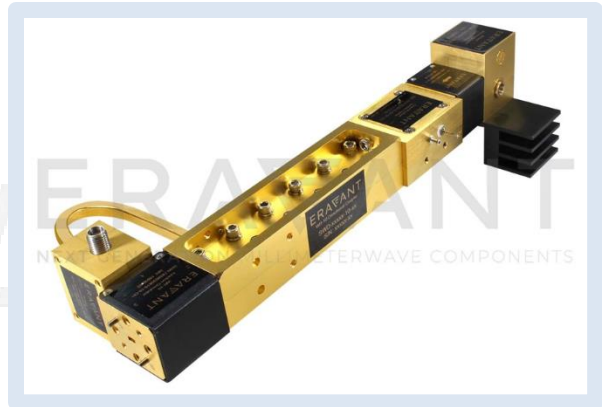




W Band Ranging Sensor Module, Dual Channel, 94 GHz, 5 GHz

Description:

Model SSP-94323-D1 is a W band ranging sensor module that is designed and manufactured for medium range measurements of a moving target's speed, travel direction and distance. The sensor module has an operating frequency range of 91.5 to 96.5 GHz and takes a nominal bias of +8.0 V_{DC}/2,780 mA. The sensor module is configured with a varactor tuned oscillator, an isolator, an amplifier, a directional coupler, a circulator, and a balanced I/Q mixer. The directional coupler is used to sample the LO power to pump the mixer, and the circulator is used as a TX/RX diplexer. The varactor has tuning voltage range of 2.8 V_{DC} to +30 V_{DC} and provides ±2.5 GHz tuning bandwidth. Various antennas can be integrated with the module to form sensor heads for many system applications.



Features:

- 94.0 GHz Operation
- Low FM/AM Noise and High Sensitivity
- Low Harmonic Emission
- Common Tx/Rx Port

Applications:

- True Ranging Radar Systems
- Moving Target Direction Detection
- High Resolution Target Detection Systems
- Military Surveillance Systems

Electrical Specifications:

Parameter	Minimum	Typical	Maximum
Tx Frequency Range	91.5 GHz	94.00 GHz	96.5 GHz
Tx Frequency Tuning Bandwidth*		±2.5 GHz	
Tx Output Power		+23 dBm	
Rx Frequency Range	91.5 GHz	94.00 GHz	96.50 GHz
Rx IF Frequency Range	DC		5 GHz
I/Q Phase Unbalance		±15°	
Rx Conversion Loss		12 dB	
Frequency Stability		-6.0 MHz/°C	
Power Stability		-0.05 dB/°C	
Varactor Tuning Voltage	2.8 V _{DC}		+30 V _{DC}
Varactor Tuning Speed		1 μS	
Gunn Bias Voltage*		+4.5 V _{DC}	+5.5 V _{DC}
Gunn Bias Current		780 mA	
Amplifier Bias Voltage		+8 V _{DC}	+15 V _{DC}
Amplifier Bias Current		2,000 mA	
Specification Temperature		+25 °C	
Operating Temperature	0 °C		+50 °C

*Note: If the SOR-R3 regulator is used, the required DC bias voltage to regulator input is +8 V_{DC}.





