SOM-70302317-15-S1

Rev. 1.1

V-Band Mechanically Tuned Gunn Oscillator, 69 to 71 GHz, +17 dBm

Description:

Model SOM-70302317-15-S1 is a V-band, mechanically tuned Gunn oscillator that utilizes a high-performance GaAs Gunn diode and proprietary cavity design to deliver +17 dBm typical power. The oscillator features a frequency tuning range of 69 to 71 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	69 GHz	70 GHz	71 GHz
Power Output		+17 dBm	
Mechanical Tuning Range		±1.0 GHz*	
Bias Tuning Range (+4.5 to +5.5 V_{DC})		±100 MHz	
Bias Voltage		+5.5 V_{DC}	+6.0 V_{DC}
Bias Current		750 mA	
Specification Temperature		+25 ˚C	
Operating Temperature	0 ˚C		+50 ˚C

*Note: Actual tuning bandwidth is wider, ±1.5 GHz typical.

Mechanical Specifications:

Item	Specification
RF Port	WR-15 Waveguide with UG-385/U Anti-Cocking Flange
Bias Port	SMA (F)
Mechanical Tuning	Self-Locking Set Screw
Body Material	Aluminum
Finish	Gold Plated
Weight	3.0 Oz
Outline	OM-SV-A-C

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Phone: 424-757-0168 | Fax: 424-757-0188 | Email: sales@sagemillimeter.com

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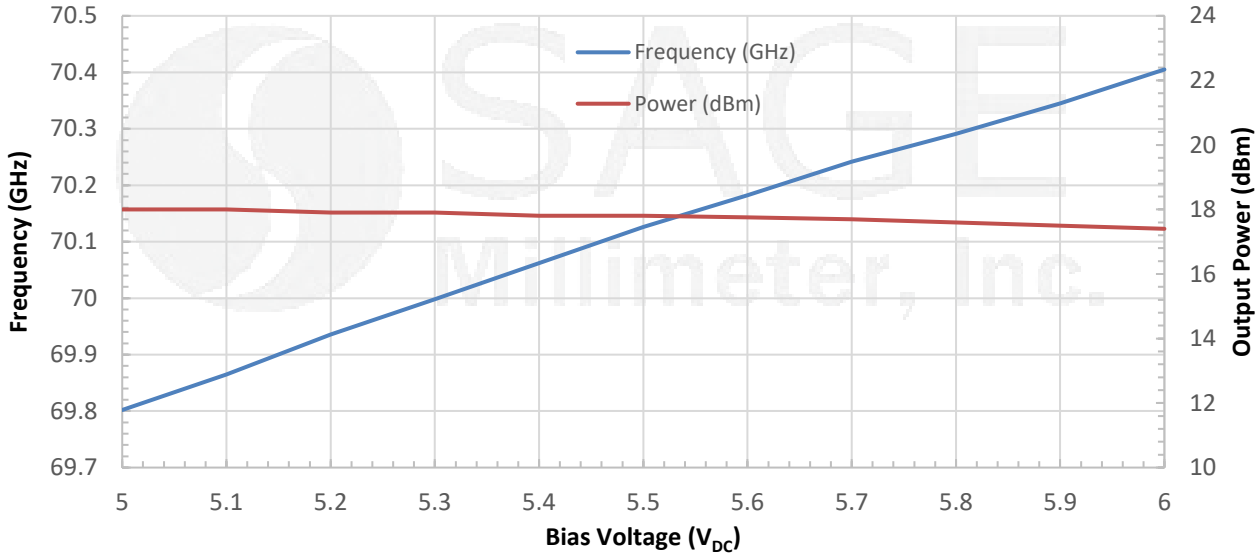
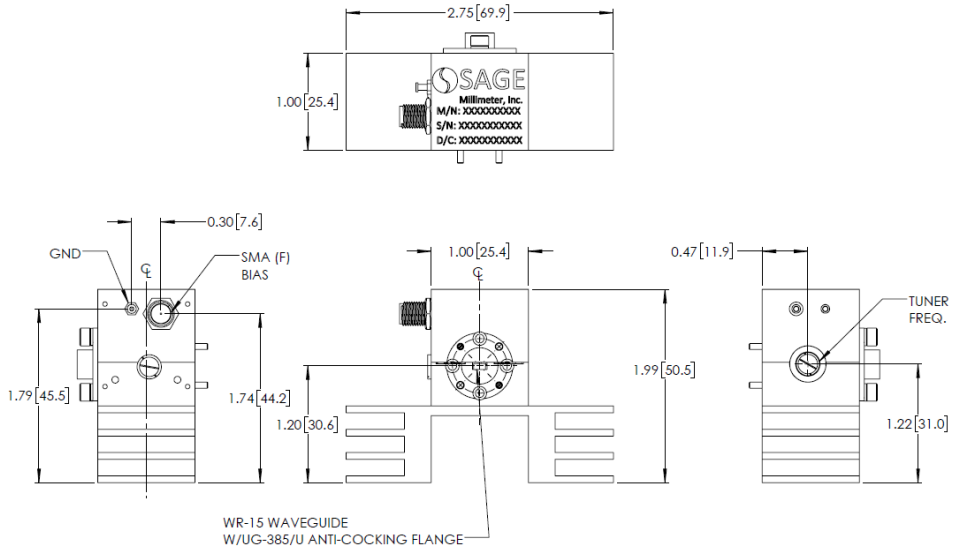
Typical Mechanical Tuning Data: (Bias: +5.5 V_{DC}/750 mA)

