### Product Features:

Low Jitter, Non-PLL Based Output
Compatible with Lead free Processing
Pb-free, Halogen-free, and Antimony-free
RoHS and REACH compliant

### Applications:

Fibre Channel
Server & Storage
Sonet / SDH
802.11 / WiFi
T1/E1, T3/E3
System Clock

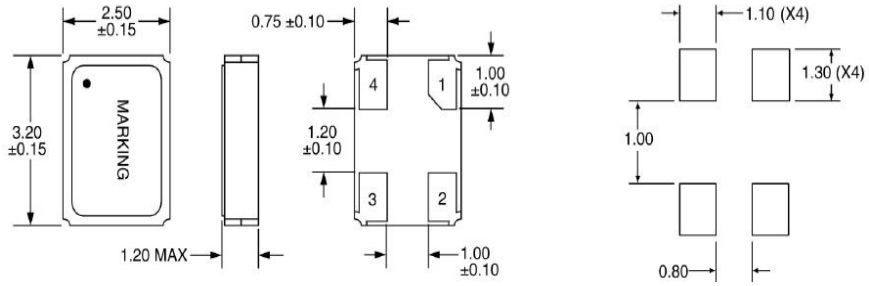
## Electrical Specifications:

| | | |
|---|---|---|
| **Frequency Range** | 1.000MHz to 156.250MHz | |
| **Frequency Stability** | ±10ppm Maximum<br>±15ppm Maximum<br>±20ppm Maximum<br>±25ppm Maximum<br>±50ppm Maximum<br>±100ppm Maximum | Inclusive of Calibration Tolerance at 25°C, Frequency Stability over Operating Temperature Range, Supply Voltage Change, Output Load Change, and First Yea Aging at 25°C. |
| **Operating Temperature Range** | 0°C to +70°C,<br>-10°C to +60°C,<br>-10°C to +70°C,<br>-20°C to +70°C,<br>-30°C to +75°C,<br>or -40°C to +85°C | |
| **Supply Voltage (Vdd)** | 1.8V, 2.5V, 2.7V, 3.0V, 3.3V, 1.62V - 3.63V | ±5% |
| **Input Current** | 20mA Maximum | |
| **Output Logic Type** | CMOS | |
| **Output Drive Capability** | 15pF Maximum<br>30pF Maximum | |
| **Aging** | ±3ppm/year Maximum | at +25°C |
| **Duty Cycle** | 50 ±5(%) or 50 ±10(%) | Measured at 50% of waveform |
| **Rise / Fall Time** | 6nSec Maximum | Measured from 20% to 80% of waveform |
| **Output Voltage Logic High** | 90% of Vdd Minimum | |
| **Output Voltage Logic Low** | 10% of Vdd Maximum | |
| **Pin 1 Connection** | Tri-State (High Impedance) | |
| **Input Voltage Logic High** | 70% of Vdd Minimum or No Connect to Enable Output | |
| **Input Voltage Logic Low** | 30% of Vdd Maximum to Disable Output (High Impedance) | |
| **Standby Current** | 10µA Maximum | Disabled Output, High Impedance |
| **Startup Time** | 10mSec Maximum | |
| **RMS Phase Jitter** | 1pSec Maximum | 12kHz to 20MHz offset frequency |
| **Period Jitter (RMS)** | 5pSec Maximum | 20k adjacent periods |
| **Period Jitter (pk-pk)** | 50pSec Maximum | 100k adjacent periods |
| **NOTES:** | • All minimum and maximum limits are specified over temperature and rated operating voltage with 15pF output unless otherwise stated.<br>• A 0.1µF bypass capacitor is recommended between Vdd (pad 4) and GND (pad 2) to minimize power supply noise. | |

## Absolute Maximum Limits:

| | |
|---|---|
| **Storage Temperature Range** | -55°C to +125°C |
| **Supply Voltage Range** | -0.3Vdc to Vdd +0.3Vdc |
| **Electrostatic Discharge** | 2000V Maximum |
| **Solder Temperature** | 260°C Maximum |
| **Junction Temperature** | 150°C Maximum |
| **NOTE:** If the part is used beyond absolute maximum ratings, it may cause internal destruction. The part should be used under the recommended operating conditions or the reliability of this part may be damaged if those conditions are exceeded. | |

