



9400

Satellite Master Oscillator

KEY FEATURES

- Output Frequency: 5 MHz - 25 MHz
- Power Consumption: 2.6W @ 25° C
- Radiation Rated to: >100 krad (Si)
- Frequency Aging @5MHz: 5.0E-11/Day, 1.5E-8/Year
- Temperature Range: -25° C to +60° C

Symmetricom's 9400 is a master oscillator that produces a highly stable, low noise, reference frequency output.

The use of surface mount technology allows for the greatest possible reduction in size without compromise of performance or reliability. All discrete components manufactured to military standards are purchased from a military certified and qualified vendor. The environmentally rugged 9400 features an ovenized SC-cut quartz resonator and sustaining electronics to achieve temperature insensitive performance. The satellite master oscillator also exhibits excellent short-term stability, phase noise and aging characteristics. Backed by an extensive oscillator legacy, the

9400 oscillator series meets the challenges of stringent specifications for frequency control, even under the most adverse environmental conditions.

These oscillators are suitable for direct installation as a component in equipment and systems as well as for use as a master frequency standard, local oscillator and timing base, satisfying a range of applications such as:

- Shipboard timing references
- Satellite system's on board timing and frequency standard
- Land-mobile system frequency reference
- Receivers/transmitters/LO



9400 Satellite Master Oscillators

9400 Specifications

ELECTRICAL SPECIFICATIONS

- Output level
(TTL outputs available): 7.0dBm into 50Ω
- Electrical frequency control
(EFC) range: ±4.0E-7 Typical
- Short-term stability @5 MHz
 - 1 second (Allan Deviation): 3.0E-12
 - 10 second (Allan Deviation): 1.0E-12
- Frequency aging @5 MHz
 - Per day: 5.0E-11
 - Per year: 1.5E-8
- Phase noise @ 5MHz:
 - Offset frequency L (f)
 - 1 Hz -116dBc/Hz
 - 10 Hz -140dBc/Hz
 - 100 Hz -150dBc/Hz
 - 1 KHz -157dBc/Hz
 - 10 KHz -160dBc/Hz
 - 100 KHz -160dBc/Hz
- Frequency vs. temperature: ±4.0E-9
- Harmonic distortion: -40dBc
- Non-harmonic distortion: -90dBc
- Frequency retrace: ±1.0E-8
(After up to 24 hrs. off & 1 hour on at 25°C)
- Input voltage
 - Range: 15 to 18 Vdc
 - Sensitivity
(Ripple, variation): 60 mVpp, +/-10%
- Power
 - Steady state: 3.6 Watts @25°C
 - Vacuum: 2.4 Watts @25°C

- Warm-up power: 6 Watts
- Warm-up time from +25° C: 15 minutes to 2.0E-8
- Operating temperature range: -25° C to +60° C
- Storage temp. (Non-operating): -40° C to +100° C
- Acceleration sensitivity @5 MHz:
 - Typical: 4.0E-9 per g
 - Option 1: 7.0E-10 per g
(worst case axis)
- Random vibration: 20 grms
- Radiation rated: >100 krad (Si)
- Mean time between failure:
(MIL-HDBK-217E) >10 million hours
- Physical
 - Size: 1.49" x 1.86" x 3.6" (3.78 cm x 4.72 cm x 9.14 cm)
 - Weight: 8.1 ounces (0.24 Kg)
 - Volume: 9.98 cu inches (163.67 cubic cm)

OPTIONS

- Lower phase noise performance
- Power conditioning
- Mechanical isolation systems
- Multiple outputs
- Crystal radiation preconditioning



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