

5.0V Surface Mount Crystal Clock Oscillator HSM6

CONNOR WINFIELD



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XO

The Connor-Winfield RoHS compliant models HSM615, HSM625, and HSM635 are 5.0mm x 7.5mm, 5.0V HCMOS, Surface Mount, Fixed Frequency Crystal Oscillators (XO) designed for use in all applications requiring precision clocks. This oscillator features 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.

Features:

RoHS Compliant / Lead Free
1.8 to 170 MHz
5.0V Operation
Tri-State Enable / Disable Function
Overall Frequency Tolerance:
HSM615 ± 25 ppm, HSM625 ± 50 ppm,
HSM635 ± 100 ppm
Temperature Range: -40 to 85°C
Power Saving Stand-By Current
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	-	7.0	Vdc	

Operating Specifications

Parameter	Minimum	Nominal	Maximum	Units	Notes
Frequency Range (Fo)	1.8	-	170	MHz	
Frequency Tolerance		-		ppm	1
HSM615	-25		25		
HSM625	-50		50		
HSM635	-100		100		
Operating Temp Range	-40	-	85	°C	
Supply Voltage (Vdd)	4.5	5.0	5.5	Vdc	
Supply Current (Icc)					
1.544 to 31.999 MHz	-	-	40		
32 to 66.999 MHz	-	-	50	mA	
67 to 124.999 MHz	-	-	80		
125 to 170 MHz	-	-	90		

Input Characteristics

Parameter	Minimum	Nominal	Maximum	Units	Notes
Enable Voltage - (Vih)	$\geq 70\%$ Vdd	-	-	Vdc	2
Disable Voltage - (Vil)	-	-	$\leq 30\%$ Vdd	Vdc	
Enable Time	-	-	10	nS	
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)	4.5	-	-	Vdc	
Low (Vol)	-	-	0.55		
Current High (Ioh)	-2	-	-	mA	
Low (Iol)	-	-	2		
Duty Cycle at 50% of Vcc	45	50	55	%	
Rise / Fall Time 10% to 90%	-	-	6	nS	
Start-Up Time	-	-	10	mS	
Jitter	-	-	5	pS RMS	

Notes:

- 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



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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

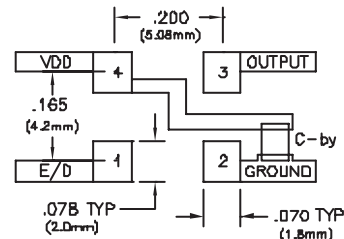
General Conditions 260°C max x 10 sec max x 2 times max or 230°C max x 180 sec max x 1 time
Typical Operation Data (Vapor phase reflow)
20 to 100 sec up to 215°C, 50 sec
at 215°C, then down to room temperature per 1 to 5°C / sec

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

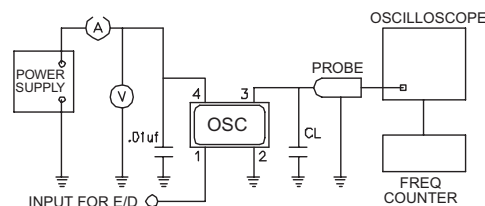
After performing the above procedures, a newly soldered coverage shall be greater than 90%

Suggested Pad Layout

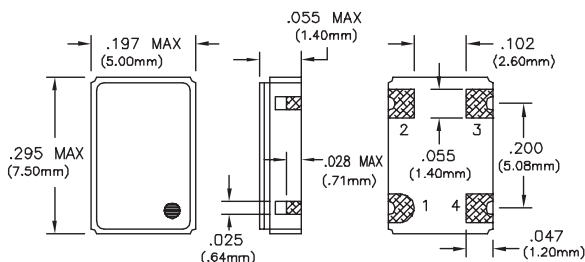
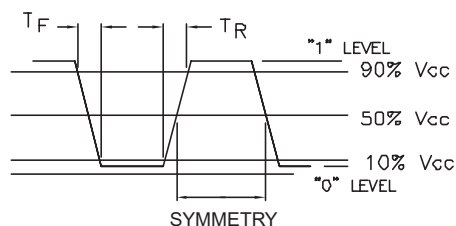


Bypass capacitor, C-by, should be ceramic capacitor ≥ .01 uf

Test Circuit



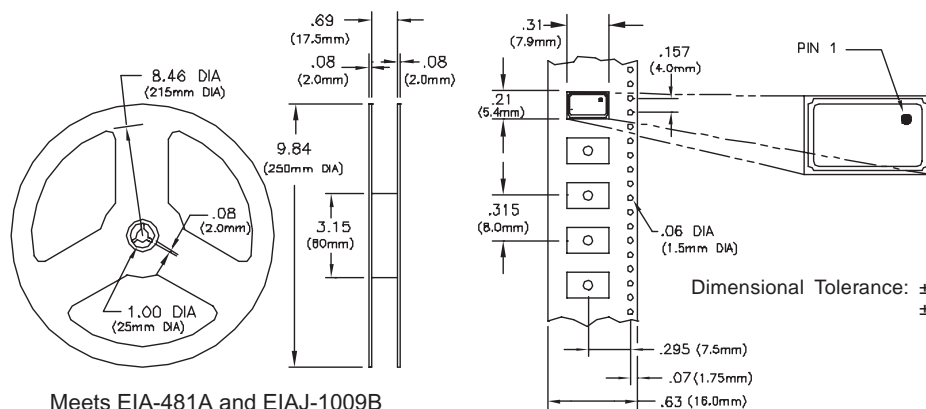
Output Waveform



Pad Connection

- 1: Enable/Disable
- 2: Ground
- 3: Output
- 4: Vcc

Tape and Reel Dimensions



Meets EIA-481A and EIAJ-1009B
2,000 PCS/Reel

Ordering Information

HSM615 - 125.00 MHz

CLOCK SERIES CENTER FREQUENCY

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