

### 3.2mm x 2.5mm Ceramic SMD Package Oscillator, CMOS

### ISM97 Series

#### Product Features:

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

#### Typical 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 ±15ppm Maximum ±20ppm Maximum ±25ppm Maximum ±50ppm Maximum ±100ppm Maximum	Inclusive of Calibration Tolerance at 25°C, Frequency Stability over Operating Temperature Range, Supply Voltage Change, Output Load Change, and First Year Aging at 25°C.
Operating Temperature Range	0°C to +70°C, -10°C to +60°C, -10°C to +70°C, -20°C to +70°C, -30°C to +75°C, 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 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	
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
<b>NOTES:</b>	<ul style="list-style-type: none"> <li>• All minimum and maximum limits are specified over temperature and rated operating voltage with 15pF output unless otherwise stated.</li> <li>• A 0.1µF bypass capacitor is recommended between Vdd (pad 4) and GND (pad 2) to minimize power supply noise.</li> </ul>	

#### 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
<b>NOTE:</b>	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.

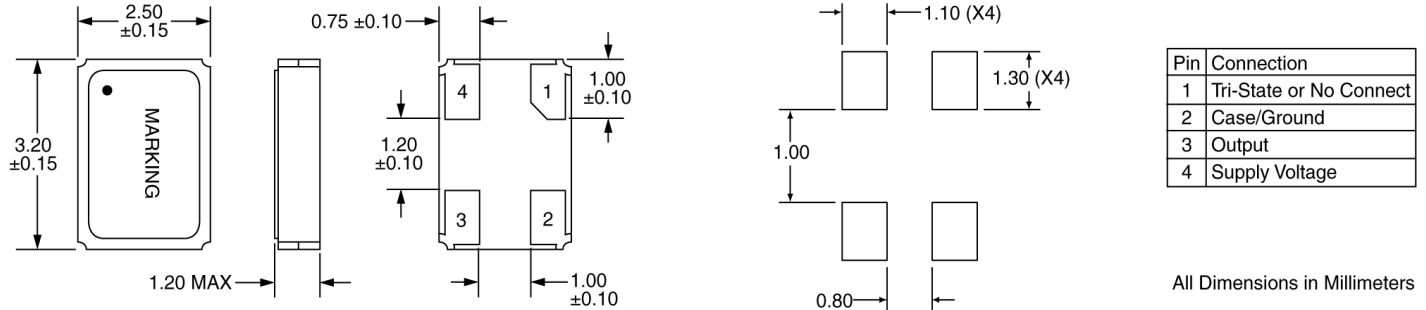
#### ENVIRONMENTAL SPECIFICATIONS

Mechanical Shock	MIL-STD-202, Method 213
Mechanical Vibration	MIL-STD-202, Method 204
Resistance to Soldering Heat	MIL-STD-202, Method 210
Solderability	J-STD-002
Gross Leak	MIL-STD-883, Method 1014
Fine Leak	MIL-STD-883, Method 1014
Moisture Sensitivity Level	MSL 1 (+260°C)

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#### MECHANICAL & SOLDER PAD LAYOUT DIMENSIONS



#### PART NUMBER GUIDE

Series	Supply Voltage	Operating Temperature Range	Duty Cycle	Output Drive Capability	Frequency Stability	Enable/Disable	Frequency
ISM97-	3 = 3.3V	1 = 0°C to +70°C	5 = 50 ±5%	1 = 15pF	E = ±10ppm	H = Enable	-25.000 MHz
	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		

Sample Part Number: ISM97-3251BH-20.000 MHz

- 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.

