



OSM4 Series 5.0V Sinewave Oven Controlled Oscillators

March 2007

- Ovenized quartz crystal high precision square wave generator with a Sine Wave output.
- Tube packaging is available.
- 10 to 20 MHz
- Full Size Thru-Hole DIP package
- Electronic Frequency Control (EFC) optional
- Good phase noise characteristics

Pletronics Inc. certifies this device is in accordance with the RoHS 6/6 (2002/95/EC) and WEEE (2002/96/EC) directives.

Pletronics Inc. guarantees the device does not contain the following:
Cadmium, Hexavalent Chromium, Lead, Mercury, PBB's, PBDE's
Weight of the Device: 6.2 grams
Moisture Sensitivity Level: 1 As defined in J-STD-020C
Second Level Interconnect code: e1

Absolute Maximum Ratings:

| Parameter | Unit |
|--------------------------------|---------------------------------|
| V _{CC} Supply Voltage | -0.5V to +7.0V |
| V _i Input Voltage | -0.5V to V _{CC} + 0.5V |
| V _o Output Voltage | -0.5V to V _{CC} + 0.5V |

Reliability: Environmental Compliance

| Parameter | Condition |
|---------------|--------------------------------------|
| Vibration | 10 to 2000 Hz / 10 g |
| Shock | 2000 g, 0.3 mS, ½ sine |
| Solderability | MIL-STD-883 Method 2003 |
| Thermal Shock | MIL-STD-883 Method 1011, Condition A |



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Part Number:

OSM4048052 G G 010 040 -20.00M -XX

| | |
|------------------------------------|---|
| OSM4048052 G G 010 040 -20.00M -XX | Internal code or blank |
| | Frequency MHZ (standards Shown) 10.000 12.800 16.000 16.384 19.440 20.000 32.768 40.000 |
| | Electronic Frequency Control 000 = No EFC 020 = \pm 2.0 ppm minimum 040 = \pm 4.0 ppm minimum 150 = \pm 15.0 ppm minimum 999 = \pm 4.0 ppm with 0 to 10K ohm |
| | Frequency Stability 003 = \pm 25 ppb for 0°C to 60°C 008 = \pm 75 ppb for 0°C to 60°C 005 = \pm 50 ppb for -20°C to 70°C 015 = \pm 150 ppb for -20°C to 70°C 010 = \pm 100 ppb for -40°C to 85°C 025 = \pm 250 ppb for -40°C to 85°C |
| | Upper Operating Temperature C = 50°C F = 65°C J = 80°C D = 55°C G = 70°C K = 85°C E = 60°C H = 75°C L = 90°C |
| | Lower Operating Temperature C = 0°C F = -15°C J = -30°C D = -5°C G = -20°C K = -35°C E = -10°C H = -25°C L = -40°C |
| Series Model | |

Part Marking:

PLE
OSM4050c
fff.fff M
ymdannn

Where: **c** = N for no EFC, R for resistor, V for voltage
fff.fff = Frequency in MHz
Ymda = Date code (Year Month Day plus internal code)
nnn = Device number

Standard values are listed, consult Pletronics Inc. for other options. Specifications such as frequency stability and operating temperature range, etc. are not identified from the marking. External packaging labels and packing list will correctly identify the ordered Pletronics part number.

Codes for Date Code YMD

| Code | 6 | 7 | 8 | 9 | 0 | 1 | 2 |
|------|------|------|------|------|------|------|------|
| Year | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |

| Code | A | B | C | D | E | F | G | H | J | K | L | M |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Month | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |

| Code | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C |
|------|----|----|----|----|----|----|----|----|----|----|----|----|
| Day | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Code | D | E | F | G | H | J | K | L | M | N | P | R |
| Day | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| Code | T | U | V | W | X | Y | Z | | | | | |
| Day | 25 | 26 | 27 | 28 | 29 | 30 | 31 | | | | | |



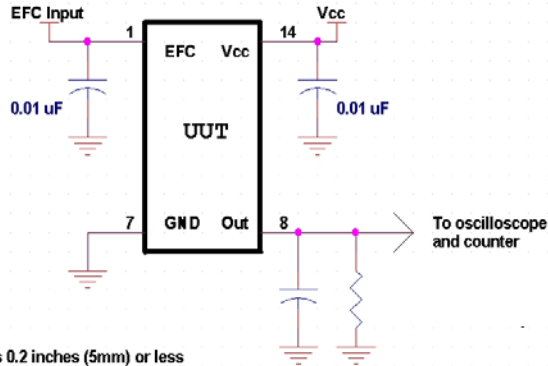
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Specification for 5.00V \pm 0.20V over the specified temperature range

