

# ISM16 Series



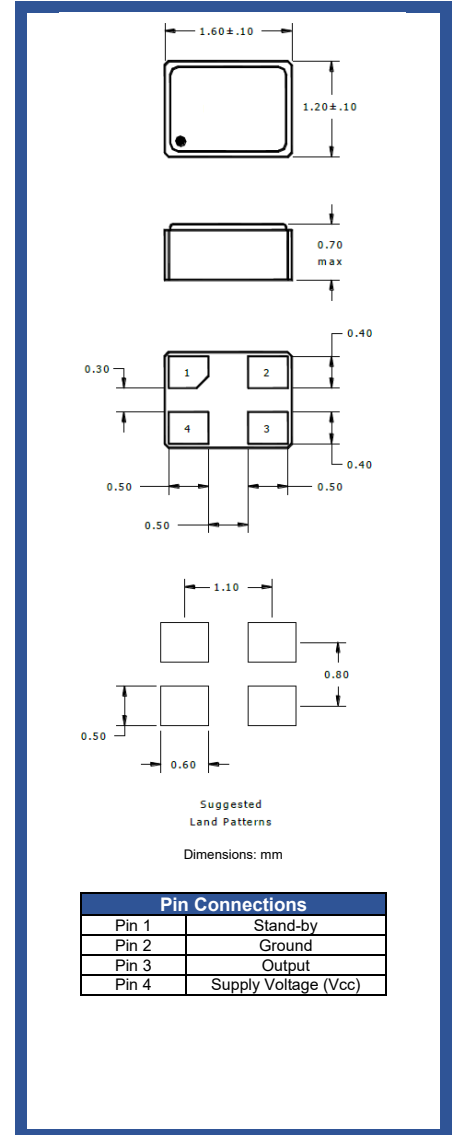
## Product Feature:

CMOS Output  
 Low Jitter, Non-PPL Based Output Wide  
 Range of Supply Voltage (1.8 to 3.3V)  
 Stand-by Function on Pin 1  
 RoHS Compliant  
 Compatible Leadfree Processing

## Applications:

Fibre Channel  
 Server & Storage  
 802.11 / Wifi  
 Sonet/SDH  
 T1/E1, T3/E3

|  |   |
|--|---|
| <b>Frequency</b>                               | 3.000000 MHz to 80.000000 MHz   |
| <b>Output Level CMOS</b>                       | Logic "0" = 0.4 V max<br>Logic "1" = Vcc - 0.4 V min  |
| <b>Duty Cycle</b>                              | See Duty Cycle Table in Part Number Guide   |
| <b>Rise / Fall Time</b>                        | 4.5 nSec max (10% to 90% of waveform)   |
| <b>Output Load</b>                             | 15pF max  |
| <b>Frequency Stability</b>                     | See Frequency Stability Table in Part Number Guide (Note 1)   |
| <b>Start-up time</b>                           | 2.0 mSec max with Vcc = +3.30 VDC<br>5.0 mSec max with Vcc = +1.80 VDC  |
| <b>Stand By Terminal Function (Pin 1)</b>      | 0.7 Vcc min = Output enable<br>0.3 Vcc max = Oscillation stop and High impedance output   |
| <b>Supply Voltage (Vcc)</b>                    | See Input Voltage Table in Part Number Guide (Tolerance = ±10%)   |
| <b>Current During Standby During Operation</b> | 10 µA max<br>2.5 typ., 3.5 mA max (1.8 V, 15 pF load @ 50.000MHz)<br>3.5 typ., 5.0 mA max (1.8 V, 15 pF load @ 80.000MHz)<br>4.2 typ., 6.0 mA max (3.3 V, 15 pF load @ 50.000MHz)<br>6.0 typ., 8.5 mA max (3.3 V, 15 pF load @ 80.000MHz) |
| <b>Aging</b>                                   | ± 3.0 ppm max @ +25°C First Year  |
| <b>Operating Temperature Range</b>             | See Operating Temperature Table in Part Number Guide  |
| <b>Storage Temperature Range</b>               | -40°C to +85°C  |
| <b>Random Jitter (RJ)</b>                      | 2.9 pSec typical  |
| <b>Total Jitter (TJ)</b>                       | 40.0 pSec typical<br>TJ = n x RJ where n ≈ 14.1, BER = 10 <sup>-12</sup>  |
| <b>Phase Jitter</b>                            | 1.0 pSec max<br>Offset frequency = 12 kHz to 5.000MHz   |



