

# 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<br>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.

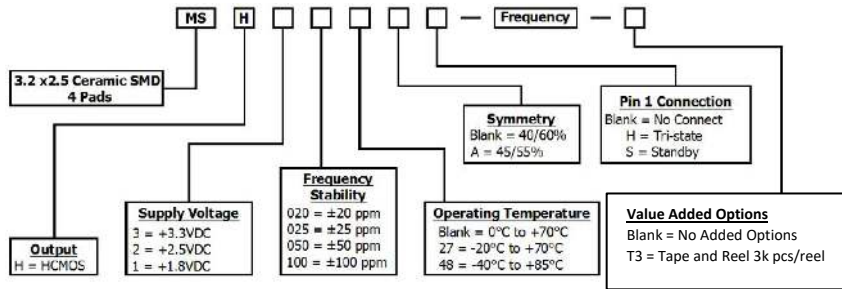
## Mechanical & Environmental Detail

|                      |   |
|----------------------|---|
| 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

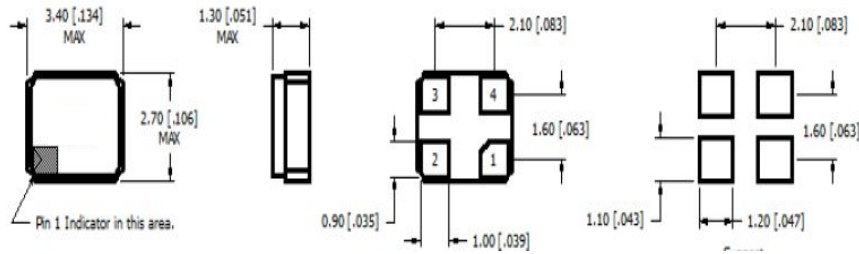
|  |  |
|--|--|
| First Line = MXX.XX (not to exceed 5 characters)           |  |
| M  | = MMD  |
| XX.XX  | = Device Frequency (four digits including decimal point) |
| Second Line = SYWWL or SSYWWL (not to exceed 6 characters) |  |
| S or SS  | = Internal Code  |
| YWW  | = Date Code (Year/Week)  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

### Part Number Guide



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

### Mechanical Details



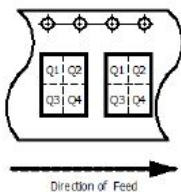
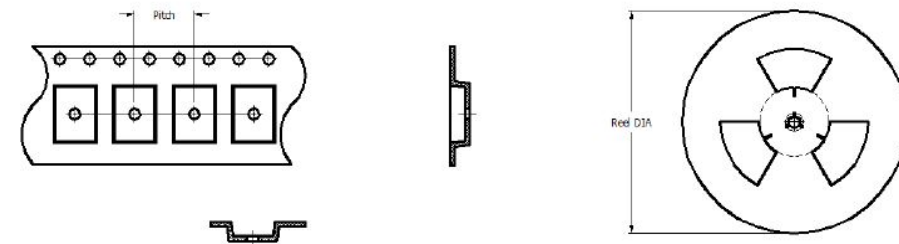
| Pin Connections |                                     |
|-----------------|-------------------------------------|
| Pin 1           | Tri-state, Standby or No Connection |
| Pin 2           | Case Ground                         |
| Pin 3           | Output                              |
| Pin 4   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