3.2 mm x 5.0 mm Ceramic Low Noise SMD Oscillator,
LVCMOS / LVPECL / LVDS

ISM74 Series

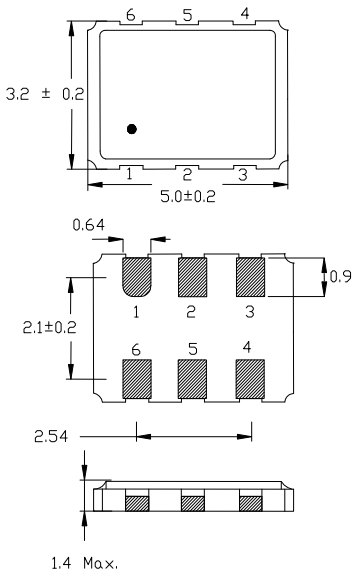
## Product Features

Small Surface Mount Package
Low RMS Phase Jitter
Frequencies to 1500 MHz
Pb Free/ RoHS Compliant
Leadfree Processing

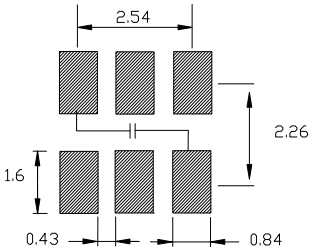
## Applications

xDSL
Broadcast video
Wireless Base Stations
Sonet /SDH
WiMAX/WLAN
Server and Storage
Ethernet/LAN/WAN
Optical modules
Clock and data recovery
FPGA/ASIC
Backplanes
GPON

| | |
|---|---|
| **Frequency**<br>LVCMOS<br>LVPECL<br>LVDS | <br>10 MHz to 250 MHz<br>10 MHz to 1500 MHz<br>10 MHz to 1500 MHz |
| **Output Level**<br>LVCMOS<br>LVPECL<br>LVDS | <br>VOH=90% VDD min., VOL=10 % VDD max.<br>VOH=VDD-1.03V max. (Nom. Load), VOL=VDD-1.6V max. (Nom. Load)<br>VOD=(Diff. Output) 350mV Typ. |
| **Duty Cycle**<br>LVCMOS<br>LVPECL<br>LVDS | <br>50% ±5% @ 50%VDD<br>50% ±5% @ 50%*<br>50% ±5% @ 50%* |
| **Rise / Fall Time**<br>LVCMOS<br>LVPECL<br>LVDS | <br>3.0 ns max. (90%/10%)*<br>0.6 ns max. (80%/20%)*<br>0.6 ns max. (80%/20%)* |
| **Output Load**<br>LVCMOS<br>LVPECL<br>LVDS | <br>15pF<br>50 Ω to VDD - 2.0 VDC<br>RL=100 Ω/CL=10pF |
| **Frequency Stability** | See Table Below |
| **Supply Voltage** | 3.3 VDC ± 10%, 2.5VDC ± 5% |
| **Current** | LVCMOS = 45 mA max., LVPECL = 65 mA max. LVDS = 35 mA max. |
| **Phase Jitter (RMS) At 12kHz to 20 MHz** | 0.5 ps typical |
| **Operating Temp. Range** | See Table Below |
| **Storage** | -40° C to +100° C |




Recommended Pad Layout




Bypass =0.01 uF

| Pin | Connection |
|---|---|
| 1 | Enable/Disable or N.C. |
| 2 | Enable/Disable or N.C |
| 3 | Ground |
| 4 | Output |
| 5 | Output or N.C. |
| 6 | $V_{DD}$ |

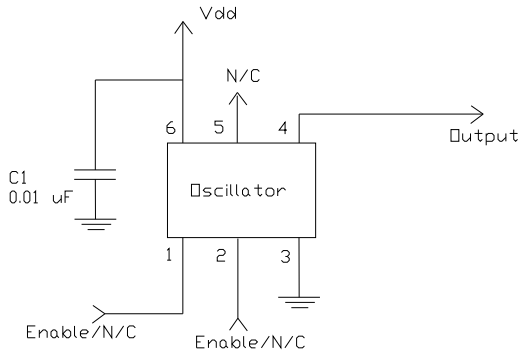
Dimension Units: mm

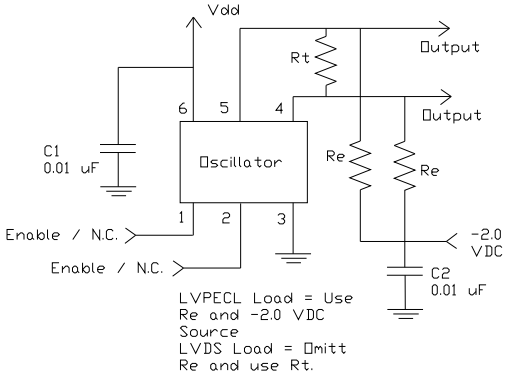
**Part Number Guide** **Sample Part Number:** **ISM74–31A9H2–155.520**

| Package | Input Voltage | Operating Temperature | Stability (in ppm) | Output | Enable / Disable | Complimentary Ouput (Pin 5) ** | Frequency |
|---|---|---|---|---|---|---|---|
| ISM74 | 3 = 3.3V | 1 = 0° C to +70° C | F = ±20 | 3 = LVCMOS | H = Enable (Pin 1) | 1 = N.C. | -155.520 MHz |
| | 6 = 2.5V | 3 = -20° C to +70° C | A = ±25 | 8 = LVDS | K = Enable (Pin 2) | 2 = Output | |
| | | 2 = -40° C to +85° C | B = ±50 | 9 = LVPECL | | | |

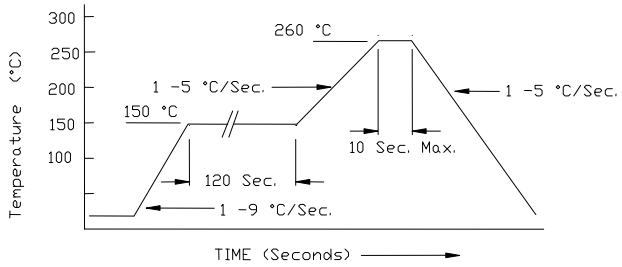
NOTE: A 0.01 µF bypass capacitor is recommended between $V_{DD}$ (pin 6) and GND (pin 3) to minimize power supply noise. * Measured as percent of waveform. ** Available on LVDS and LVPECL ouput only.

## Typical Application:




## Pb Free Solder Reflow Profile:

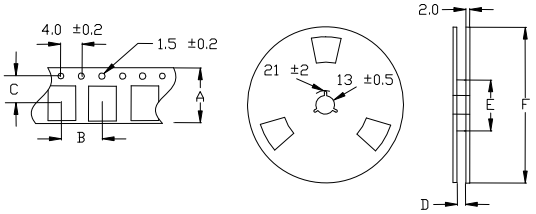



*Units are backward compatible with 240C reflow processes

## 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 metalization).

## Tape and Reel Information:




| Quantity per Reel | 1000 |
|---|---|
| A | 16 +/-.3 |
| B | 8 +/-.2 |
| C | 7.5 +/-.2 |
| D | 17.5 +/-1 |
| E | 50 / 60 / 80 |
| F | 180 / 250 |

## 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) |
| Terminal Strength | MIL-STD-883, Method 2004, Test Condition D |
| 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: ILSI and Date Code (YWW)
Line 2: Frequency