

## W-Band Mechanically Tuned Gunn Oscillator, 82.5 GHz, $\pm 0.5$ GHz, +17 dBm

### Description:

**Model SOM-83301317-10-S1** is a W-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 82.0 to 83.0 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                                  | 82.0 GHz | 82.5 GHz             | 83.0 GHz             |
| Power Output                                      |          | +17 dBm              |                      |
| Mechanical Tuning Range                           |          | $\pm 0.5$ GHz*       |                      |
| Bias Tuning Range (+3.5 to +4.5 V <sub>DC</sub> ) |          | $\pm 50$ MHz         |                      |
| Bias Voltage                                      |          | +4.0 V <sub>DC</sub> | +4.5 V <sub>DC</sub> |
| Bias Current                                      |          | 750 mA               |                      |
| Specification Temperature                         |          | +25 °C               |                      |
| Operating Temperature                             | 0 °C     |                      | +50 °C               |

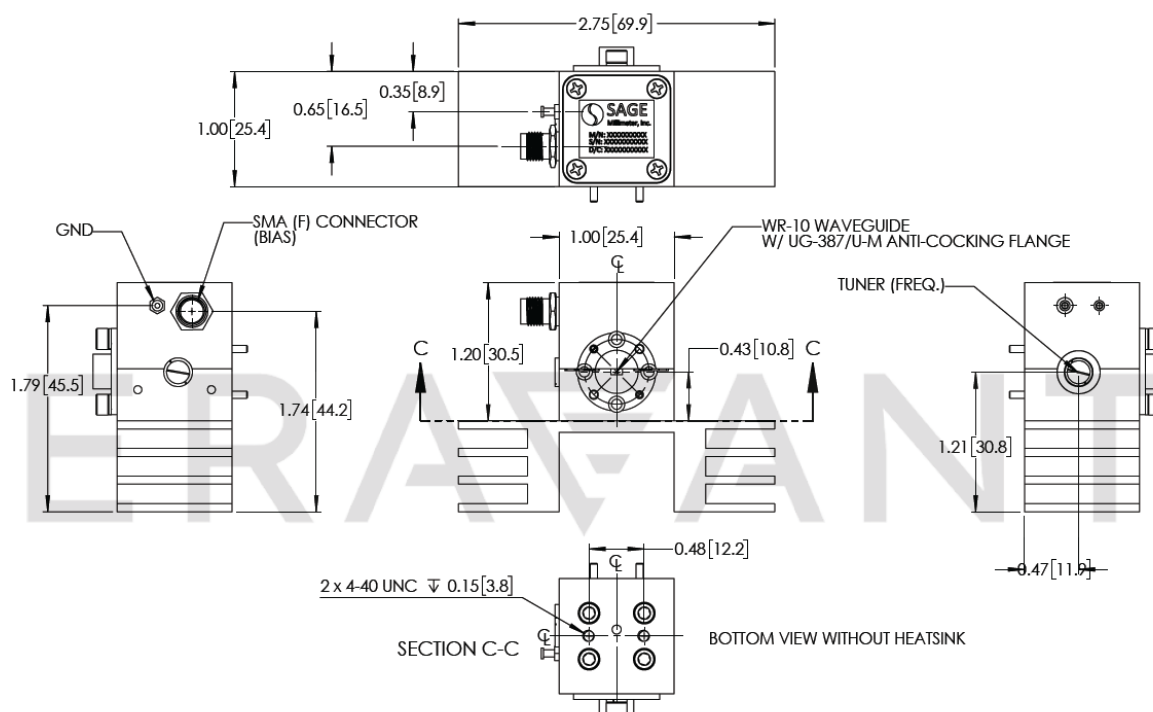
### Mechanical Specifications:

| 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                                           |



**W-Band Mechanically Tuned Gunn Oscillator, 82.5 GHz,  $\pm 0.5$  GHz, +17 dBm****Typical Measured Data:** (Bias: +4.0 Vdc/750mA)

| Tuner Position               | Frequency (GHz) | Power (dBm) |
|------------------------------|-----------------|-------------|
| 0.5 Clockwise Turns          | 82.000          | 17.3        |
| Factory Set                  | 82.500          | 17.4        |
| 0.75 Counter Clockwise Turns | 83.000          | 17.5        |

**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.
- The data given above was tested under case temperature **35 °C**.
- The Eravant 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.
- Eravant 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,  $8.0 \pm 0.15$  inch-pounds ( $0.92 \pm 0.05$  Nm), should be applied. **Eravant 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