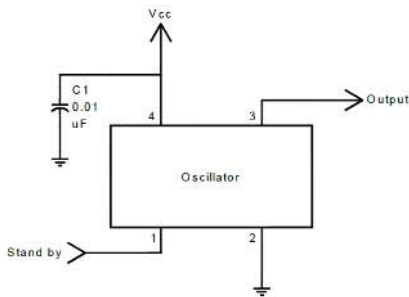
### Notes:

- Includes room temperature tolerance and stability over operating temperature.
- A 0.01 F bypass capacitor is recommended between Vcc (Pin 4) and GND (Pin 2) to minimize power supply noise

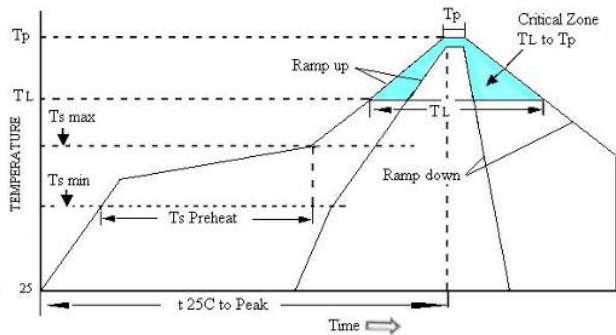
| Part Number Guide |               | Sample Part Number:   |                       | ISM16-3153A-20.000 MHz |                    |              |
|-------------------|---------------|-----------------------|-----------------------|------------------------|--------------------|--------------|
| Package           | Input Voltage | Operating Temperature | Symmetry (Duty Cycle) | Output                 | Stability (in ppm) | Frequency    |
| ISM16 -           | 1 = 1.8 V     | 1 = 0° C to +70° C    | 5 = 45 / 55 Max.      | 3 = 15 pF              | *A = ±25           | -20.0000 MHz |
|                   | 3 = 3.3 V     | 2 = -40° C to +85° C  | 6 = 40 / 60 Max.      |                        | B = ±50            |              |
|                   | 6 = 2.5 V     | 3 = -20° C to +70° C  |                       |                        | C = ±100           |              |
|                   |               | 5 = -30° C to +85° C  |                       |                        | *F = ±20           |              |
|                   |               |                       |                       |                        | G = ±30            |              |

\*Note available for all temperature ranges

## Typical Application:



## Pb Free Solder Reflow Profile:



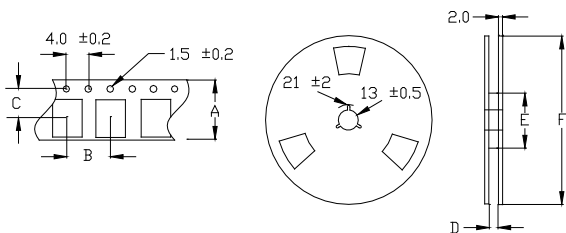
Units are backward compatible with 240°C reflow processes

|  |                          |
|--|--------------------------|
| 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         |
| Time 25°C to Peak Temperature            | 8 minutes max            |

## 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 ±0.2  |
| B                 | 4.0 ±0.1  |
| C                 | 3.5 ±0.05 |
| D                 | 9.0 ±0.3  |
| E                 | 60 / 80   |
| F                 | 180 / 250 |

Dimensions: mm