

## 2.0 mm x 1.6 mm Ceramic Package SMD Oscillator, CMOS

## ISM36 Series

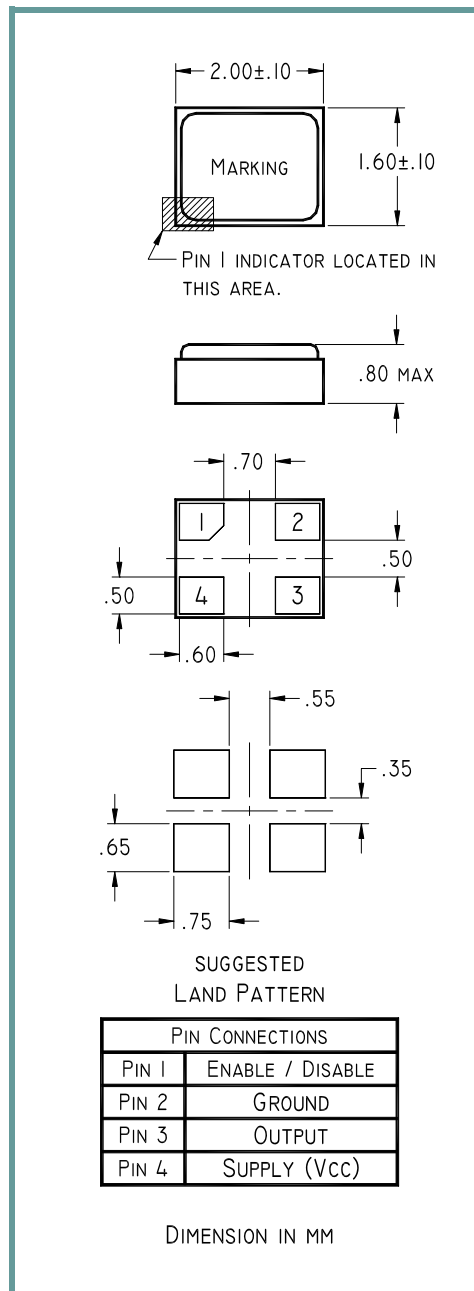
### Product Features:

Very Low Current Consumption  
CMOS Logic Levels  
Compatible with Leadfree Processing  
Small Footprint Package  
AT Cut Temperature Stability Characteristics

### Applications:

Real Time Clocks  
Metering  
Industrial Control  
Time Reference  
System Clock

|                                          |                                                                                                                                                                         |
|------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Frequency</b>                         | 32.768 kHz                                                                                                                                                              |
| <b>Output Level</b><br>CMOS              | '0' = 0.1 V <sub>CC</sub> Max., '1' = 0.9 V <sub>CC</sub> Min.                                                                                                          |
| <b>Duty Cycle</b>                        | 50% ±5%                                                                                                                                                                 |
| <b>Rise / Fall Time</b>                  | 50 nSec Max. 1.8V (20% to 80% V <sub>CC</sub> Levels)<br>40 nSec Max. 2.5V (20% to 80% V <sub>CC</sub> Levels)<br>30 nSec Max. 3.3V (20% to 80% V <sub>CC</sub> Levels) |
| <b>Output Load</b>                       | 15pF Max                                                                                                                                                                |
| <b>Frequency Tolerance</b><br>(at +25°C) | See Part Number Guide Below                                                                                                                                             |
| <b>Frequency Stability</b>               | See Part Number Guide Below                                                                                                                                             |
| <b>Enable / Disable Time</b>             | 200 nSec Max                                                                                                                                                            |
| <b>Start Up Time</b>                     | 7.0 mSec Max. (V <sub>CC</sub> = 3.3V)<br>10.0 mSec Max. (V <sub>CC</sub> = 1.8V)                                                                                       |
| <b>Supply Voltage</b>                    | See Input Voltage Table, tolerance ±10%                                                                                                                                 |
| <b>Current Operating</b>                 | 40 µA Max. (F=32.768kHz, V <sub>CC</sub> = 3.3V, 15 pF load)                                                                                                            |
| <b>Current Standby</b>                   | 3 µA Max                                                                                                                                                                |
| <b>Stand-by Function</b>                 | Output Enable (High) = 0.7 V <sub>CC</sub> Min,<br>Output Disable (Low/High Impedance) = 0.3 V <sub>CC</sub> Max.                                                       |
| <b>Operating</b>                         | See Operating Temperature Table in Part Number Guide                                                                                                                    |
| <b>Storage</b>                           | -40° C to +105° C Standard                                                                                                                                              |



