9638B

Low-Profile Ultra-miniature Military OCXO with Vibration Compensation

KEY FEATURES

- 10 MHz Output
- Electronic Vibration Compensation
- < 3.0E-10 Per Day Aging
- < 2.0E-11 Per g Acceleration Sensitivity
- Low Phase Noise
- Temperature Range: -40°C to +70°C

OPTIONS

Available options for this product include:

- Analog or I²C EFC input

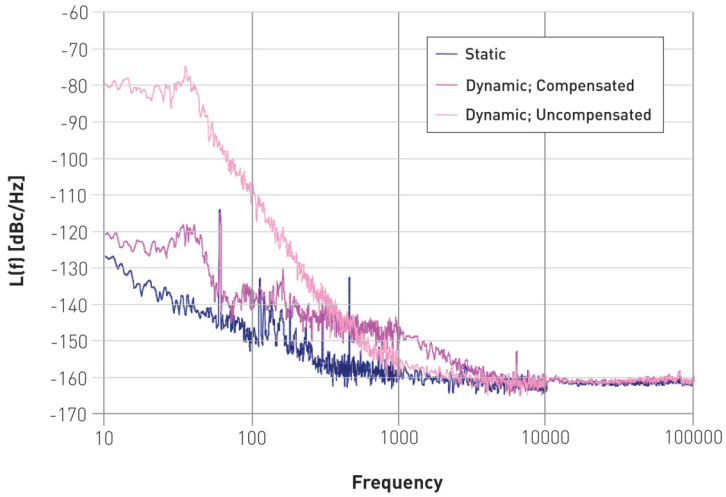
Contact Symmetricom to configure a 9638B oscillator that will meet your specific needs.

As the military moves toward implementing more advanced communications, navigation and targeting systems, precision oscillators that can withstand a wide range of operating environments are becoming more critical.

Like Symmetricom's 9633, the 9638B is a military OCXO designed for ground tactical and airborne applications where superior frequency stability and phase noise in high-vibration environments are required. But while the 9633 utilizes both electronic and mechanical compensation techniques to counter the effects of vibration, the 9638B uses only electronic compensation. The benefit is reduced package height — 1.01" for the 9638B vs. 1.58" for the 9633.

The 9638B thus provides a very small package that delivers superior dynamic phase noise, frequency accuracy, and stability for today's radar, secure communications, and navigation applications.

The 9638B is based on an ovenized 10 MHz 3rd overtone SC-cut crystal resonator, enclosed in a hermetically sealed package.



Dynamic Phase Noise (typical performance)

9638B SPECIFICATIONS

ELECTRICAL SPECIFICATIONS

- Standard Output Frequency: 10 MHz
- Initial Accuracy: ±5.0E-8
- Format: Sine wave
- Amplitude: 7.0 dBm ±1 dB
- Harmonic distortion: <-35 dBc
- Non-harmonic distortion: <-80 dBc
- Load impedance: 50 Ω
- VSWR: 1.5:1

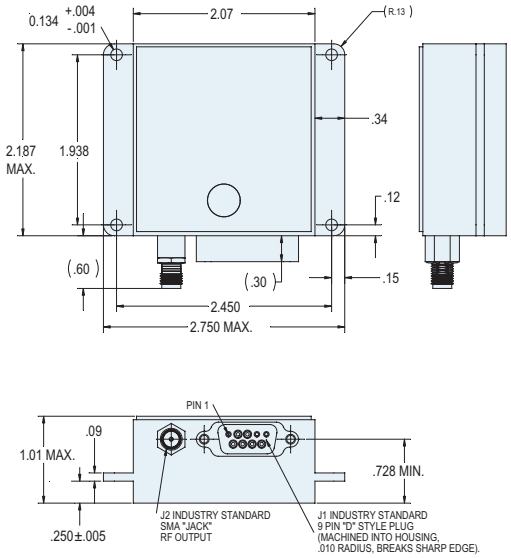
PERFORMANCE PARAMETERS

- Short-term stability
  - 1 second (Allan deviation): <5.0E-12
  - 10 second (Allan deviation): <5.0E-12
  - 100 second (Allan deviation): <1.0E-11
- SSB phase noise (static)
  - 1 Hz: N/A
  - 10 Hz: -120 dBc
  - 100 Hz: -140 dBc
  - 1 kHz: -150 dBc
  - 10 kHz: -155 dBc
  - 100 kHz: -155 dBc
- Aging
  - Per day: <3.0E-10
  - Per year: <4.0E-8
  - 10 years: <1.0E-6
- Frequency Retrace (after up to 24 hrs. off and 1 hour on at 25° C): ±1.0E-8
- Acceleration sensitivity
  - Per g, total gamma: ≤2.0E-11
- Frequency change vs. Temperature
  - -30° C to +70° C: ±1.0E-8
  - Warm-up time from +25° C: ≤5 minutes to within 2.0E-8 of final frequency
- Input Voltage
  - Range: 12 to 15 Vdc
  - Sensitivity: <5.0E-10 for ±5% voltage change
- Steady-state power consumption: <3 W
- Warm-up power consumption: 4 to 12 W
- Electronic Frequency Control (EFC)
  - Range: ±5.0E-7 minimum
  - EFC Input: Analog or I²C
  - EFC Linearity: 10% typical
- Load change sensitivity: ±1.0E-9 for ±5% load change

ENVIRONMENTAL & PHYSICAL SPECIFICATIONS

- Operating Temperature: -40° C to +70° C
- Storage temperature: -55° C to +100° C
- Operating Humidity: 95% RH up to 65° C
- Operating Altitude: 0 to 65,000 feet
- Random vibration
  - Operating (endurance): 35 g rms
- Shock: 20 g for 11 ms half-sine impulse
- EMI/EMC Performance: Contact Factory
- MTBF: 100,000 hours (ground fixed) 45,000 hours (ground mobile)
- Reliability specification: MIL-HDBK-217F
- Weight: 0.16 kg

9638B OUTLINE DRAWING



9638B CONNECTION DESCRIPTIONS

PIN NO.	FUNCTION
J2-1	10 MHz RF OUTPUT
J1-1	CHASSIS GND
J1-2	SCL I²C - CLOCK
J1-3	SDA I²C - DATA
J1-4	CHASSIS GND
J1-5	CHASSIS GND
J1-6	DO NOT CONNECT
J1-7	DO NOT CONNECT
J1-8	PWR
J1-9	PWR

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