9500B

Ovenized Master Oscillator

Key Features

- Output frequency: 4-100MHz. 5MHz (standard) (Note: contact for alternate frequency requirements)
- STS for t = 1-100 secs < 3.0 E-13
- Space-qualified and radiation rated to >100 K Rad (Si), ELDERS, neutron and SEE hardened
- Power consumption: <3.6W @ 25ºC
- Size: 8.95" x 3.87" x 3.27"
- Frequency aging <5.0 E-11/day, <1.0 E-8/yr
- Temperature range: -24ºC to +60ºC

Options

Available options for this product include:

- Serial DAC tuning – allows digital tuning over EFC range
- Discrete telemetry and control circuitry – enables analog readouts of output power, baseplate temperature, other functions
- Customized mechanical isolation systems
- Crystal radiation preconditioning
- Multiple RF output ports
- TTL or LVDS output
- Improved acceleration sensitivity

Contact Microsemi to configure a 9500-series oscillator that will meet your specific needs.

The Microsemi® 9500B Series is a master oscillator that produces a highly stable, low noise reference frequency output. It is based on our proven 9500 series design, that builds on Microsemi's strong (40 years) space flight heritage. Particularly suited to space applications, it delivers the best stability performance available in a commercial product.

A mixture of through-hole and surface mount technology, along with the SC-cut quartz resonator, is completely enclosed in an insulating dewar and then kept at a precisely controlled temperature. The result is temperature-insensitive performance and excellent short-term stability, phase noise, and aging characteristics.

All EEE parts on the 9500B are selected in accordance with MIL-STD-975/PPL-21 for Grade 1 or Grade 2 applications, and are procured from approved QML/QPL sources of supply. Assembly is performed by skilled operators certified to J-STD-001DS approved workmanship standards.

The environmentally rugged 9500B Series is suitable for direct installation as a component in equipment and systems as well as for use as a master frequency standard, local oscillator, or time base.

The 9500B series satisfies a wide voltage range of operation suitable for space craft primary or secondary supplies.

- Navigation payload frequency reference
- GPS space borne frequency reference
- Land-mobile system frequency reference
- Satellite on-board frequency standard
- Remote station primary frequency standard

9500B

Specifications

ELECTRICAL SPECIFICATIONS

• Standard Output Frequency	5 MHz
• Initial Accuracy	±2.0E-8
• Format	Sine wave (TTL or LVDS optional)
• Amplitude	7.0 dBm ±1 dB
• Harmonic distortion	<-50 dBc
• Non-harmonic distortion	<-90 dBc
• Load impedance	50 Ω
• VSWR	1.5:1

PERFORMANCE PARAMETERS

• Short-term stability	
1 second (Allan deviation):	<3.0 E-13
10 second (Allan deviation):	<3.0 E-13
100 second (Allan deviation):	<3.0 E-13
• SSB phase noise (static)	
1 Hz	-120 dBc
10 Hz	-145 dBc
100 Hz	-155 dBc
1 kHz	-157 dBc
10 kHz	-160 dBc
100 kHz	-160 dBc
• Aging	
Per day:	<5.0 E-11
Per year:	<1.0 E-8
• Frequency Retrace (after up to 24 hrs. off and 1 hour on at 25° C):	±1.0 E-8
• Acceleration sensitivity	
Per g, total gamma:	≤4.0 E-9
Low g option, total gamma	<8.0 E-10
• Frequency change vs. Temperature	
-25° C to +60° C:	±3.0E-10
Warm-up time from +25° C:	≤120 minutes to within 2.0 E-8 of final frequency
• Input Voltage	
Range:	22 to 38 Vdc
Sensitivity:	<1.0 E-10 for ±5% voltage change
• Steady-state power consumption:	<3.6 W at 25°C; <2.9 W at 25°C in vacuum
• Warm-up power consumption:	<10 W
• Electronic Frequency Control (EFC) Range	±2.0 E-7 typical

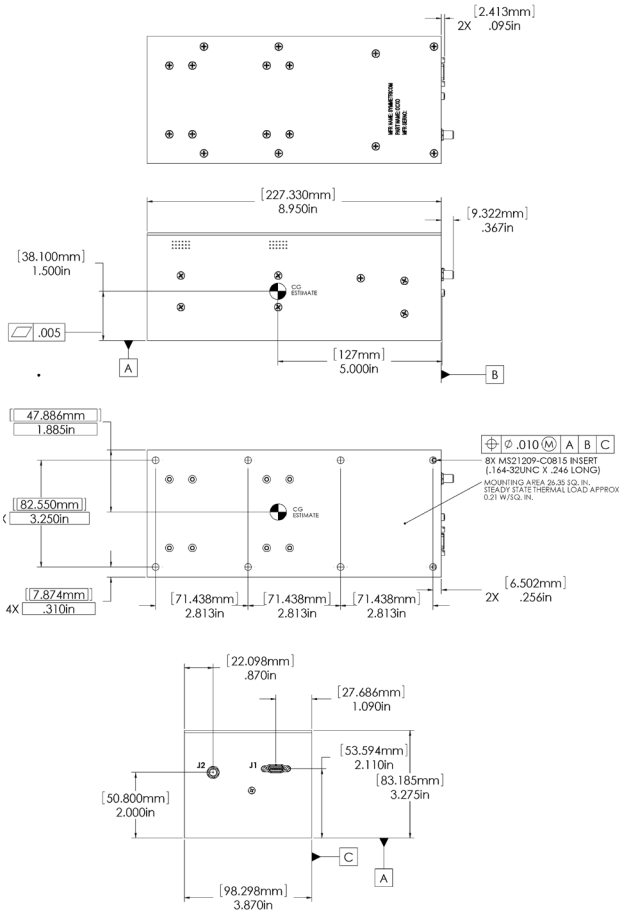
ENVIRONMENTAL & PHYSICAL SPECIFICATIONS

• Operating Temperature:	-24° C to +60° C
• Storage temperature:	-40° C to +100° C
• Random vibration Operating (endurance):	20 g rms
• Pyrotechnic shock:	3000 g
• Radiation Performance:	
Total Dose:	100 krad (Si)
ELDERS:	Compliant
SEU:	Compliant
Neutron Fluence:	Compliant
Prompt Dose Rate:	Compliant
• EMI/EMC Performance:	Contact Factory
• MTBF	>10 million hours
• Reliability specification:	MIL-HDBK-217F
• Weight:	5.25 lbs

Connection Descriptions

PIN NO.	FUNCTION
J1-1	Power +Vdc
J1-2	Power Vdc Return
J1-3	Chassis GND
J1-4	Telemetry
J1-5	N/C
J1-6	Chassis GND
J1-7	Chassis GND
J1-8	Telemetry
J1-9	Power +Vdc
J1-10	Power Vdc Return
J1-11	Chassis GND
J1-12	Chassis GND
J1-13	Chassis GND
J1-14	Chassis GND
J1-15	N/C
J2-1 TO J2-25	Digital Interface (Not implemented)
J3	RF Out 1 (J4 would be added for RF Out 2)

Outline Drawing



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

Microsemi Corporation (Nasdaq: MSCC) offers a comprehensive portfolio of semiconductor solutions for aerospace, defense and security; enterprise and communications; and industrial and alternative energy markets. Products include high-performance, high-reliability analog and RF devices, mixed signals and RF integrated circuits, customizable SoCs, FPGAs, and complete subsystems. Microsemi is headquartered in Aliso Viejo, Calif. Learn more at
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