The surface mount package is designed for high-density mounting and is optimum for mass production.

Features:

RoHS Compliant
5.0V Operation
Overall Frequency Tolerance:
VKA51A5: ± 25 ppm
VKA52A5: ± 50 ppm
VKA53A5: ± 100 ppm
Low Jitter <1pS RMS
Temperature Range 0° to 70°C
Enable / Disable Pad 5
Leadless Surface Mount Package
Tape and Reel Packaging

Absolute Maximum Ratings

Parameter	Minimum	Nominal	Maximum	Units	Notes
Storage Temperature	-55	-	125	°C	
Supply Voltage (Vcc)	-0.5	-	7.0	Vdc	
Control Voltage (Vc)	-0.5	-	7.0	Vdc	

Operating Specifications

Parameter	Minimum	Nominal	Maximum	Units	Notes
Frequency Range (Fo)	1.0	-	52	MHz	
Frequency Tolerance					
Model VKA51A2	-25	-	25	ppm	1
Model VKA52A2	-50	-	50		
Model VKA53A2	-100	-	100		
Operating Temperature Range	0	-	70	°C	
Supply Voltage (Vcc)	4.75	5.0	5.25	Vdc	
Supply Current (Icc)					
1.0 to 19.999 MHz	-	-	15	mA	
20 to 52 MHz	-	-	25		
Jitter:					
(BW=12kHz to 20 MHz)	-	-	1	ps RMS	
(BW=10Hz to 20 MHz)	-	-	5		

Input Characteristics

Parameter	Minimum	Nominal	Maximum	Units	Notes
Control Voltage Range (Vc)	0.5	2.5	4.5	Vdc	
Frequency Pullability @ 25°C	± 100	-	-	ppm	
Monotonic Linearity	-10	-	10	%	
Input Impedance	-	50K	-	Ohm	
Modulation Bandwidth (3dB)	10	-	-	kHz	
Enable Input Voltage - High (Vih)	2.7	-	-	Vdc	2
Disable Input Voltage - Low (Vil)	-	-	0.3		

HCMOS Output Characteristics

Parameter	Minimum	Nominal	Maximum	Units	Notes
Load	-	-	15	pf	
Voltage High (Voh)	4.5	-	-	Vdc	
Low (Vol)	-	-	0.5		
Current High (Ioh)	-4	-	-	mA	
Low (Iol)	-	-	16		
Duty Cycle at 50% of Vcc	45	50	55	%	
Rise / Fall Time 20% to 80%	-	-	5	nS	

Notes:

1. Referenced to (Fo) measured with control voltage @ 2.5Vdc. Inclusive of frequency vs. temperature stability, supply voltage change, load change, shock and vibration, 15 years aging.
2. The Output is enabled with no connection on the enable pad.

Specifications subject to change without notice. All dimensions in inches. © Copyright 1998 The Connor-Winfield Corporation



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Package Characteristics

Package	Hermetically sealed, ceramic leadless package.
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Environmental Characteristics

Temperature Cycle	The specimen shall meet electrical characteristics after tested 5 cycles of -55°C / 30 minutes and +125°C / 30 minutes
Hermetical	No bubbles appear in Flourinert (FC-43) at 125°C ±5°C for 5 minutes
Solvent Resistance	Marking will withstand immersion in Isopropyl Alcohol or Trichloroethylene

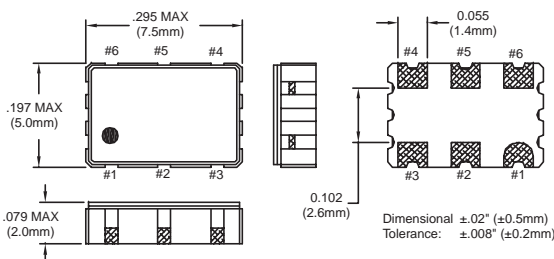
Soldering

General Conditions	260°C max x 10 sec max x 2 times max or 230°C max x 180 sec max x 1 time
Typical Operation Data (Vapor phase reflow)	20 to 100 sec up to 215°C, 50 sec at 215°C, then down to room temperature per 1 to 5°C / sec

