5.0V Surface Mount Crystal Clock Oscillator HSM6

CONNOR WINFIELD

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XO

The Connor-Winfield models HSM61, HSM62, and HSM63 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:

- RoHS Compliant
- 1.0 to 80 MHz
- 5.0V Operation
- Tri-State Enable/Disable Function
- Overall Frequency Tolerance:
  HSM61 ± 25 ppm, HSM62 ± 50 ppm,
  HSM63 ± 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	-	7.0	Vdc	

Operating Specifications

Parameter	Minimum	Nominal	Maximum	Units	Notes
Frequency Range (Fo)	1.0	-	80	MHz	
Frequency Tolerance		-		ppm	1
HSM61	-25		25		
HSM62	-50		50		
HSM63	-100		100		
Operating Temp Range	-40	-	85	°C	
Supply Voltage (Vdd)	4.5	5.0	5.5	Vdc	
Supply Current (Icc)	-	-		mA	
1.8 to 31.999 MHz			27		
32.0 to 49.999 MHz			45		
50 to 80.0 MHz			75		

Input Characteristics

Parameter	Minimum	Nominal	Maximum	Units	Notes
Enable Voltage - (Vih)	2.2	-	-	Vdc	2
Disable Voltage - (Vil)	-	-	0.8	Vdc	
Enable Time	-	-	100	nS	
Disable Time	-	-	100	nS	

HCMOS Output Characteristics

Parameter		Minimum	Nominal	Maximum	Units	Notes
Load		-	-	50	pF	
Voltage	High (Voh)	4.50	-	-	Vdc	
	Low (Vol)	-	-	0.55		
Current	High (Ioh)	-16	-	-	mA	
	Low (Iol)	-	-	16		
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	

RoHS COMPLIANT

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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

Mechanical Shock	MIL STD 883 Method 2002
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

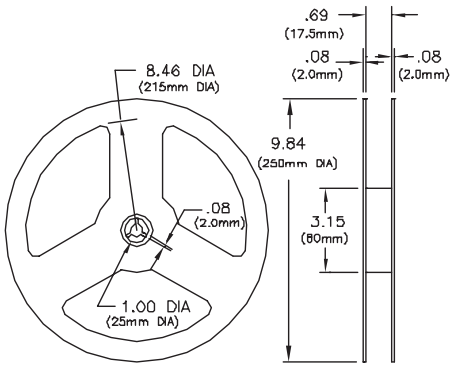
After performing the above procedures, a newly soldered coverage shall be greater than 90%

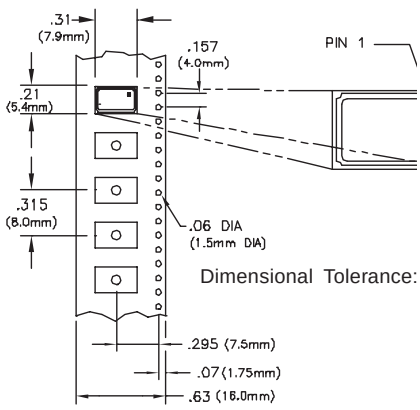
Ordering Information

HSM	6	1		044.736M
Type: Clock 7.5x5.0mm Package	Temperature Range: 6 = -40 to 85°C	Frequency Tolerance: 1 = ± 25 ppm, 2 = ± 50 ppm, 3 = ± 100 ppm	Supply Voltage: Omit = 5.0 Vdc	Output Frequency: Frequency Format -xxx.xM Minimum * -xxx.xxxxxxM Maximum* *Amount of numbers after the decimal point. M = MHz

Example: To Order an HSM61 with an output frequency of:
4 MHz = HSM61-004.0M
44.736 MHz = HSM61-044.736M
125 MHz = HSM61-125.0M

Tape and Reel Dimensions

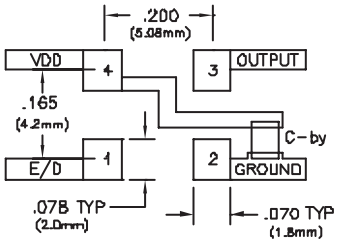




Meets EIA-481A and EIAJ-1009B
2,000 PCS/Reel

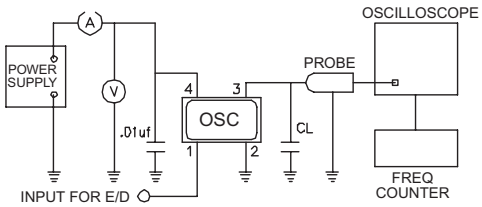
Dimensional Tolerance: ±.02" (.508mm)
±.005"(.127mm)

Suggested Pad Layout

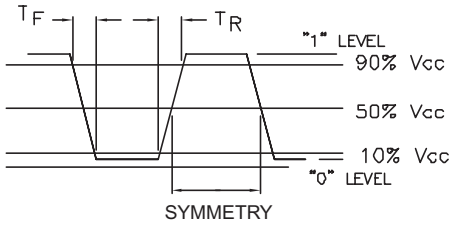


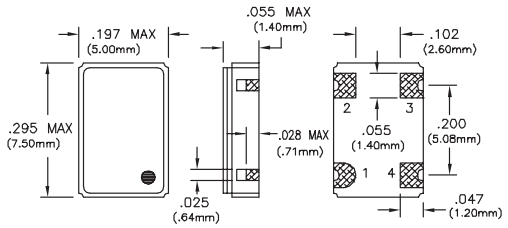
Bypass capacitor, C-by, should be ceramic capacitor ≥ .01 uf

Test Circuit



Output Waveform





Pin Connections
1: Enable/Disable
2: Ground
3: Output
4: Vcc

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