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With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



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5.0V Surface Mount Crystal Clock Oscillator HSM9

CONNOR WINFIELD



Features:

- 1.0 to 80 MHz
- 5.0V Operation
- RoHS Compliant
- Tri-State Enable / Disable
- Overall Frequency Tolerance:
 - HSM94 ± 20 ppm, HSM91 ± 25 ppm
 - HSM92 ± 50 ppm, HSM93 ± 100 ppm
- Temperature Range: 0 to 70°C
- Ceramic Surface Mount Package
- Tape and Reel Packaging

XO

The Connor-Winfield HSM91, HSM92, HSM93, and HSM94 models are 7.5mm x 5mm, 5.0V 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.

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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)		-	80	MHz	
HSM94	1.8				
HSM91	1.0				
HSM92	1.0				
HSM93	1.0				
Frequency Tolerance		-		ppm	1
HSM94	-20		20		
HSM91	-25		25		
HSM92	-50		50		
HSM93	-100		100		
Operating Temp Range	0	-	70	°C	
Supply Voltage (Vdd)	4.5	5.0	5.5	Vdc	
Supply Current (Icc)		-		mA	
1.0 to 31.999 MHz			27		
32 to 49.999 MHz			45		
50 to 80.0 MHz			75		

Input Characteristics

Parameter	Minimum	Nominal	Maximum	Units	Notes
Enable Voltage - (Vih)	≥ 70% Vdd	-	-	Vdc	2
Disable Voltage - (Vil)	-	-	≤ 30% Vdd	Vdc	
Enable Time	-	-	100	nS	
Disable Time	-	-	100	nS	

HCMOS Output Characteristics

Parameter	Minimum	Nominal	Maximum	Units	Notes
Load	-	-	50	pF	
Voltage High (Voh)	4.5	-	-	Vdc	
Low (Vol)	-	-	0.55	Vdc	
Current High (Ioh)	-16	-	-	mA	
Low (Iol)	-	-	16	mA	
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:

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



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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

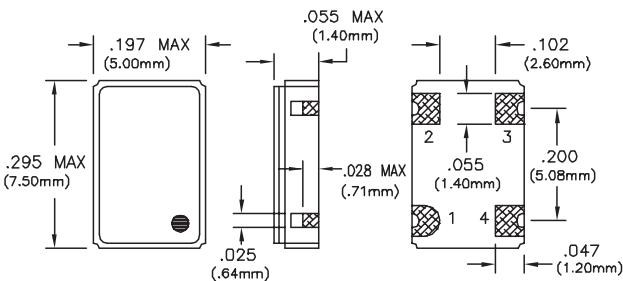
Free Drop The specimen shall meet electrical characteristics after tested 3 times, Free Drop testing on the hard wooden board from a height of 75 cm.

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

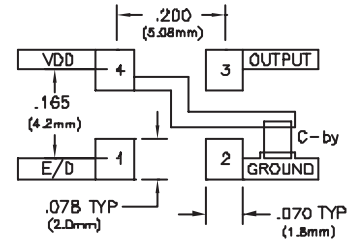
After performing the above procedures, a newly soldered coverage shall be greater than 90%



Pin Connections

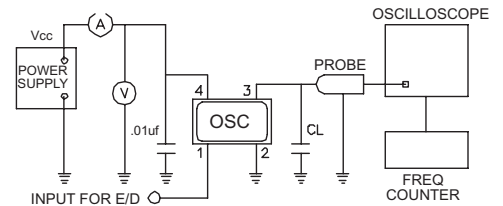
- 1: Tri-State E/D
- 2: Ground
- 3: Output
- 4: VDD

Suggested Pad Layout

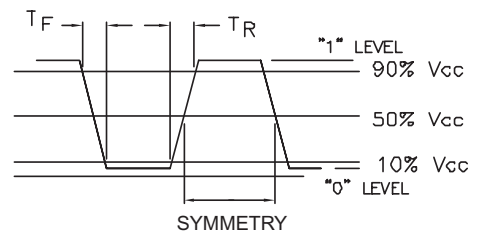


Bypass capacitor, C-by, should be ceramic capacitor ≥ .01 uf

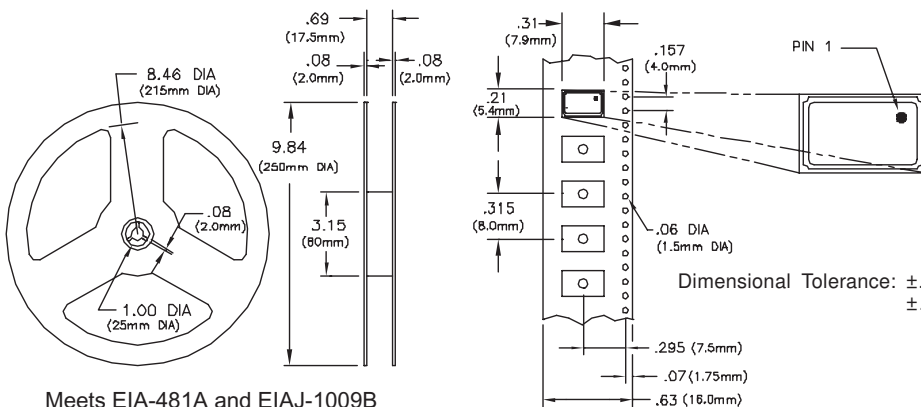
Test Circuit



Output Waveform



Tape and Reel Dimensions



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

Ordering Information

HSM91 - 050.0M
CLOCK SERIES CENTER FREQUENCY

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