| Item | Min | Max | Unit | Condition | |
|------------------------------------|-----------------------------|-------|-------|--|---|
| Frequency Range | 10 | 20 | MHZ | See list of standard frequencies | |
| Frequency Accuracy vs. Temperature | -250 | 250 | ppb | determined by part number | |
| Frequency Accuracy vs. Supply | -100 | +100 | ppb | for Supply change of 0.2V | |
| Frequency Accuracy vs. Load | -10 | +10 | ppb | Load change of \pm 10% | |
| Frequency Accuracy Short Term | -0.5 | +0.5 | ppb | for periods of 0.1 seconds to 30 seconds | |
| | -0.05 | +0.05 | ppb | for a period of 1 second | |
| Aging | 1 st Year | -0.70 | +0.70 | ppm | |
| | 10 Years | -4.0 | +4.0 | ppm | Accumulated for 10 years |
| Frequency Control | Voltage | -4.0 | +4.0 | ppm | 0.5V to 5.0V, determined by part number > 47 K ohm |
| | (positive slope) Resistance | -4.0 | +4.0 | ppm | 0 to 10 Kohm, determined by part number > 4.7 K ohm |
| Phase Noise | 1 Hz | -- | -80 | dBc/Hz | |
| | 10 Hz | -- | -110 | | |
| | 100 Hz | -- | -135 | | |
| | 1,000Hz | -- | -145 | | |
| Warmup | -- | 30 | sec | within specification after turn on at 0°C | |
| Output Waveform | Sine Wave | | | | |
| Output Level | 1.0 | 2.0 | V PP | 50 ohm load | See Load Circuit |
| | 2.0 | 4.0 | V PP | 1K ohm // 5pF | |
| Output Harmonics | -- | -10 | dBc | 50 ohm load | |
| Output Spurious | -- | -70 | dBc | 50 ohm load | |
| Power Supply Current | -- | 110 | mA | at -20°C | |
| | -- | 70 | mA | at +30°C | |
| | Warmup | -- | 250 | mA | for 10 seconds maximum |
| Operating Temperature Range | -40 | +85 | °C | Part number defines the temperature range to meet the accuracy specification | |
| Storage Temperature Range | -55 | +125 | °C | | |

Load Circuit (nominal load: 50 ohms)



All leads 0.2 inches (5mm) or less

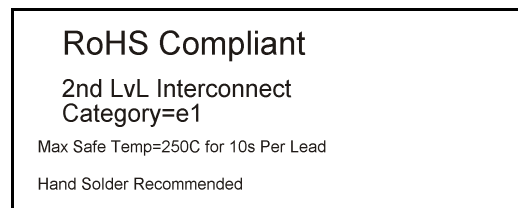
ESD Rating

| Model | Minimum Voltage | Conditions |
|----------------------|-----------------|-------------------------|
| Human Body Model | 2000 | MIL-STD-883 Method 3115 |
| Charged Device Model | 2000 | JESD 22-C101 |

Package Labeling

Label is 1" x 2.6" (25.4mm x 66.7mm)
Font is Courier New
Bar code is 39-Full ASCII

Label is 1" x 2.6" (25.4mm x 66.7mm)
Font is Arial

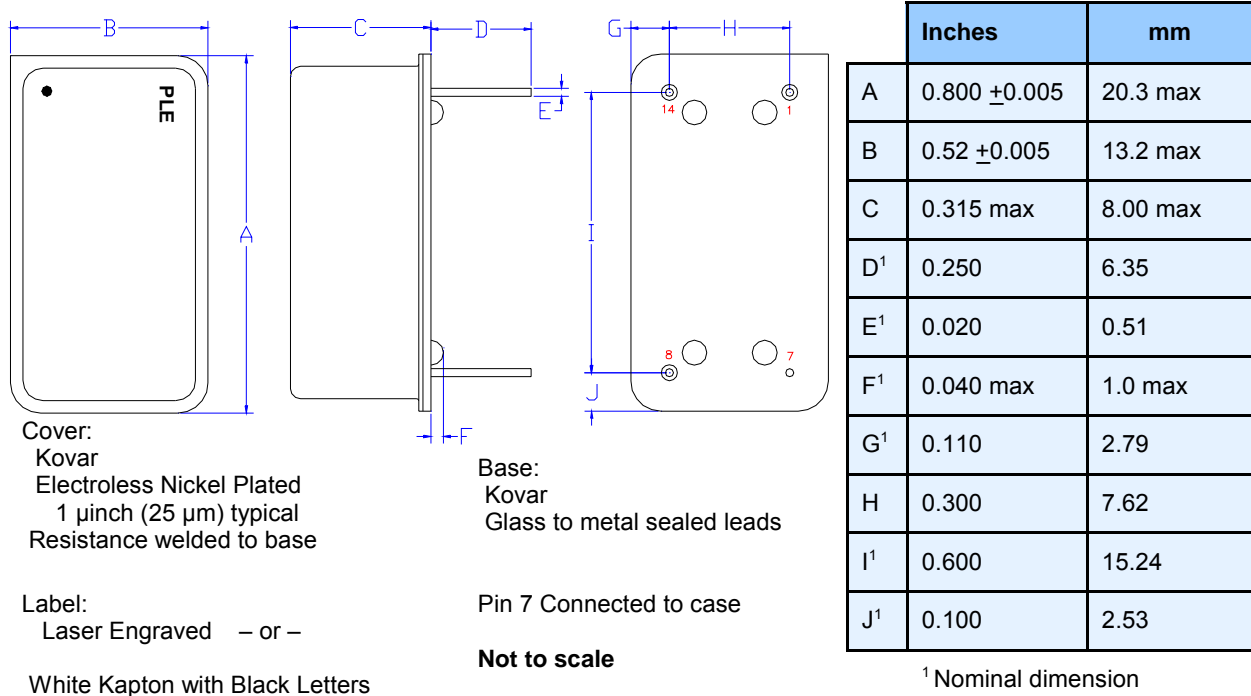


(Will show OSM on label)

PCB Mounting (typical for lead free processing)

Hand soldering is recommended at 250°C maximum for 5 seconds maximum per pin

Mechanical:



| Pin | Function | Note |
|-----|-----------------------------------|---|
| 1 | EFC | 10 K ohm to ground –OR– 0.5 to 5.0V control voltage, depends on option ordered. Use the 30% value for initial operation |
| 7 | Ground (GND) | |
| 8 | Output | |
| 14 | Supply Voltage (V _{CC}) | Recommend connecting appropriate power supply bypass capacitors as close as possible. |

Layout and application information

For Optimum Jitter Performance, Pletronics recommends:

- Minimize air flow over the oscillator
- Stabilize the power supply voltage for best performance.



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