

# MSH Series



- Low Profile Ceramic SMD Package
- Hermetically Sealed
- Tristate Function/Standby Option
- Wide Frequency Range



## Electrical Specifications:

Frequency Range	1.544MHZ to 70.000MHZ	1.544MHZ to 110.000MHZ		
Temperature Stability*	(See Part Number Guide for Options)			
Aging (+25°C ±3°C)	±5ppm First Year			
Operating Temperature Range	(See Part Number Guide for Options)			
Storage Temperature Range	-55°C to +125°C			
Supply Voltage (±10%)	+1.80VDC	+2.50VDC	+3.30VDC	
Supply Current	1.544MHZ to 9.999MHZ	10mA max	12mA max	14mA max
	10.000MHZ to 35.999MHZ	12mA max	14mA max	16mA max
	36.000MHZ to 49.999MHZ	15mA max	20mA max	25mA max
	50.000MHZ to 110.000MHZ	25mA max	30mA max	35mA max
Standby Current (With Stand-by Option)	100µA			
Tristate	VOH = 70% of Vdd min or No Connection to Enable Output VOL = 30% of Vdd max or grounded to Disable Output (High Impedence)			
Logic "0"	10% Vdd max			
Logic "1"	90% Vdd min			
Output Type	HCMOS			
Symmetry (50% of waveform)	(See Part Number Guide for Options)			
Rise/Fall Time (10% to 90% of Supply Voltage)	5nSEC	6nSEC	7nSEC	
Load	15pF			
Start-up Time	2mSec max			

\* Inclusive of Temperature. Load and Voltage.

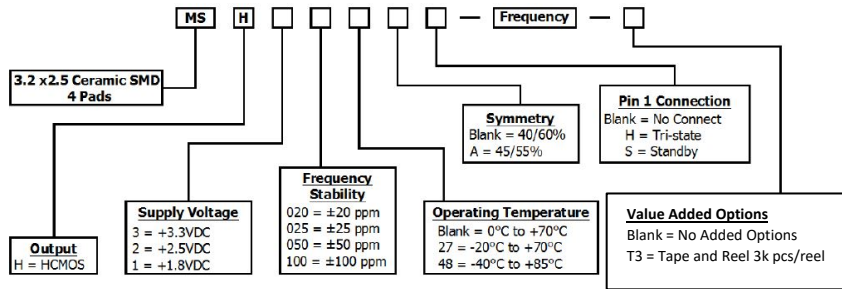
## Mechanical & Environmental Detail

Humidity	85% RH, 85°C, 48 Hours
Hermetic Seal	Leak Rate 5 X 10-8 ATM cc/s He
Solderability	MIL-STD-202G, Method 208
Reflow Solderability	260°C for 10 seconds
Vibration	MIL-STD-202G, Method 204 35G, 50 to 2000 Hz
Shock	MIL-STD-202G, Method 203 Test Cond E, 1000G's, ½ Sinewave
MIL-STD-883	Available with Level B Screening

## Marking Detail

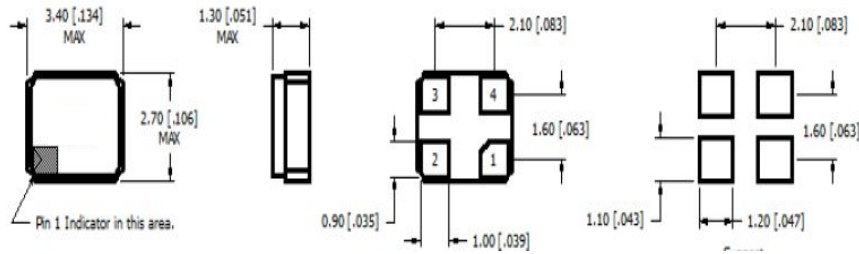
First Line = MXX.XX (not to exceed 5 characters)	
M	= MMD
XX.XX	= Device Frequency (four digits including decimal point)
Second Line = SYWWL or SSYWWL (not to exceed 6 characters)	
S or SS	= Internal Code
YWW	= Date Code (Year/Week)
L	= RoHS Compliant

### Part Number Guide



PLEASE CONSULT WITH MMD SALES DEPARTMENT FOR ANY OTHER PARAMETERS OR OPTIONS

### Mechanical Details



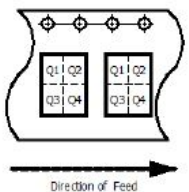
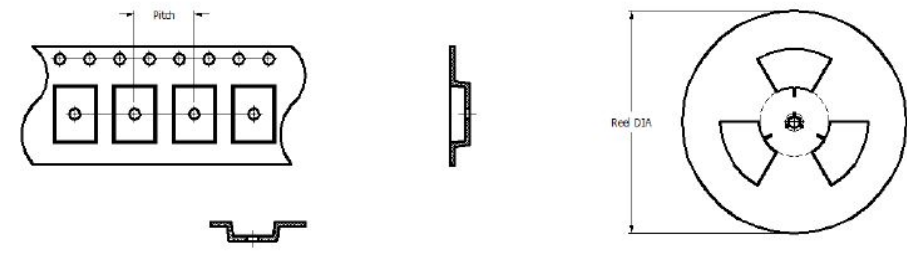
Pin Connections	
Pin 1	Tri-state, Standby or No Connection
Pin 2	Case Ground
Pin 3	Output
Pin 4	Supply Voltage

Notes:

1. Dimension in brackets are in inches.
2. An External Bypass Capacitor is recommended.
3. Pads Plating  
Base or under conductor Ni thickness; 1.3 um to 8.8 um  
Final plating; Au (99.9) less than 0.5 um, 0.3 um typ

Suggest Land Pattern

### Tape & Reel Dimensions



Pitch	4.00 [0.157]
Tape Width	8.00 [0.315]
Reel DIA	180 [7.0]
Count	3000
Pin 1 Orient	Q1

- Notes: UNLESS OTHERWISE SPECIFIED
1. Applicable Standards / Specifications  
ANSI Y14.5M, Dimensions and Tolerances  
EIA-481-B, 8mm through 200mm Embossed Carrier Tapping and 8mm and 12mm Punched Carrier Tapping of Surface Mount Components for Automatic Handling.
  2. Dimensions are in millimetres [inch].
  3. Tolerances are ±0.1 [0.004] mm unless otherwise specified.
  4. Do not scale drawing.