

# 1.8V LVCMOS Surface Mount Crystal Clock Oscillator 6211, 6221, 6231



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 6211, 6221, and 6231 are a 6 x 3.5mm, 1.8V LVCMOS, Ceramic, Surface Mount, Fixed Frequency Crystal Oscillators (XO) designed for use in all applications requiring precision clocks. The RoHS compliant, surface mount package is designed for high-density mounting and is optimum for mass production.

### Features:

- 30 to 70 MHz
- 1.8V Operation
- RoHS Compliant
- Tri-State Enable / Disable Function
- Overall Frequency Tolerance:
  - 6211 ± 25 ppm
  - 6221 ± 50 ppm
  - 6231 ± 100 ppm
- Temperature Range: -40 to 85°C
- 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	-	3.6	Vdc	

### Operating Specifications

Parameter	Minimum	Nominal	Maximum	Units	Notes
Frequency Range (Fo)	30	-	70	MHz	
Frequency Tolerance				ppm	1
6211	-25	-	25		
6221	-50	-	50		
6231	-100	-	100		
Operating Temp Range	-40	-	85	°C	
Supply Voltage (Vdd)	1.71	1.8	1.89	Vdc	
Supply Current (Icc)	-	-	15	mA	

### Input Characteristics

Parameter	Minimum	Nominal	Maximum	Units	Notes
Enable Voltage - (Vih)	≥ 70% Vdd	-	-	Vdc	2
Disable Voltage - (Vil)	-	-	≤ 30% Vdd	Vdc	
Enable Time	-	-	100	nS	
Disable Time	-	-	100	nS	

### LVCMOS Output Characteristics

Parameter	Minimum	Nominal	Maximum	Units	Notes
Load	-	-	15	pF	
Voltage High (Voh)	1.54	-	-	Vdc	
Low (Vol)	-	-	0.19	Vdc	
Current High (Ioh)	-2	-	-	mA	
Low (Iol)	-	-	2	mA	
Duty Cycle at 50% of Vcc	40	50	60	%	
Rise / Fall Time 10% to 90%	-	-	3.5	nS	
Start-Up Time	-	-	10	mS	
Jitter	-	-	5	pS RMS	

#### Notes:

1. Inclusive of calibration @ 25°C, frequency vs temperature stability, supply voltage change, load change, shock and vibration, 10 years aging.
2. Oscillator output is enabled with no connection on pad 1



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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

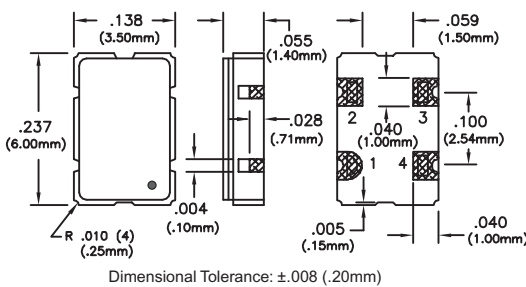
Free Drop The specimen shall meet electrical characteristics after tested 3 times, Free Drop testing on the hard wooden board from a height of 75 cm.

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

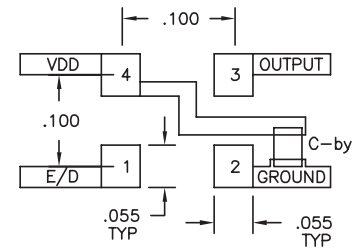
After performing the above procedures, a newly soldered coverage shall be greater than 90%



### Pad Connection

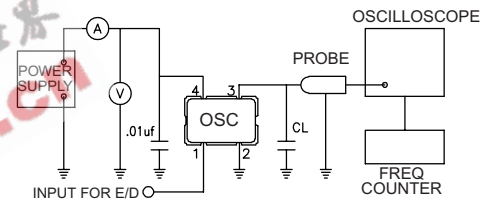
- 1: Tri-State E/D
- 2: Ground
- 3: Output
- 4: VDD

### Suggested Pad Layout

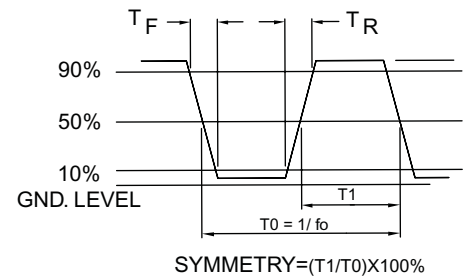


Bypass capacitor, C-by, should be ceramic capacitor ≥ .01uf.

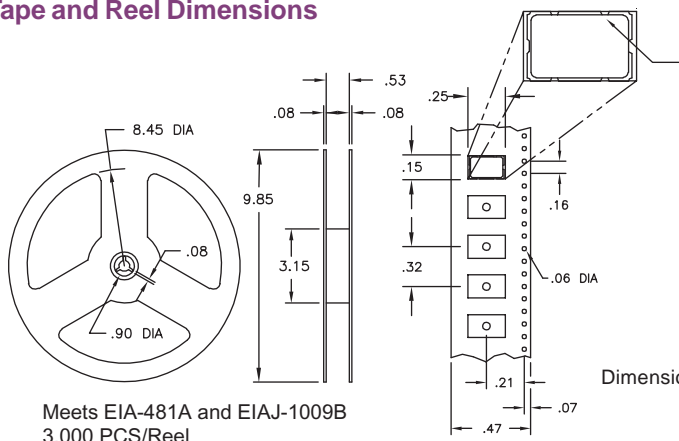
### Test Circuit



### Output Waveform

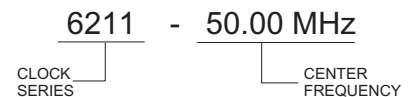


### Tape and Reel Dimensions



Meets EIA-481A and EIAJ-1009B  
3,000 PCS/Reel

### Ordering Information



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