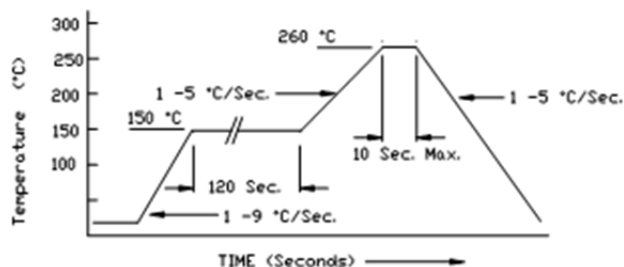
| Part Number Guide |               |                       | Sample Part Number:               |                    | ISM36 -32ZBH – 32.768 kHz |              |
|-------------------|---------------|-----------------------|-----------------------------------|--------------------|---------------------------|--------------|
| Package           | Input Voltage | Operating Temperature | Frequency Tolerance 25°C (in ppm) | Stability (in ppm) | Enable / Disable          | Frequency    |
| ISM36 -           | 3 = 3.3 V     | 1 = 0° C to +70° C    | E = ±10                           | E = ±10*           | H = Stand-by              | - 32.768 kHz |
|                   | 6 = 2.5 V     | 3 = -20° C to +70° C  | D = ±15                           | D = ±15            |                           |              |
|                   | 1 = 1.8 V     | 5 = -30° C to +85° C  | F = ±20                           | F = ±20            |                           |              |
|                   |               | 2 = -40° C to +85° C  | Z = ±30                           | Z = ±30            |                           |              |
|                   |               |                       | B = ±50                           | B = ±50            |                           |              |

NOTE: A 0.01 µF bypass capacitor is recommended between Vdd (pin 4) and GND (pin 2) to minimize power supply noise. \* Not available at all operating temperature options.

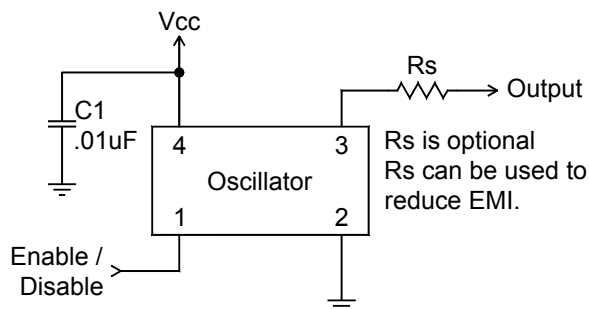
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### Pb Free Solder Reflow Profile



### Typical Application:

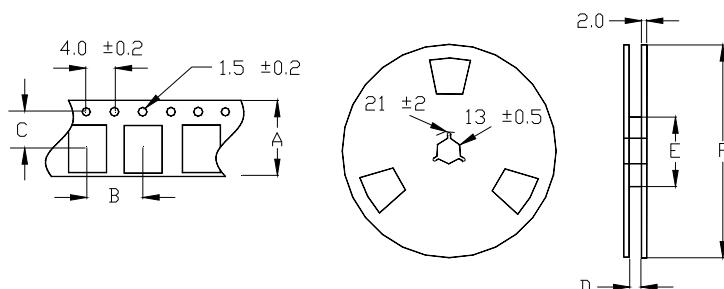


Units are backward compatible with 240C reflow processes

### Package Information:

MSL = N.A. (package does not contain plastic, storage life is unlimited under normal room conditions).  
Termination = e4 (Au over Ni over W base metallization).

### Tape and Reel Information:



| Quantity per Reel | 3000         |
|-------------------|--------------|
| A                 | 8.0+/- .3    |
| B                 | 4.0 +/- .2   |
| C                 | 3.5 +/- .2   |
| D                 | 16.5 +/- .2  |
| E                 | 50 / 60 / 80 |
| F                 | 180          |

### Environmental Specifications

|                              |                                                             |
|------------------------------|-------------------------------------------------------------|
| Thermal Shock                | MIL-STD-883, Method 1011, Condition A                       |
| Moisture Resistance          | MIL-STD-883, Method 1004                                    |
| Mechanical Shock             | MIL-STD-883, Method 2002, Condition B                       |
| Mechanical Vibration         | MIL-STD-883, Method 2007, Condition A                       |
| Resistance to Soldering Heat | J-STD-020C, Table 5-2 Pb-free devices (except 2 cycles max) |
| Hazardous Substance          | Pb-Free / RoHS / Green Compliant                            |
| Solderability                | JESD22-B102-D Method 2 (Preconditioning E)                  |
| Gross Leak                   | MIL-STD-883, Method 1014, Condition C                       |
| Fine Leak                    | MIL-STD-883, Method 1014, Condition A2, R1=2x10-8 atm cc/s  |
| Solvent Resistance           | MIL-STD-202, Method 215                                     |

### Marking

Line 1: I-Date Code (YWW)

Line 2: Frequency