

# 2.8V LVCMOS Surface Mount Crystal Clock Oscillator 5116



2111 Comprehensive Drive  
Aurora, Illinois 60505  
Phone: 630-851-4722  
Fax: 630-851-5040  
[www.conwin.com](http://www.conwin.com)

US Headquarters:  
630-851-4722  
European Headquarters:  
+353-61-472221

## XO

The Connor-Winfield models 5116, 5126, and 5136 are 7.5mm x 5mm, 2.8V LVCMOS, Surface Mount, Fixed Frequency Crystal Oscillators (XO) designed for use in all applications requiring precision clocks. This oscillator features low stand-by current (10uA) when the output is disabled. The RoHS compliant, surface mount package is designed for high-density mounting and is optimum for mass production.

## Features:

1.8 to 80 MHz  
2.8V Operation  
RoHS Compliant  
Tri-State Enable / Disable Function  
Overall Frequency Tolerance:  
5116 ± 25 ppm, 5126 ± 50 ppm,  
5136 ± 100 ppm  
Temperature Range: 0 to 70°C  
Power Saving Stand-By Current  
Ceramic 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	

## Operating Specifications

Parameter	Minimum	Nominal	Maximum	Units	Notes
Frequency Range (Fo)	1.8	-	80	MHz	
Frequency Tolerance		-		ppm	1
5116	-25		25		
5126	-50		50		
5136	-100		100		
Operating Temp Range	0	-	70	°C	
Supply Voltage (Vdd)	2.66	2.8	2.94	Vdc	
Supply Current (Icc)				mA	
1.8 to 31.999 MHz	-	-	12		
32 to 50 MHz	-	-	20		

## Input Characteristics

Parameter	Minimum	Nominal	Maximum	Units	Notes
Enable Voltage - (Vih)	≥ 70% Vdd	-	-	Vdc	2
Disable Voltage - (Vil)	-	-	≤ 30% Vdd	Vdc	
Enable Time	-	-	10	nS	
Disable Time	-	-	150	nS	
Output Disable Current (Icc)	-	-	10	uA	

## HCMOS Output Characteristics

Parameter	Minimum	Nominal	Maximum	Units	Notes
Load	-	-	15	pF	
Voltage High (Voh)	2.39	-	-	Vdc	
Low (Vol)	-	-	0.29		
Current High (Ioh)	-4	-	-	mA	
Low (Iol)	-	-	4		
Duty Cycle at 50% of Vcc	45	50	55	%	
Rise / Fall Time 10% to 90%	-	-	5	nS	
Start-Up Time	-	-	10	mS	
Jitter	-	-	5	pS RMS	

## Notes:

- Inclusive of calibration @ 25°C, frequency vs temperature stability, supply voltage change, load change, shock and vibration, 10 years aging.
- Oscillator requires a pull up resistor from pin 1 to Vcc to insure proper operation.



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## Package Characteristics

Package Hermetically sealed ceramic package and metal cover

## 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.

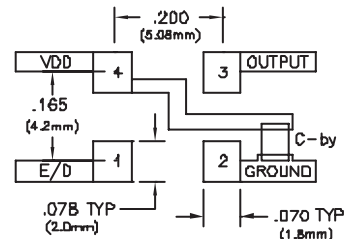
Vibration The specimen shall meet electrical characteristics after tested by the following conditions: 10-55Hz 1.5mm Amplitude, 55-2000 Hz 20 G's, 2 hours for each plane

Thermal Shock After applied Thermal Shock of 260°C max x 10 sec max x 2 times, or 230°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

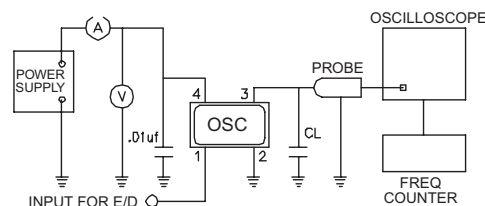
After performing the above procedures, a newly soldered coverage shall be greater than 90%

## Suggested Pad Layout

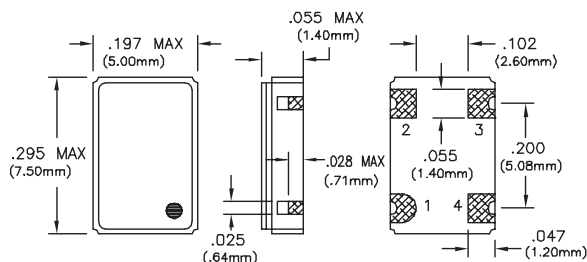
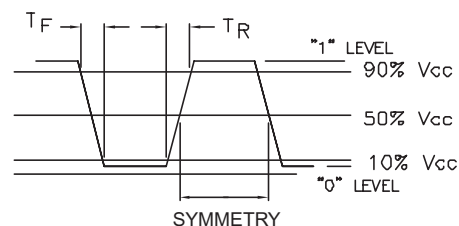


Bypass capacitor, C-by, should be ceramic capacitor ≥ .01 uf

## Test Circuit



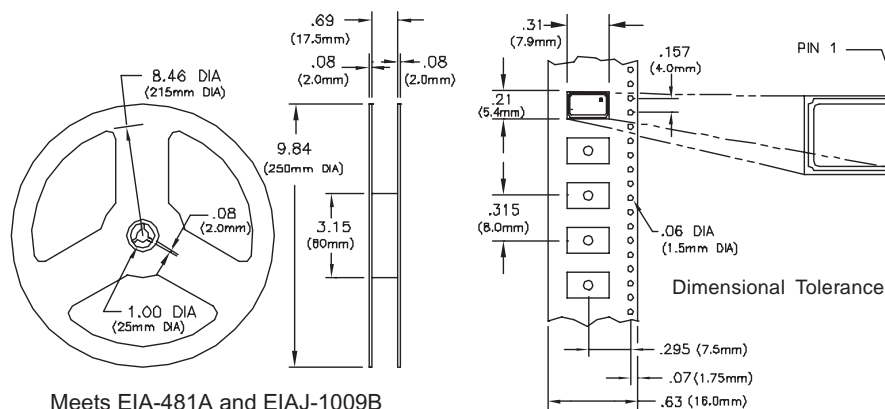
## Output Waveform



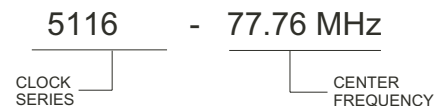
## Pin Connections

- 1: Enable/Disable
- 2: Ground
- 3: Output
- 4: Vcc

## Tape and Reel Dimensions



## Ordering Information



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