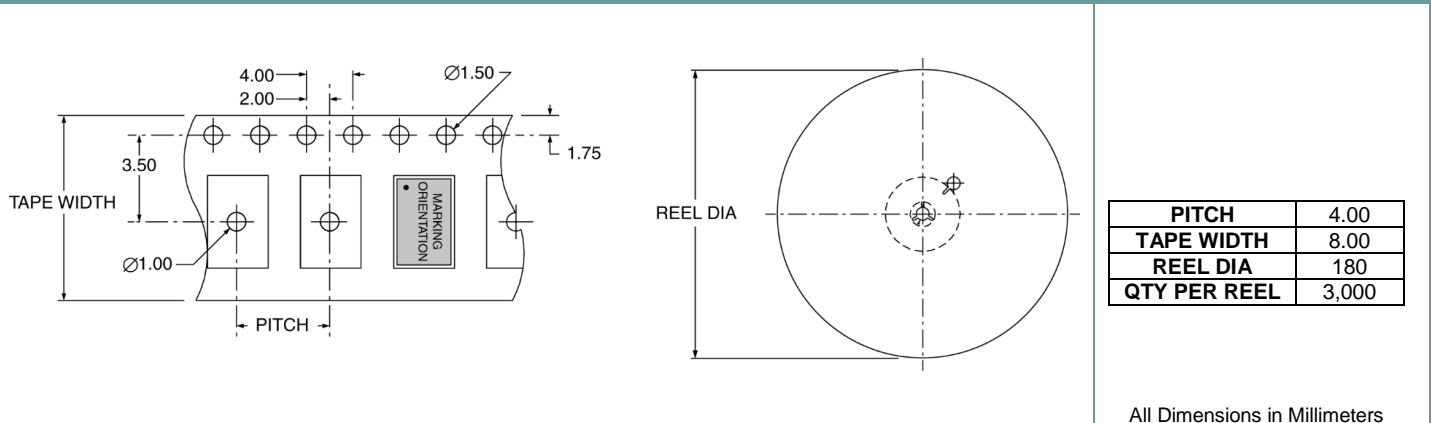
#### MARKING

Line 1: ILSI, Date Code (YWW)  
 Line 2: Frequency  
 Pin 1 Dot

#### 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)

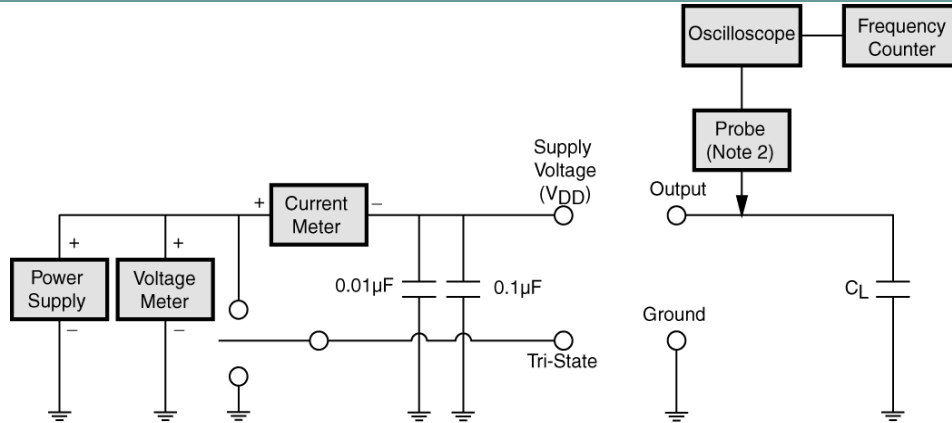
#### TAPE & REEL DIMENSIONS



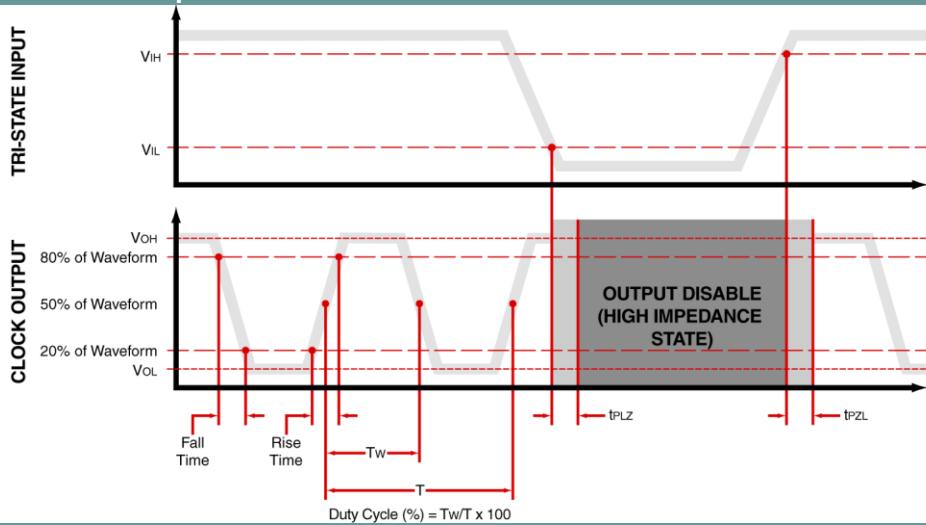
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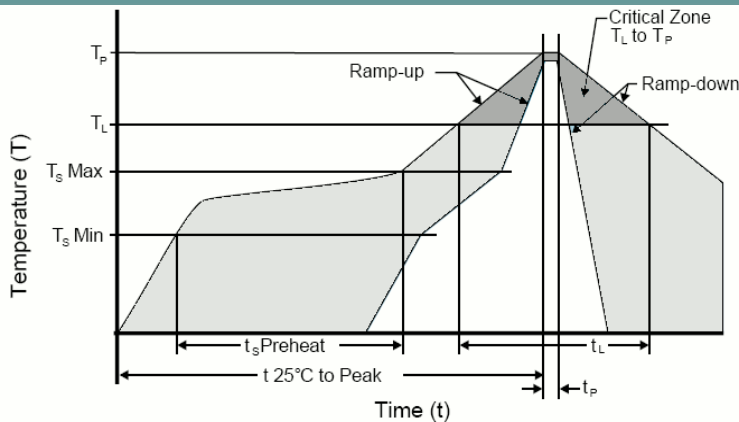
#### TEST CIRCUIT: Enable/Disable Option



#### WAVEFORM: Enable/Disable Option



#### SOLDER REFLOW PROFILE



Units are backward compatible with +240°C reflow process

Ts max to TL (Ramp-up Rate)	3°C / second max
Preheat	
Temperature min (Ts min)	150°C
Temperature typ (Ts typ)	175°C
Temperature max (Ts max)	200°C
Time (Ts)	60 to 180 seconds
Ramp-up Rate (TL to TP)	3°C / second max
Time Maintained Above Temperature (TL)	217°C
Time (TL)	60 to 150 seconds
Peak Temperature (Tp)	260°C max for 10 seconds
Time within 5°C to Peak Temperature (Tp)	20 to 40 seconds
Ramp-down Rate	6°C / second max
Tune 25°C to Peak Temperature	8 minute max
Moisture Sensitivity Level (MSL)	Level 1

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