Mechanical Characteristics

Free Drop	The specimen shall meet electrical characteristics after tested 3 times, Free Drop testing on the hard wooden board from a height of 75 cm.
Vibration	The specimen shall meet electrical characteristics after tested by the following conditions: 10-55Hz 1.5mm Amplitude, 55-2000 Hz 20 G's, 2 hours for each plane
Thermal Shock	After applied Thermal Shock of 245°C max x 10 sec max x 2 times, or 215°C max x 180 sec max, the specimen shall meet electrical characteristics
Solderability	(EIAJ-RCX-0102/101 Condition 1a) 1) Flux: MIL-F-14256 (WW Rosin=25%, Isopropyl Alcohol = 75%) 2) Solder: QQ-S-571 (Sn = 63%, Pb = 37%) 3) Solder bath temperature: 235°C ±5°C 4) Depth of immersion: Up to electrical terminal 5) Immersing time: Within 2 sec ±0.5 sec into solder bath

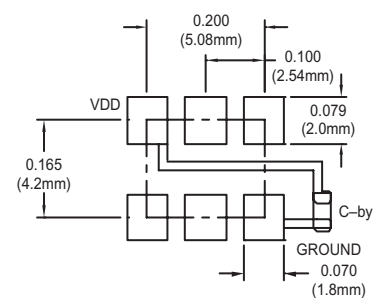
After performing the above procedures, a newly soldered coverage shall be greater than 90%



Pin Function

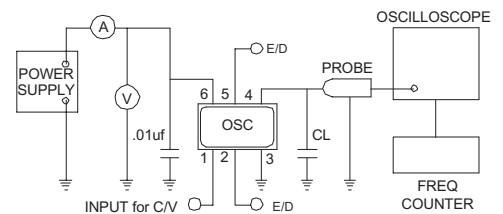
- 1: Control Voltage
- 2: N/C
- 3: Ground
- 4: Output
- 5: E/D
- 6: VDD

Suggested Pad Layout

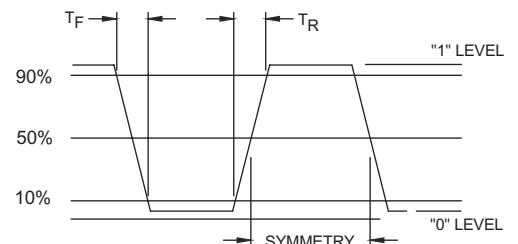


Bypass capacitor, C-by, should be ceramic capacitor ≥ .01uf.

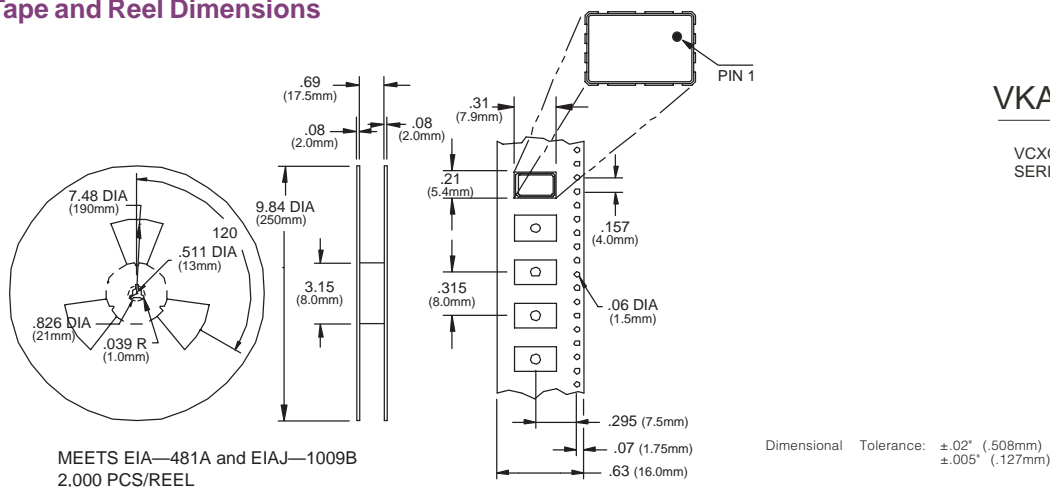
Test Circuit



Output Waveform



Tape and Reel Dimensions



MEETS EIA-481A and EIAJ-1009B
2,000 PCS/REEL

Ordering Information

VKA51A5 - 51.84 MHz

VCXO SERIES

CENTER FREQUENCY

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