

3.3V LVCMOS Surface Mount Crystal Clock Oscillator 6213, 6223, 6233



XO

Features:

- 1.8 to 50 MHz
- 3.3V Operation
- RoHS Compliant
- Tri-State Enable / Disable Function
- Overall Frequency Tolerance:
 - 6213 ± 25 ppm
 - 6223 ± 50 ppm
 - 6233 ± 100 ppm
- Temperature Range: -40 to 85°C
- Power Saving Stand-By Current
- Ceramic Surface Mount Package
- Tape and Reel Packaging

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The Connor-Winfield models 6213, 6223, and 6233 are a 6 x 3.5mm, 3.3V LVCMOS, Surface Mount, Ceramic, Fixed Frequency Crystal Oscillators (XO) designed for use in all applications requiring precision clocks. These oscillators feature 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.

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	-	50	MHz	
Frequency Tolerance				ppm	1
6213	-25	-	25		
6223	-50	-	50		
6233	-100	-	100		
Operating Temp Range	-40	-	85	°C	
Supply Voltage (Vdd)	3.0	3.3	3.6	Vdc	
Supply Current (Icc)				mA	
1.80 to 31.999 MHz	-	-	12		
32.0 to 50.0 MHz	-	-	17		

Input Characteristics

Parameter	Minimum	Nominal	Maximum	Units	Notes
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	

LVCMOS Output Characteristics

Parameter	Minimum	Nominal	Maximum	Units	Notes
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 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:

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



Bulletin **Sm082**
Page **1 of 2**
Revision **01**
Date **30 May 2002**



Package Characteristics

Package	Hermetically sealed ceramic package and metal cover
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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

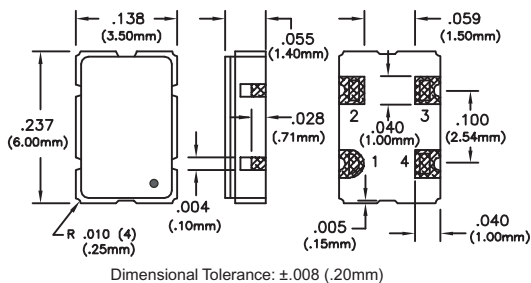
Soldering

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 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

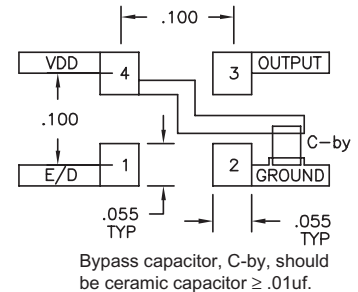
After performing the above procedures, a newly soldered coverage shall be greater than 90%



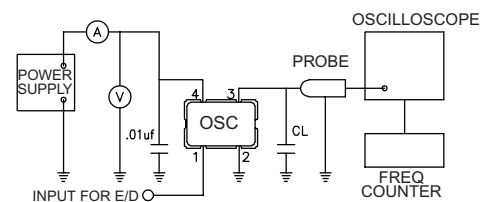
Pad Connection

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

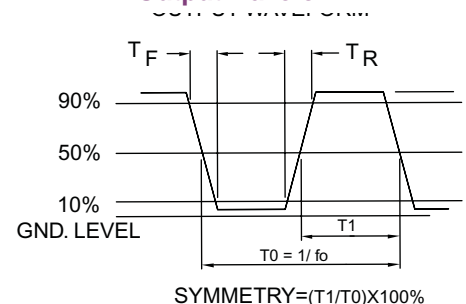
Suggested Pad Layout



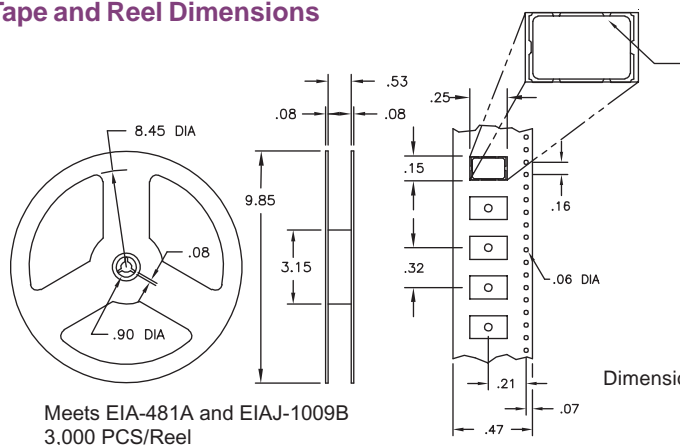
Test Circuit



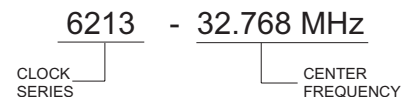
Output Waveform



Tape and Reel Dimensions



Ordering Information



Bulletin	Sm082
Page	2 of 2
Revision	01
Date	30 May 2002