5.0V Surface Mount Crystal Clock Oscillator HSM9



2111 Comprehensive Drive

Aurora, Illinois 60505

Phone: 630-851-4722

Fax: 630-851-5040 www.conwin.com

US Headquarters: 630-851-4722 European Headquarters: +353-61-472221

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.

Features: 1.0 to 80 MHz

5.0V Operation

RoHS Compliant

Tri-State Enable / Disable

Overall Frequency Tolerance:

HSM91 ± 25 ppm $HSM94 \pm 20 ppm$, $HSM92 \pm 50 ppm$, $HSM93 \pm 100 \text{ ppm}$

Temperature Range: 0 to 70°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	-	7.0	Vdc	

Operating Specifications Parameter Minimum Nominal Maximum Units Notes Frequency Range (Fo) HSM94 HSM91 80 MHz 1.8 1.0 HSM92 1.0 HSM93 1.0 Frequency Tolerance ppm -20 -25 -50 20 25 50 HSM94 HSM91 HSM92 -100 100 HSM93 0 °C 70 Operating Temp Range Supply Voltage (Vdd) 4.5 5.0 5.5 Vdc Supply Current (Icc) 1.0 to 31.999 MHz 32 to 49.999 MHz mΑ 27 45 75 50 to 80.0 MHz

Input Characteristics

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

HCMOS Output Characteristics

Parameter	Minimum	Nominal	Maximum	Units	Notes
Load	-	-	50	pF	
Voltage High (Voh) Low (Vol)	4.5 -	- -	0.55	Vdc	
Current High (loh) Low (lol)	-16 -	- -	- 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	

COMPLIANT

Bulletin Sm006 Page 1 of 2 Revision 27 Date 07 May 2008

- 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



Aurora, Illinois 60505

Phone: 630-851-4722 Fax: 630-851-5040

www.conwin.com

Package Characteristics

Hermetically sealed ceramic package and metal cover Package

Environmental Characteristics

The specimen shall meet electrical characteristics after tested 5 cycles of -55°C / 30 minutes and +125°C / 30 minutes Temperature Cycle

No bubbles appear in Flourinert (FC-43) at 125°C ±5°C for 5 minutes Hermetical

Marking will withstand immersion in Isopropyl Alcohol or Trichloroethylene Solvent Resistance

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

(Vapor phase reflow) 20 to 100 sec up to 215°C, 50 sec Typical Operation Data

at 215°C, then down to room temperature per 1 to 5°C / sec

Mechanical Characteristics

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

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 Vibration

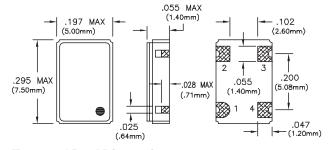
After applied Thermal Shock of 260°C max x 10 sec max x 2 times, or 230°C max x 180 sec max, Thermal Shock

the specimen shall meet electrical characteristics

Solderability

(EIAJ-RCX-0102.101 Condition 1a)
) Flux: MIL-F-14256 (WW Rosin=25%, Isopropyl Alcohol = 75%)
) Solder: QQ-S-571 (Sn = 63%, Pb = 37%)
) Solder bath temperature: 235°C ±5°C
) Depth of immersion: Up to electrical terminal
) Immersing time: Within 2 sec ±0.5 sec into solder bath

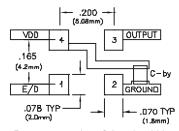
After performing the above procedures, a newly soldered coverage shall be greater than 90%



Pin Connections

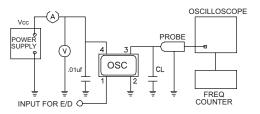
- 1: Tri-State E/D
- 2: Ground
- 3: Output
- 4: VDD

Suggested Pad Layout

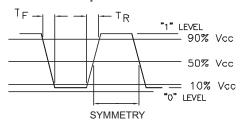


Bypass capacitor, C-by, should be ceramic capacitor ≥ .01 uf

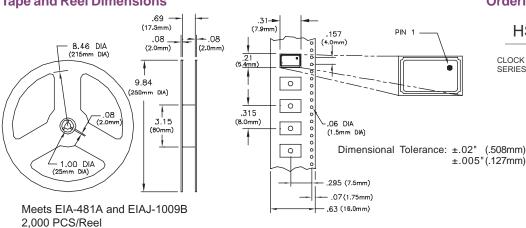
Test Circuit



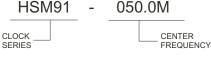
Output Waveform



Tape and Reel Dimensions



Ordering Information



Bulletin	Sm006
Page	2 of 2
Revision	27
Date	07 May 2008