

## W-Band Mechanically Tuned Gunn Oscillator, 95 GHz, $\pm 0.5$ GHz Tuning

### Description:

**Model SOM-95301315-10-S1** is a W-band, mechanically tuned Gunn oscillator that utilizes a high performance GaAs Gunn diode and proprietary cavity design to deliver +15 dBm typical power. The oscillator features a frequency tuning range of 94.5 to 95.5 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                                  | 94.5 GHz | 95.0 GHz             | 95.5 GHz             |
| Power Output                                      |          | +15 dBm              |                      |
| Mechanical Tuning Range                           |          | $\pm 0.5$ GHz*       |                      |
| Bias Tuning Range (+4.0 to +5.0 V <sub>DC</sub> ) |          | $\pm 100$ MHz        |                      |
| Bias Voltage                                      |          | +4.5 V <sub>DC</sub> | +5.0 V <sub>DC</sub> |
| Bias Current                                      |          | 850 mA               |                      |
| Specification Temperature                         |          | +25°C                |                      |
| Operating Temperature                             | 0°C      |                      | +50°C                |

\*Note: Actual tuning bandwidth may be wider,  $\pm 1.0$  GHz typical.

### 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                                           |

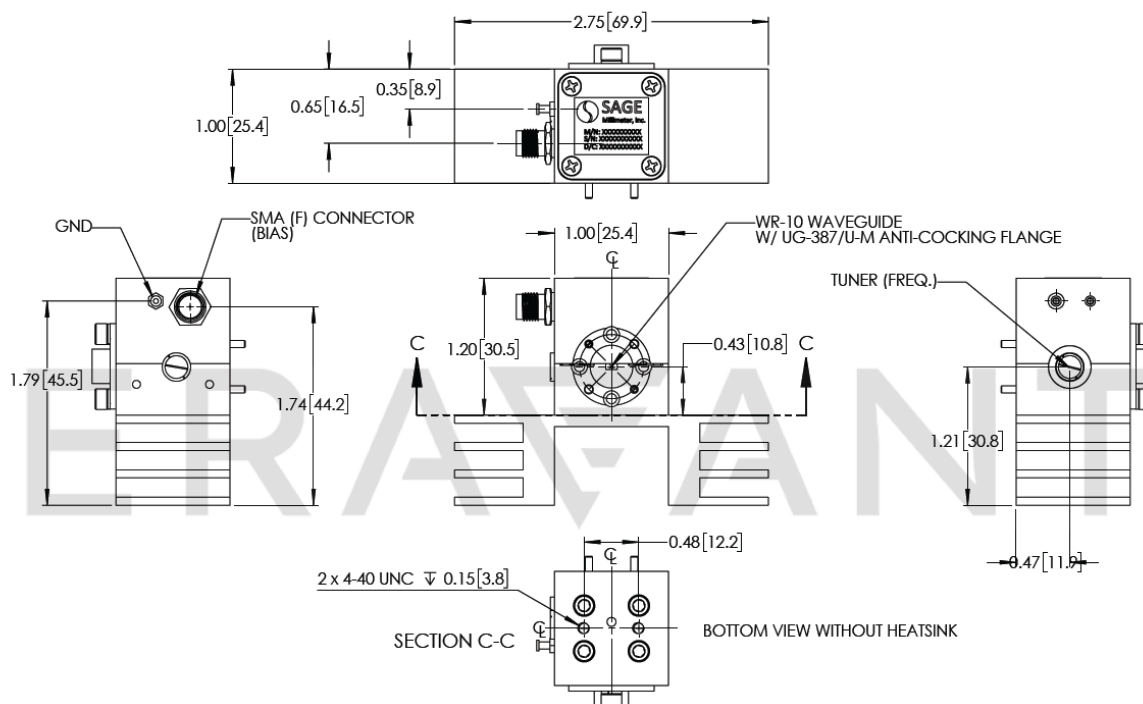


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## Typical Measured Data:

| Tuner Position        | Frequency (GHz) | Power (dBm) |
|-----------------------|-----------------|-------------|
| 1/4 Clockwise         | 94.45           | 14.8        |
| Factory Set           | 95.00           | 15.2        |
| 1/2 Counter Clockwise | 95.66           | 15.6        |

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



## 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 **+5.0 Volts**.
- The case temperature of the device should never exceed **+50°C**. Use an additional heatsink or fan if necessary.



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- 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

