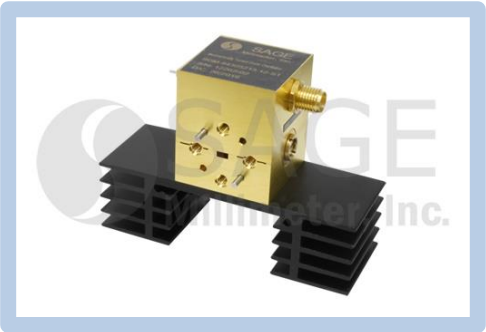
SOM-90301316-10-S1

Rev. 1.1

W-Band Mechanically Tuned Gunn Oscillator, 90 GHz, ±0.5 GHz, +16 dBm

Description:



Model SOM-90301316-10-S1 is a W-band, mechanically tuned Gunn oscillator that utilizes a high performance InP Gunn diode and proprietary cavity design to deliver +16 dBm typical power. The oscillator features a frequency tuning range of 89.5 to 90.5 GHz and delivers low AM/FM noise and harmonic emissions. Compared to its counterparts, such as multiplier based sources, the Gunn oscillator is a lower cost and cleaner source. The Gunn oscillator's frequency can also be tuned by varying the bias voltage, which is useful for phase-locking and electrical-tuning applications. The Gunn oscillator is equipped with a self-locking set screw for frequency trimming. Models with a micrometer for lab and test bench applications are available under a different model number. The performance of the oscillator can be further enhanced by adding an optional isolator, Gunn oscillator modulator/regulator and temperature heater.

Features:

- Low AM/FM Noise and Harmonics
- Bias Tunable

Applications:

- Test Sources
- Signal Generation
- Lab Test Setups

Electrical Specifications:

Parameter	Minimum	Typical	Maximum
Center Frequency	89.5 GHz	90 GHz	90.5 GHz
Power Output		+16 dBm	
Mechanical Tuning Range		±0.5 GHz*	
Bias Tuning Range (+4.0 to +5.0 V_{DC})		±100 MHz	
Bias Voltage		+4.5 V_{DC}	+5.0 V_{DC}
Bias Current		850 mA	
Specification Temperature		+25˚C	
Operating Temperature	0˚C		+50˚C

*Note: Actual tuning bandwidth may be wider.

Mechanical Specifications:

Item	Specification
RF Port	WR-10 Waveguide with UG-387/U-M Anti-Cocking Flange
External Bias	SMA (F)
Mechanical Tuning	Self-Locking Set Screw
Body Material	Aluminum
Finish	Gold Plated
Weight	3.0 Oz
Outline	OM-SW-A-C

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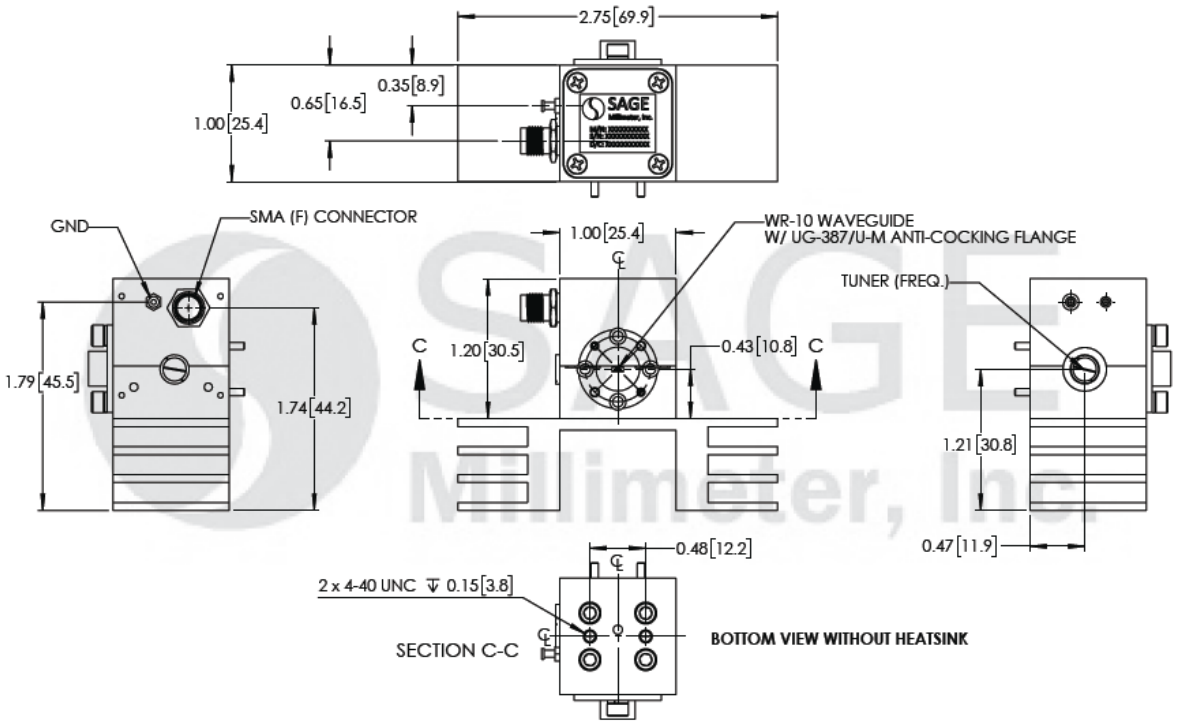
Typical Measured Data: (Bias: +4.5 V_{DC}/850 mA)

Tuner Position	Frequency (GHz)	Power (dBm)
1 Clockwise Turns	89.500	16.0
Factory Set	90.000	15.9
1 1/8 Counter Clockwise Turns	90.500	15.8

Mechanical Outline: (Unless otherwise specified, all dimensions are in inches [millimeters])



Note:

- All data is presented is collected from a sample lot. Actual data may vary unit to unit.
- The data given above was tested under case temperature **35°C**.
- The SAGE Millimeter Gunn oscillator regulator **SOR-R3** is highly recommended for over voltage and reverse bias protection. The outline of the model SOR-R3 is shown in below.
- The bias tuning feature can be used for electrical tuning and phase lock loop applications.
- SAGE Millimeter, Inc. reserves the right to change the information presented without notice.

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Caution:

- Reversing polarity will destroy the device.
- Bias voltage should never exceed **+5.0 Volts**.
- The case temperature of the device should never exceed **+50˚C**. Use an additional heatsink or fan if necessary.
- Proper torque, 8.0 ± 0.4 inch-pounds (0.90 ± 0.02 Nm), should be applied. **SAGE Millimeter torque wrench, model SCH-08008-S1, is highly recommended.**
- Any foreign objects in the waveguide will destroy the device.

Appendix: The Outline of the Gunn Oscillator Regulator Model SOR-R3