

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 $+70^{\circ}\text{C}$

Options

Available options for this product include:

- Analog or 1°C EFC input

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

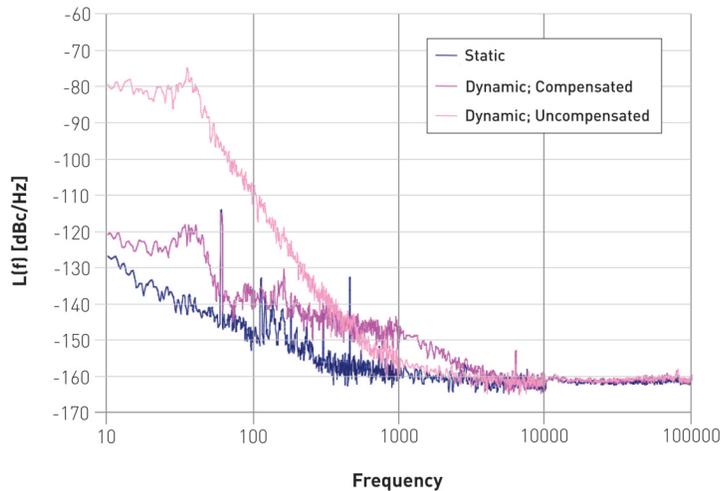
As the military moves toward implementing more advanced communications, navigation and targeting systems, precision oscillators that can withstand a wide range of operating environments are becoming more critical.

Like Microsemi'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 utilized 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	$\pm 5.0E-8$
• 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

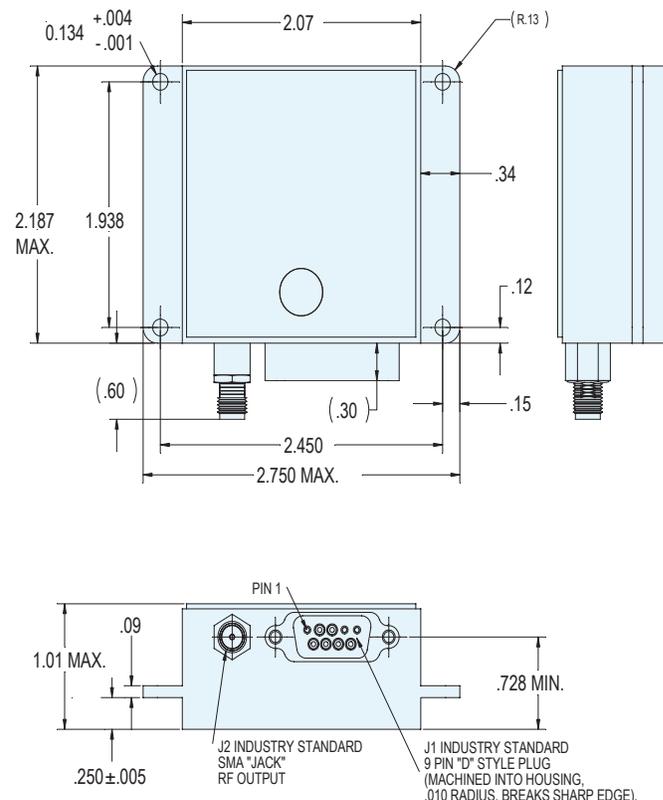
PERFORMANCE PARAMETERS

• 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):		$\pm 1.0E-8$
• Acceleration sensitivity		
Per g. total gamma:		$\leq 2.0E-11$
• Frequency change vs. Temperature		
-30°C to +70°C		$\pm 1.0E-8$
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 $\pm 5\%$ voltage change
• Steady-state power consumption:		4 to 12 W
• Electronic Frequency Control (EFC)		
Range:		$\pm 5.0E-7$ minimum
EFC Input:		Analog or 1°C
EFC Linearity		10% typical
• Load change sensitivity		$\pm 1.0E-9$ for $\pm 5\%$ 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 level) 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 1°C - CLOCK
J1-3	SDA 1°C - 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



Microsemi

Microsemi Corporate Headquarters
One Enterprise, Aliso Viejo, CA 92656 USA
Within the USA: +1 (949) 380-6100
Sales: +1 (949) 380-6136
Fax: +1 (949) 215-4996

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