

## 4 Pad 1.6mm x 1.2mm SMD, LVC MOS Oscillator, 32.768kHz

## ISM37 Series

### Product Features:

- LVC MOS compatible output
- Low 30µA Input Current
- Small Footprint SMD Package
- AT Cut Temperature Stability Characteristic
- Six supply voltages options, 1.8V, 2.5V, 2.8V, 3.0V, 3.3V, 1.62V to 3.63V (Continuous)
- RoHS and REACH compliant

### Typical Applications:

- Real Time Clock Source
- Metering
- Industrial Control
- System Clock

### ELECTRICAL SPECIFICATIONS

Frequency Range	32.768kHz	
Frequency Tolerance	±15ppm, ±20ppm, ±30ppm, or ±50ppm Maximum	at +25°C
Frequency Stability	±15ppm, ±20ppm, ±30ppm, or ±50ppm Maximum	Inclusive of Operating Temperature Range
Operating Temperature Range	-20°C to +70°C -30°C to +85°C -40°C to +85°C	
Supply Voltage (Vdd)	1.8V, 2.5V, 2.8V, 3.0V, 3.3V, or 1.62V to 3.63V	
Input Current	30µA Maximum	No Load, Vdd = 3.3V
Output Logic Type	LVC MOS	
Output Drive Capability	15pF Maximum	
Aging	±3ppm/year Maximum	at +25°C
Duty Cycle	50 ±5(%)	Measured at 50% of waveform
Rise / Fall Time	200nSec Maximum	Measured from 10% to 90% 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	3µA Maximum	Disabled Output: High Impedance
Startup Time	7mSec Maximum 10mSec Maximum	Vdd = 2.5V to 3.3V Vdd = 1.8V

**NOTES:**

- All minimum and maximum limits are specified over temperature and rated operating voltage with 15pF output unless otherwise stated.
- 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 +0.5Vdc
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.

### PART NUMBER GUIDE

Series	Supply Voltage	Operating Temperature Range	Frequency Tolerance	Frequency Stability	Pin 1 Connection	Frequency
ISM37-	1 = 1.8V 6 = 2.5V 2 = 2.8V 7 = 3.0V 3 = 3.3V 8 = 1.62V to 3.63V	3 = -20°C to +70°C 5 = -30°C to +85°C 2 = -40°C to +85°C	D = ±15ppm F = ±20ppm Z = ±30ppm B = ±50ppm	D = ±15ppm F = ±20ppm Z = ±30ppm B = ±50ppm	H = Tri-State (High Impedance)	-32.768 kHz

**Sample Part Number: ISM37-82BBH-32.768 kHz**

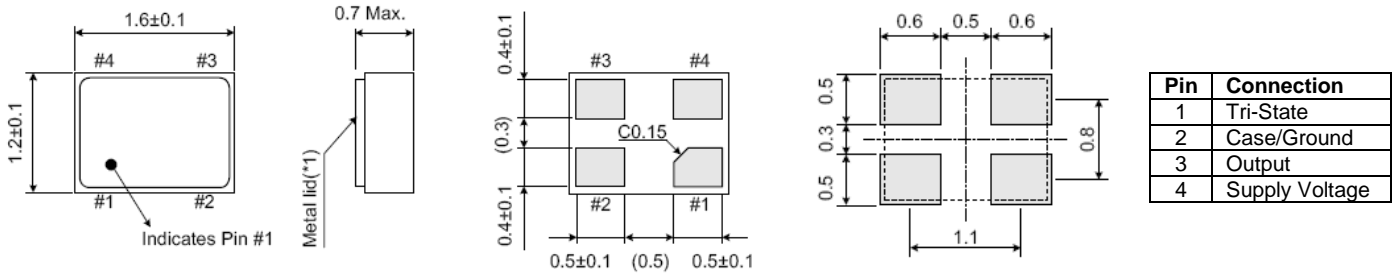
**NOTES:**

- Please consult with Sales Department any other parameters or options.

