

# CRYSTAL CONTROLLED OSCILLATORS

## 3.3V LVC MOS SURFACE MOUNT 5x3.2mm CLOCK OSCILLATOR



7213, 7223,  
7233

**ABSOLUTE MAXIMUM RATINGS** TABLE 1.0

PARAMETER	UNITS	MINIMUM	NOMINAL	MAXIMUM	UNITS	NOTE
Storage Temperature		-55	-	125	°C	
Supply Voltage	(Vcc)	-0.5	-	7.0	Vdc	

**MODEL SPECIFICATIONS:** TABLE 2.0

**MODEL 7213**

PARAMETER	UNITS	MINIMUM	NOMINAL	MAXIMUM	UNITS	NOTE
Frequency Range	(Fo)	1.8	-	160	MHz	
Frequency Tolerance:		-25	-	25	ppm	1

**MODEL 7223**

PARAMETER	UNITS	MINIMUM	NOMINAL	MAXIMUM	UNITS	NOTE
Frequency Range	(Fo)	1.8	-	160	MHz	
Frequency Tolerance:		-50	-	50	ppm	1

**MODEL 7233**

PARAMETER	UNITS	MINIMUM	NOMINAL	MAXIMUM	UNITS	NOTE
Frequency Range	(Fo)	1.8	-	160	MHz	
Frequency Tolerance:		-100	-	100	ppm	1

**OPERATING SPECIFICATIONS** TABLE 3.0

PARAMETER	UNITS	MINIMUM	NOMINAL	MAXIMUM	UNITS	NOTE
Operating Temperature Range		-40	-	85	°C	
Supply Voltage	(Vdd)	3.0	3.3	3.6	Vdc	
Supply Current	1.5 to 49.999 MHz	(Icc)	-	20	mA	
	50 to 79.999 MHz	(Icc)	-	30	mA	
	80 to 124.999 MHz	(Icc)	-	40	mA	
	125 to 160.999 MHz	(Icc)	-	50	mA	

**INPUT CHARACTERISTICS** TABLE 4.0

PARAMETER	UNITS	MINIMUM	NOMINAL	MAXIMUM	UNITS	NOTE
Enable Voltage	(Vih)	70% Vdd	-	-	Vdc	2
Disable Voltage	(Vil)	-	-	30% Vdd	Vdc	
Enable Time		-	-	10	ms	
Disable Time		-	-	150	ns	
Output Disable Current	(Icc)	-	-	10	uA	

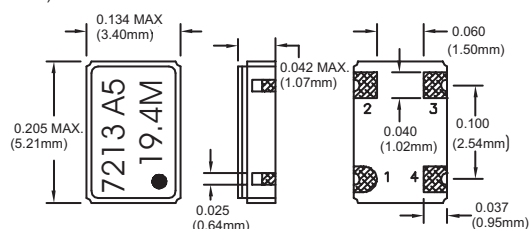
**LVC MOS OUTPUT CHARACTERISTICS** TABLE 5.0

PARAMETER	UNITS	MINIMUM	NOMINAL	MAXIMUM	UNITS	NOTE
LOAD		-	-	15	pF	
Voltage	(High)	(Voh)	2.70	-	Vdc	
	(Low)	(Vol)	-	0.36	Vdc	
Current	(High)	(Ioh)	-2	-	mA	
	(Low)	(Iol)	-	2	mA	
Duty Cycle	1.5 to 49.999 MHz		45	50	%	3
	50 to 160 MHz		40	50	%	3
Rise / Fall Time	1.5 to 69.999 MHz		-	3	ns	4
	70 to 160 MHz		-	1	ns	4
Start-Up Time		-	-	10	ms	
Period Jitter		-	3	5	ps RMS	
Phase Jitter (BW=12kHz to 20MHz)		-	0.5	1	ps RMS	

**PACKAGE CHARACTERISTICS** TABLE 6.0

Package	Hermetically sealed ceramic package and 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.
  - Oscillator output is enabled with no connection on pad 1.
  - Duty Cycle measured at 50% of Vcc.
  - Rise and Fall times measured from 10% to 90%.



PAD	CONNECTION
1	ENABLE/DISABLE
2	GROUND
3	OUTPUT
4	Vcc

Dimensional Tolerance: ±.02" (.508mm)  
±.005" (.127mm)

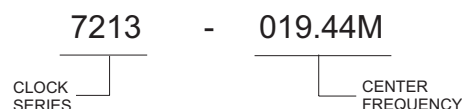
### DESCRIPTION

The Connor-Winfield models 7213, 7223 and 7233 are 3.3V LVC MOS, Surface Mount, Fixed Frequency Crystal Oscillators (XO) designed for use in all applications requiring precision clocks. These oscillators feature low stand-by current (10uA) when output is disabled. The surface mount package is designed for high-density mounting and is optimum for mass production.

