



CRYSTAL CONTROLLED OSCILLATORS

1.8V LVCMOS SURFACE MOUNT 7.5x5mm CRYSTAL CLOCK OSCILLATOR



X221

ABSOLUTE MAXIMUM RATINGS

TABLE 1.0

PARAMETER	UNITS	MINIMUM	NOMINAL	MAXIMUM	UNITS	NOTE
Storage Temperature		-55	-	125	°C	
Supply Voltage	(Vcc)	-0.5	-	3.6	Vdc	

OPERATING SPECIFICATIONS

TABLE 2.0

PARAMETER		MINIMUM	NOMINAL	MAXIMUM	UNITS	NOTE
Frequency Range	(Fo)	70	-	165	MHz	
Frequency Tolerance:		-50	-	50	ppm	1
Operating Temperature Range		-40	-	85	°C	
Supply Voltage	(Vcc)	1.71	1.8	1.89	Vdc	
Supply Current	70 to 94.999 MHz	(Icc)	-	11	mA	
	95 to 124.999 MHz	(Icc)	-	17	mA	
	125 to 165 MHz	(Icc)	-	23	mA	

INPUT CHARACTERISTICS

TABLE 3.0

Enable Voltage	(High)	(Vih)	0.7Vcc	-	-	Vdc
Disable Voltage	(Low)	(Vil)	-	-	0.3Vcc	Vdc
Enable Time			-	-	2	mS
Disable Time			-	-	200	nS
Output Disable Current (Standby Current)		(Icc)	-	-	10	uA

LVCMOS OUTPUT CHARACTERISTICS

TABLE 4.0

PARAMETER		MINIMUM	NOMINAL	MAXIMUM	UNITS	NOTE
LOAD		-	-	15	pF	
Voltage	(High)	(Voh)	Vcc-0.4	-	-	Vdc
	(Low)	(Vol)	-	0.4	Vdc	
Current	(High)	(Ioh)	-8	-	-	mA
	(Low)	(Ioh)	-	8	mA	
Duty Cycle at 50% of Vcc			45	50	55	%
Rise / Fall Time 10% to 90%			-	1.5	2.5	nS
Start-Up Time			-	-	2	mS
Jitter (BW=10kHz to 20MHz)			-	-	5	pS RMS
Jitter (BW=12kHz to 20MHz)			-	-	1	pS RMS

PACKAGE CHARACTERISTICS

TABLE 5.0

Package	Hermetically sealed ceramic surface mount package with metal cover
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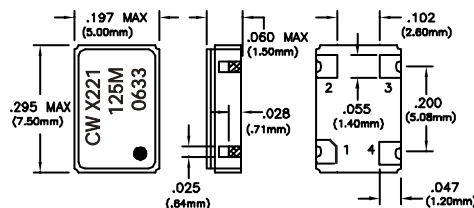
Note:

- Inclusive of calibration @ 25°C, frequency vs. temperature stability, supply voltage change, load change, shock and vibration, 10 years aging.

Enable / Disable Function (Pad 1)	Output
High or Open	Enable
Low	Disable (High Impedance)

Pad	Connection
1	Enable/Disable
2	Ground
3	Output
4	Vcc

Dimensional $\pm .02"$ ($\pm 0.5mm$)
Tolerance: $\pm .008"$ ($\pm 0.2mm$)



DESCRIPTION

The Connor-Winfield X221 is a 1.8V, LVCMOS, Surface Mount, Fixed Frequency Crystal Oscillator (XO) designed for use in all applications requiring precision clocks. This oscillator features low stand-by current (10uA) when the output is disabled. The surface mount package is designed for high-density mounting and is optimum for mass production.