### 4 Pad 1.6mm x 1.2mm SMD, LVCMOS Oscillator, 32.768kHz

ISM37 Series

#### MECHANICAL & SOLDER PAD LAYOUT DIMENSIONS (in millimeters)



#### MARKING

Line 1: 32.768  
 Line 2: Date Code (YWW)  
 Pin 1 Dot

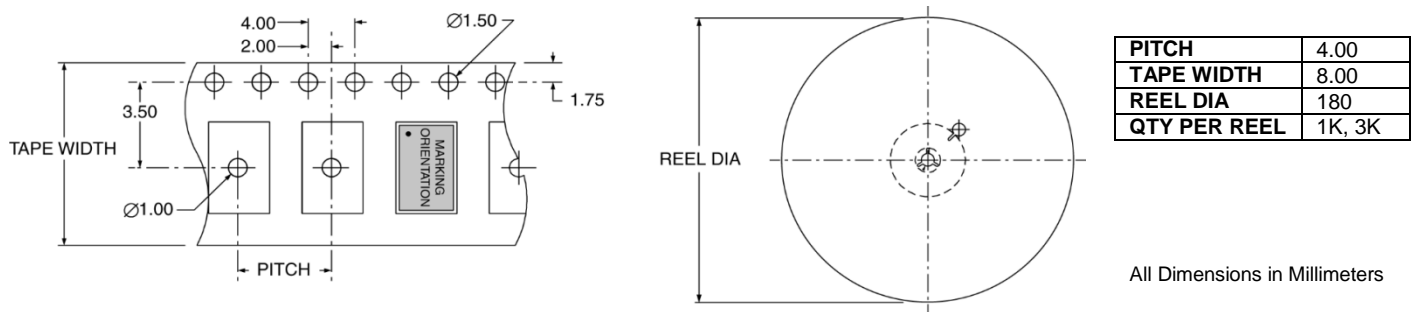
#### PACKAGE INFORMATION

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

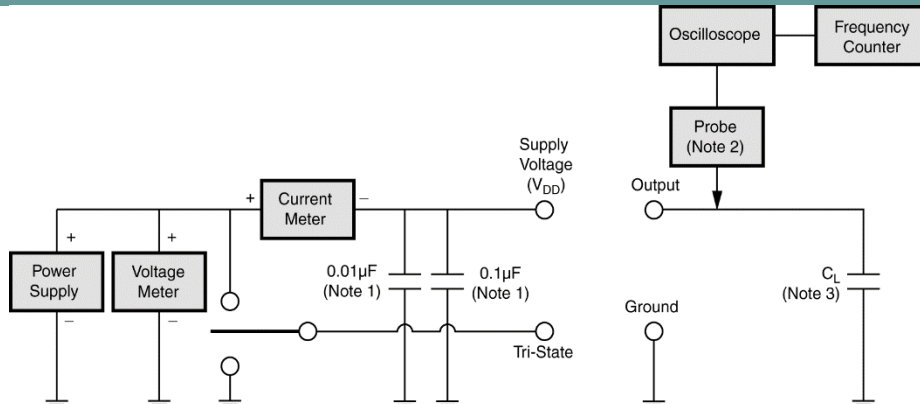
#### ENVIRONMENTAL SPECIFICATIONS

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)

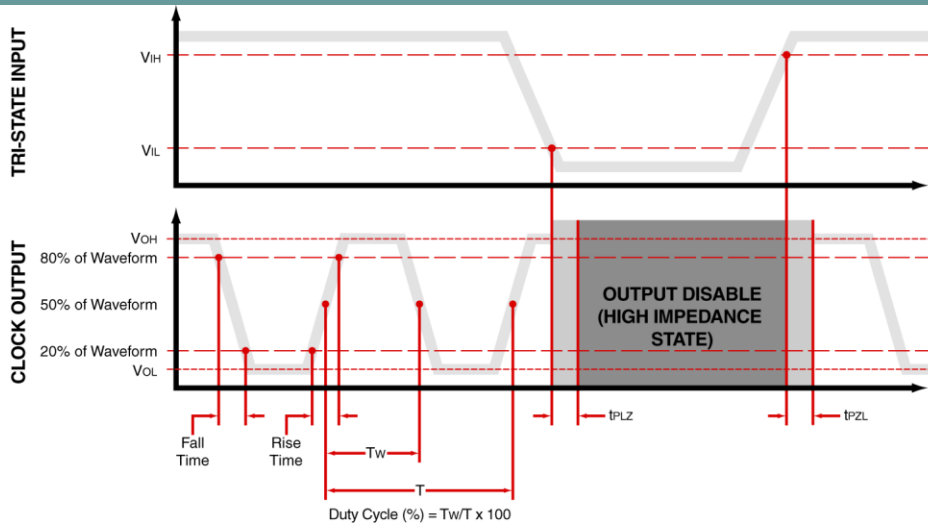
#### TAPE & REEL DIMENSIONS



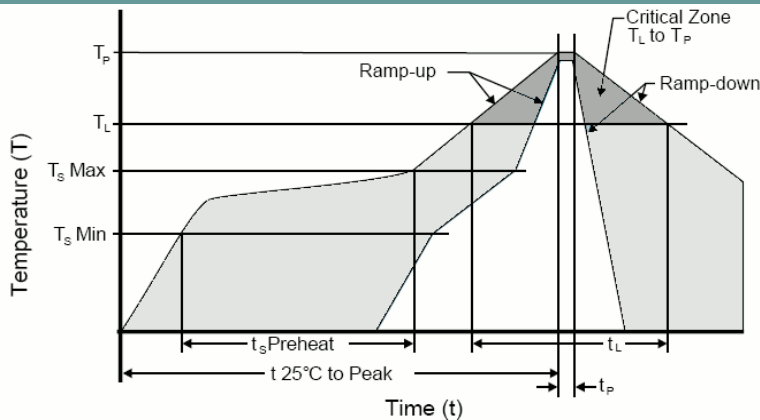
#### TEST CIRCUIT



WAVEFORM



SOLDER REFLOW PROFILE



Units are backward compatible with +240°C reflow process

Ts max to T <sub>L</sub> (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 (T <sub>L</sub> to T <sub>p</sub> )	3°C / second max
Time Maintained Above Temperature (T <sub>L</sub> ) Time (T <sub>L</sub> )	217°C 60 to 150 seconds
Peak Temperature (T <sub>p</sub> )	260°C max for 10 seconds
Time within 5°C to Peak Temperature (T <sub>p</sub> )	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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