## Mechanical & Solder Pad Layout Dimensions:




| Pin Connections | |
|---|---|
| Pin 1 | Tri-State or No Connect |
| Pin 2 | Case/Ground |
| Pin 3 | Output |
| Pin 4 | Supply Voltage |

**Dimension Units: mm**

**Part Number Guide** **Sample Part Number: ISM97-3251BH-20.000 MHz**

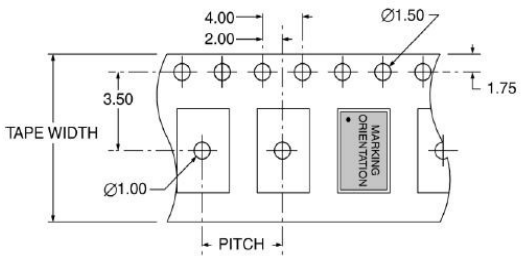
| Series | Supply Voltage | Operating Temperature Range | Duty Cycle | Output Drive Capability | Frequency Stability | Pin 1 Connection | Frequency |
|---|---|---|---|---|---|---|---|
| ISM97- | 3 = 3.3V | 1 = 0°C to +70°C | 5 = 50 ±5% | 1 = 15pF | E = ±10ppm | H = Tri-State | -25.000 MH |
| | 7 = 3.0V | 8 = -10°C to +60°C | 6 = 50 ±10% | 6 = 30pF | D = ±15ppm | O = N/C | |
| | 2 = 2.7V | 6 = -10°C to +70°C | | | F = ±20ppm | | |
| | 6 = 2.5V | 3 = -20°C to +70°C | | | A = ±25ppm | | |
| | 1 = 1.8V | 4 = -30°C to +75°C | | | B = ±50ppm | | |
| | 8 = 1.62V - 3.63V | 2 = -40°C to +85°C | | | C = ±100ppm | | |

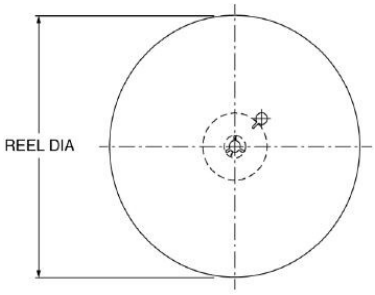
**NOTES**:
- Not all Frequency Stability options are available at all frequencies and Operating Temperature Ranges.
- Not all Output Drive Capability options are available at all frequencies.
- Not all Supply Voltage options are available at all frequencies.
- Please consult with Sales Department any other parameters or options.

### Package Information

**Termination** = e4 (Au over Ni over W base metallization)
**Terminal Plating Thickness:**
Gold (0.3µm to 1.0µm), Nickel (1.27µm to 8.89µm)