FEATURES

70 to 165 MHz

1.8V OPERATION

TRI-STATE ENABLE/DISABLE FUNCTION

POWER SAVING STAND-BY CURRENT: 10uA

OVERALL FREQUENCY TOLERANCE: $\pm 50ppm$

TEMPERATURE RANGE: -40 to 85°C

CERAMIC SURFACE MOUNT PACKAGE

TAPE AND REEL PACKAGING

RoHS COMPLIANT / LEAD FREE

ORDERING INFORMATION

X221 - 125 MHz

CLOCK SERIES

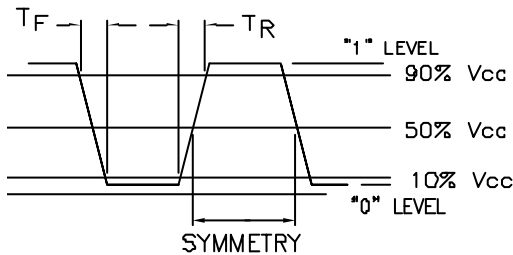
CENTER FREQUENCY

Specifications subject to change without notice.

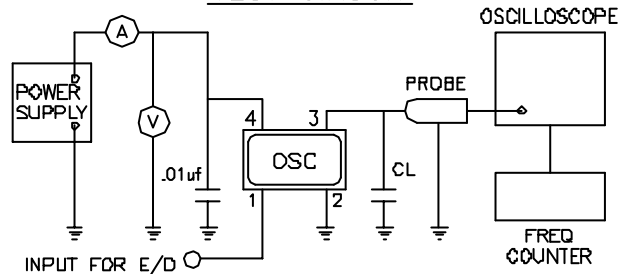
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CRYSTAL CONTROLLED OSCILLATORS

OUTPUT WAVEFORM



TEST CIRCUIT



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 75cm.

VIBRATION:

The specimen shall meet electrical characteristics after tested by the following conditions;
10-55Hz 1.5mm Amplitude, 55-2000Hz 20G'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%.

ENVIRONMENTAL CHARACTERISTICS

TEMPERATURE CYCLE:

The specimen shall meet electrical characteristics after tested 5 cycles of -55 °C/30 min & +125 °C/30 min.

HERMETICAL

No bubbles appear in Fluorinert (FC-43) at 125 °C ± 5 °C, for 5 minutes.

SOLVENT RESISTANCE:

Marking will withstand immersion in Isopropyl Alcohol or Trichloroethylene.

SOLDERING

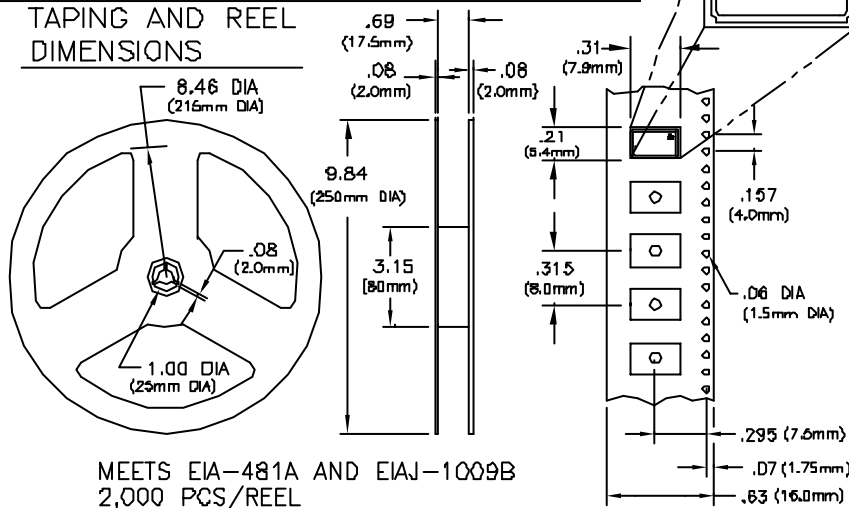
GENERAL CONDITIONS:

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

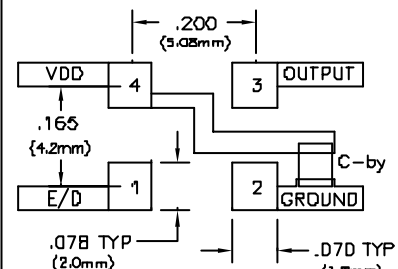
TAPING AND REEL DIMENSIONS



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

PIN 1

SUGGESTED PAD LAYOUT



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

Dimensional ±.02" (±0.5mm)
Tolerance: ±.008" (±0.2mm)