3.3V Surface Mount Crystal Clock Oscillator HSM6

CONNOR WINFIELD

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XO

The Connor-Winfield HSM613, HSM623, and HSM633 are 7.5mm x 5mm, 3.3V HCMOS, 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:

- 1.544 to 170 MHz
- 3.3V Operation
- RoHS Compliant
- Tri-State Enable/Disable
- Power Saving Function: 10uA When Disabled
- Overall Frequency Tolerance:
  - HSM613 ± 25 ppm
  - HSM623 ± 50 ppm
  - HSM633 ± 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	-	5.0	Vdc	

Operating Specifications

Parameter	Minimum	Nominal	Maximum	Units	Notes
Frequency Range (Fo)	1.544	-		MHz	
HSM613			125		
HSM623			170		
HSM633			170		
Frequency Tolerance		-		ppm	1
HSM613	-25		25		
HSM623	-50		50		
HSM633	-100		100		
Operating Temp Range	-40	-	85	°C	
Supply Voltage (Vdd)	3.0	3.3	3.6	Vdc	
Supply Current (Icc)	-	-		mA	
1.544 to 31.999 MHz			15		
32 to 49.999 MHz			20		
50 to 66.999 MHz			25		
67 to 124.999 MHz			40		
125 to 170 MHz			50		

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	

HCMOS Output Characteristics

Parameter		Minimum	Nominal	Maximum	Units	Notes
Load		-	-	15	pF	
Voltage	High (Voh)	2.91	-	-	Vdc	
	Low (Vol)	-	-	0.33		
Current	High (Ioh)	-2	-	-	mA	
	Low (Iol)	-	-	2		
Duty Cycle at 50% of Vcc		45	50	55	%	
Rise / Fall Time: 20% to 80%						
1.544 to 19.999 MHz		-	3.0	6.0	nS	
20.00 to 49.999 MHz		-	2.0	4.0		
50.00 to 99.9999 MHz		-	1.5	3.0		
100.00 to 170 MHz		-	0.5	1.0		
Start-Up Time		-	-	10	mS	
Jitter	(10 Hz to 20 MHz)	-	-	5	pS RMS	
	(12 kHz to 20 MHz)	-	-	1		

Notes:

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

RoHS COMPLIANT

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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

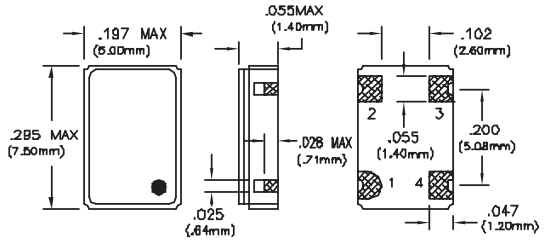
Soldering

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%

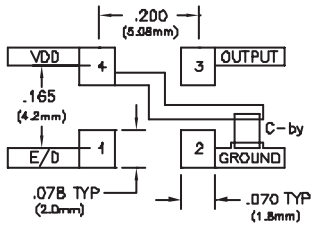


Dimensional Tolerance: ±.02" (.508mm)
±.005" (.127mm)

Pin Connections

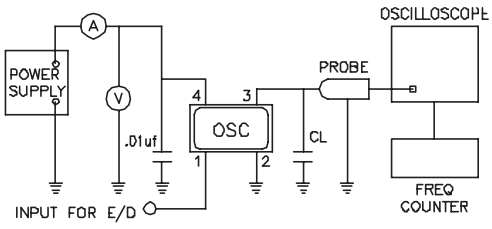
1: Tri-State E/D
2: Ground
3: Output
4: VDD

Suggested Pad Layout

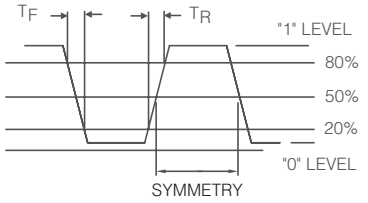


Bypass capacitor, C-by, should be ceramic capacitor ≥ .01uf.

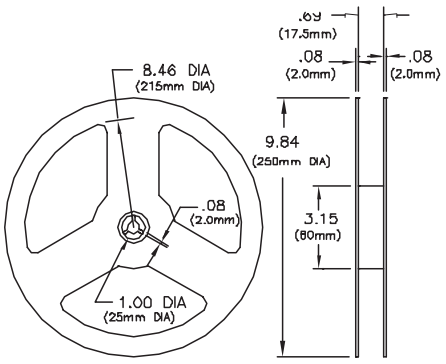
Test Circuit

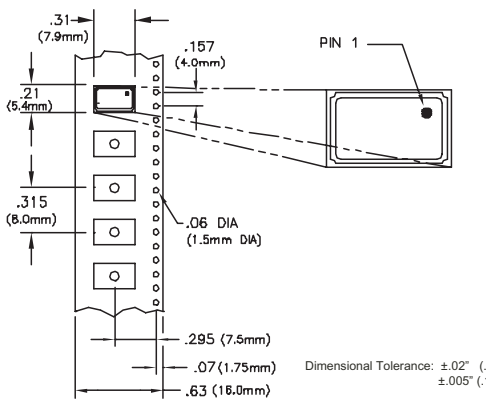


Output Waveform



Tape and Reel Dimensions





Dimensional Tolerance: ±.02" (.
±.005" (.

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

Ordering Information

HSM633 - 125.0M

HSM633: CLOCK SERIES
125.0M: CENTER FREQUENCY

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Revision	12
Date	12 Jan 2009