## Tape & Reel Dimensions:

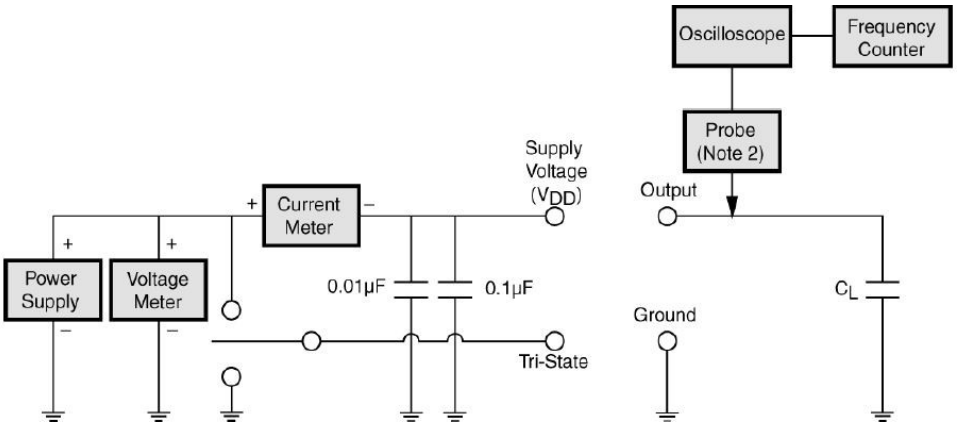


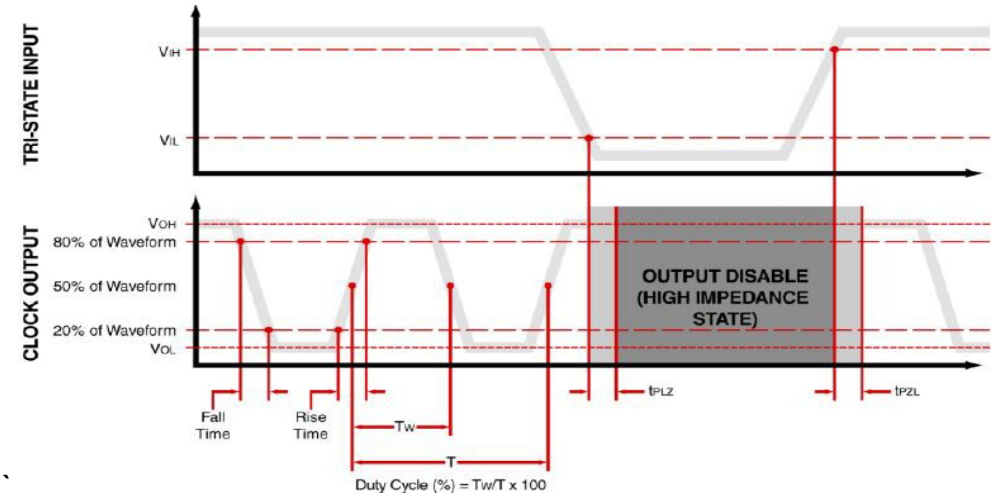

| | |
|---|---|
| PITCH | 4.00 |
| TAPE WIDTH | 8.00 |
| REEL DIA | 180 |
| QTY PER REEL | 3,000 |

**Dimensions Units: mm**

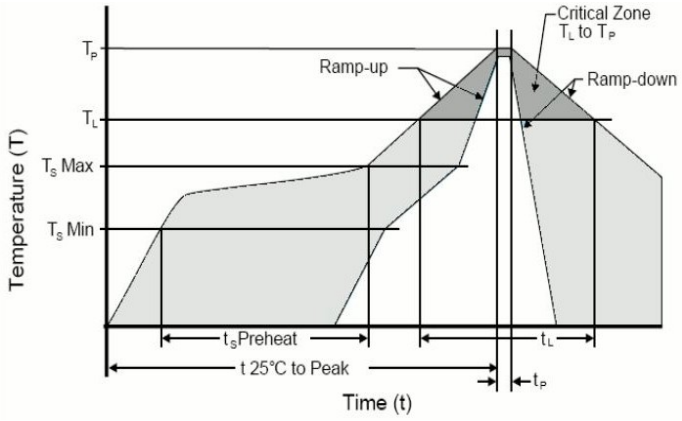
## Test Circuit: Enable/Disable Option




## Waveform: Enable/Disable Option



## Solder Reflow Profile:




Units are backward compatible with +240°C reflow process

| | |
|---|---|
| Ts max to $T_L$ (Ramp-up Rate) | 3ºC / second max |
| Preheat<br>Temperature min (Ts min)<br>Temperature typ (Ts typ)<br>Temperature max (Ts max)<br>Time (Ts) | <br>150ºC<br>175ºC<br>200ºC<br>60 to180 seconds |
| Ramp-up Rate ($T_L$ to Tp) | 3ºC / second max |
| Time Maintained Above<br>Temperature ($T_L$)<br>Time ($T_L$) | <br>217ºC<br>60 to 150 seconds |
| Peak Temperature (Tp) | 260ºC max for 10 seconds |
| Time within 5ºC to Peak Temperature (Tp) | 20 to 40 seconds |
| Ramp-down Rate | 6ºC / second max |
| Tune 25ºC to Peak Temperature | 8 minutes max |
| Moisture Sensitivity Level (MSL) | Level 1 |

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