Tuner Position	Frequency (GHz)	Power (dBm)
1/2 Clockwise	68.88	17.2
Factory Set	70.00	17.5
3/4 Counter Clockwise	71.06	17.4

Typical Frequency and Power Output vs. Bias Voltage



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



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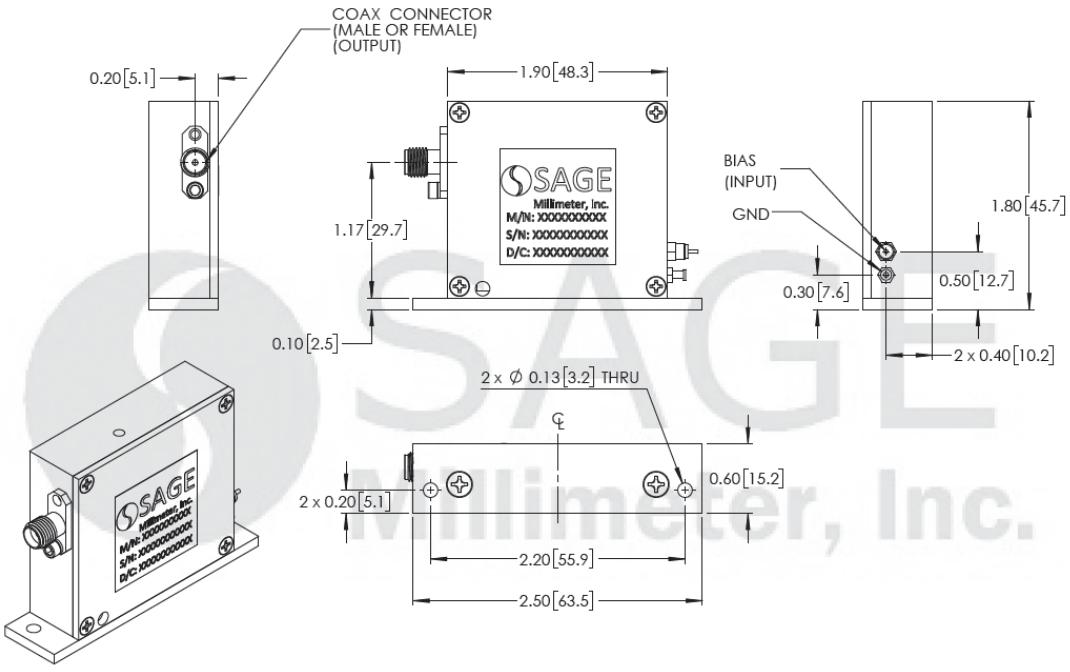
Note:

- All data presented is collected from a sample lot. Actual data may vary unit to unit.
- All testing was performed under **+35 °C** case temperature.
- 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 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.

Caution:

- Reversing polarity will destroy the device.
- Bias voltage should never exceed **+6.0 Volts**.
- The oscillator is factory set to operate around **70 GHz**. The self-locking set screw is for frequency trimming only. It is not designed for frequent frequency tuning.
- 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



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