### FEATURES

- 1.8 to 160 MHz
- 3.3V OPERATION
- TRI-STATE ENABLE / DISABLE FUNCTION
- OVERALL FREQUENCY TOLERANCE:  
7213 ±25ppm  
7223 ±50ppm  
7233 ±100ppm
- TEMPERATURE RANGE: -40 to 85°C
- POWER SAVING FUNCTION: 10uA when disabled.
- CERAMIC SURFACE MOUNT PACKAGE
- TAPE AND REEL PACKAGING
- RoHS COMPLIANT / LEAD FREE

### ORDERING INFORMATION

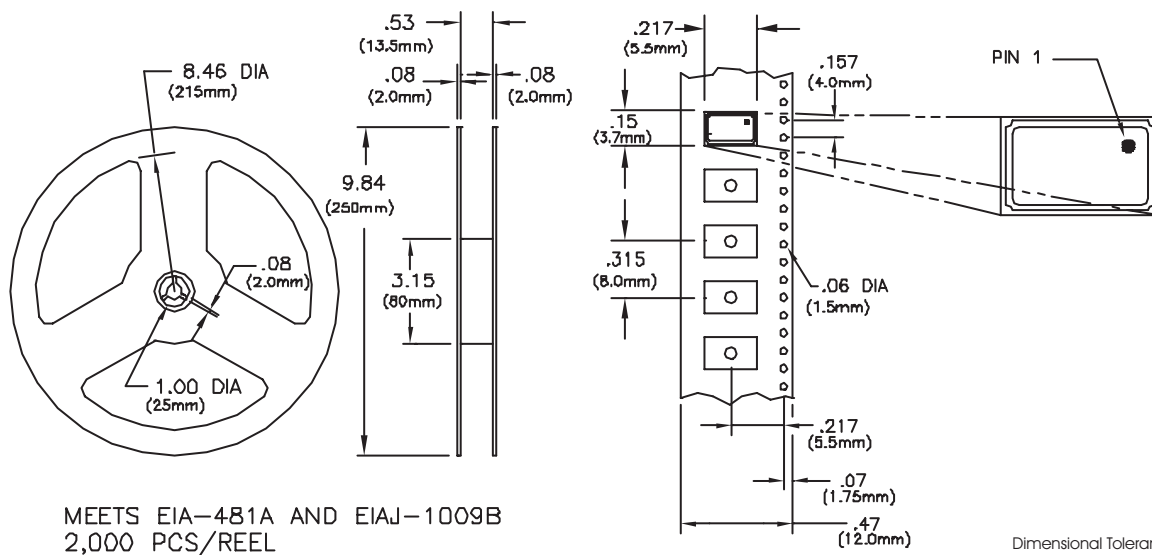


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# CRYSTAL CONTROLLED OSCILLATORS

ENVIRONMENTAL CHARACTERISTICS	TEST CIRCUIT
<p><b>TEMPERATURE CYCLE:</b> The specimen shall meet electrical characteristics after tested 5 cycles of -55°C/30 min &amp; +125°C/30 min.</p> <p><b>HERMETICAL</b> No bubbles appear in Flourinert (FC-43) at 125°C ±5°C, for 5 minutes.</p> <p><b>SOLVENT RESISTANCE:</b> Marking will withstand immersion in Isopropyl Alcohol or Trichloroethylene.</p>	
<p><b>SOLDERING</b></p> <p><b>GENERAL CONDITIONS:</b> 260°C max x 10 sec max x 2 times max or 230°C max x 180 sec max x 1 time.</p> <p><b>TYPICAL OPERATION DATA (Vapor phase reflow)</b> 20 to 100 sec up to 215°C, 50 sec at 215°C then down to room temperature per 1 to 5°C/sec</p>	<p><b>OUTPUT WAVEFORM</b></p>
<p><b>MECHANICAL CHARACTERISTICS</b></p> <p><b>FREE DROP:</b> The specimen shall meet electrical characteristics after tested 3 times Free Drop testing on the hard wooden board from a height of 75cm.</p> <p><b>VIBRATION:</b> 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.</p> <p><b>THERMAL SHOCK:</b> 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.</p> <p><b>SOLDERABILITY:</b> (EIAJ-RGX-0102/1D1 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%.</p>	<p><b>SUGGESTED PAD LAYOUT</b></p> <p>Bypass capacitor, C-by, should be ceramic capacitor ≥ .01uf.</p>

## TAPING AND REEL DIMENSIONS



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