



## E-Band Mechanically Tuned Gunn Oscillator, 0.5 GHz Tuning Bandwidth

### Description:

**Model SOM-84305213-12-S1** is an E-band, mechanically tuned Gunn oscillator that utilizes a high-performance GaAs Gunn diode and proprietary cavity design to deliver +13 dBm typical power. The oscillator features a frequency tuning range of 83.75 to 84.25 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	83.75 GHz	84 GHz	84.25 GHz
Power Output		+13 dBm	
Mechanical Tuning Range		±250 MHz	
Bias Tuning Range (+4.5 to +5.5 V <sub>DC</sub> )		±100 MHz	
Bias Voltage		+5.0 V <sub>DC</sub>	+6.0 V <sub>DC</sub>
Bias Current		350 mA	
Specification Temperature		+25°C	
Operating Temperature	0°C		+50°C

### Mechanical Specifications:

Item	Specification
RF Port	WR-12 Waveguide with UG-387/U 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-SE-A-C

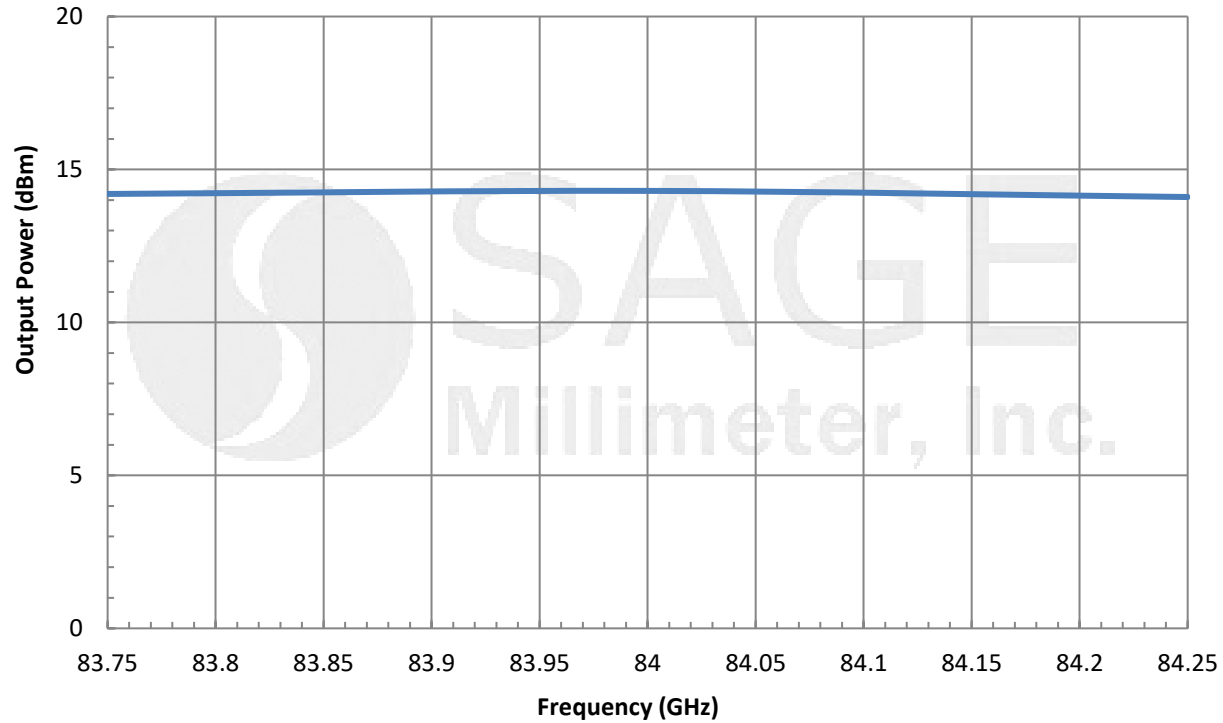




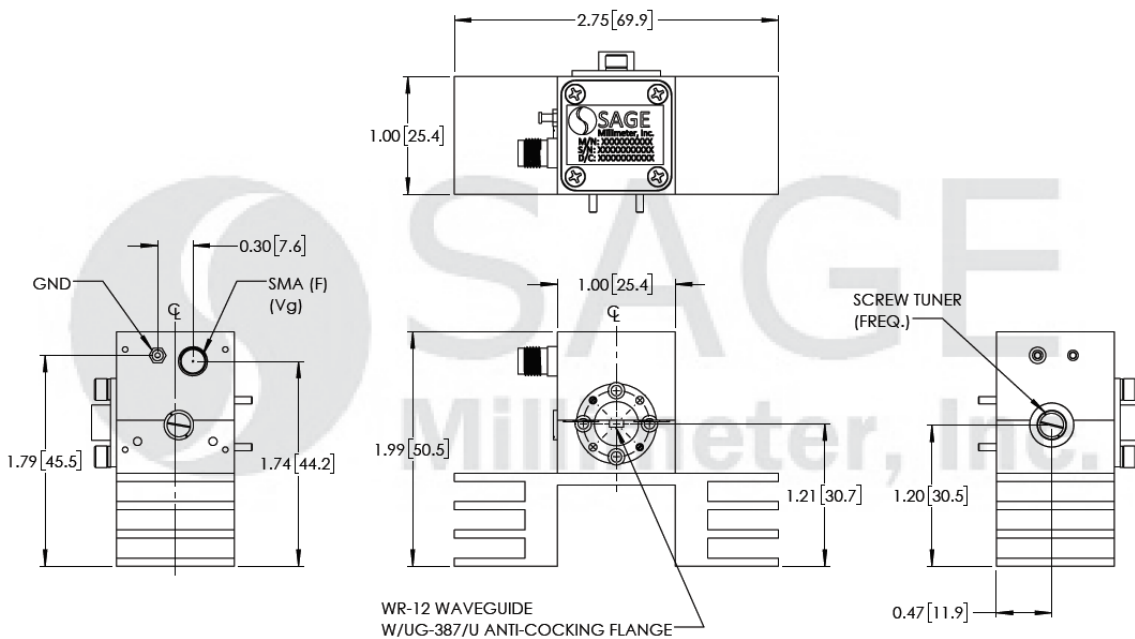
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### Typical Output Power vs. Frequency

Bias: +5 V<sub>DC</sub>/350 mA



**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, slightly.
- 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.

### Caution:

- Reversing polarity will destroy the device.
- Bias voltage should never exceed **+6.0 Volts**.
- The case temperature of the device should never exceed **+50°C**. Use an additional heatsink or fan if necessary.
- Proper torque,  $8.0 \pm 0.4$  inch-pounds ( $0.90 \pm 0.02$  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