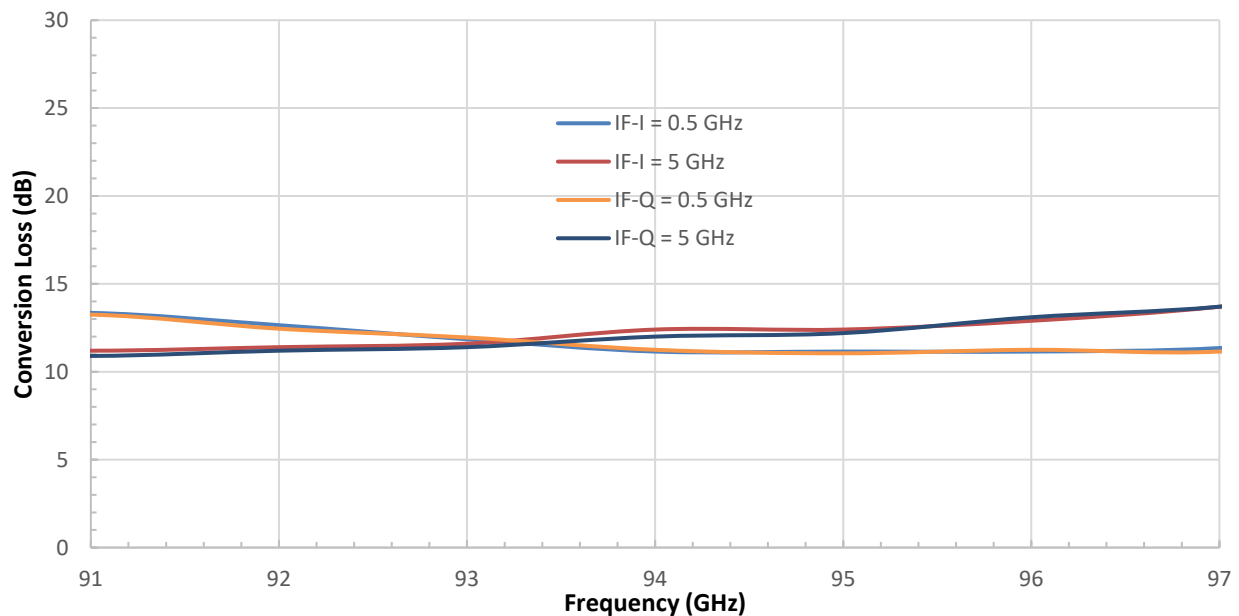
W Band Ranging Sensor Module, Dual Channel, 94 GHz, 5 GHz

Mechanical Specifications:

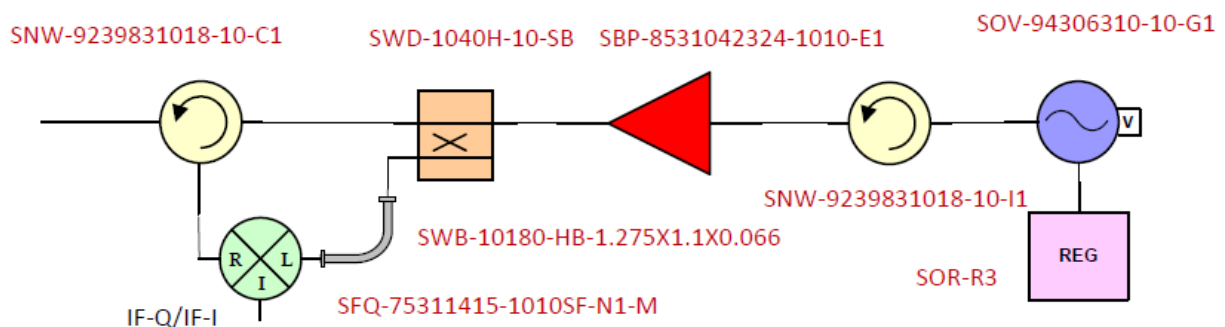
Item	Specification
Tx/Rx Port	WR-10 Waveguide with UG-387/U-M Anti-Cocking Flange
IF Ports	SMA (F), SMA (F)
Gunn Bias Port (Bias)	SMA (F)
Varactor Bias Port (Vv)	Solder Pins
Amplifier Bias Port	Solder Pins
Material	Aluminum and Brass
Finish	Gold Plated
Weight	5 Oz
Size	8.06" (L) X 3.80" (W) X 1.99" (H)
Outline	SP-NWEV-D1-A

Typical Conversion Loss vs. Frequency

RF Power = -20 dBm



Block Diagram:



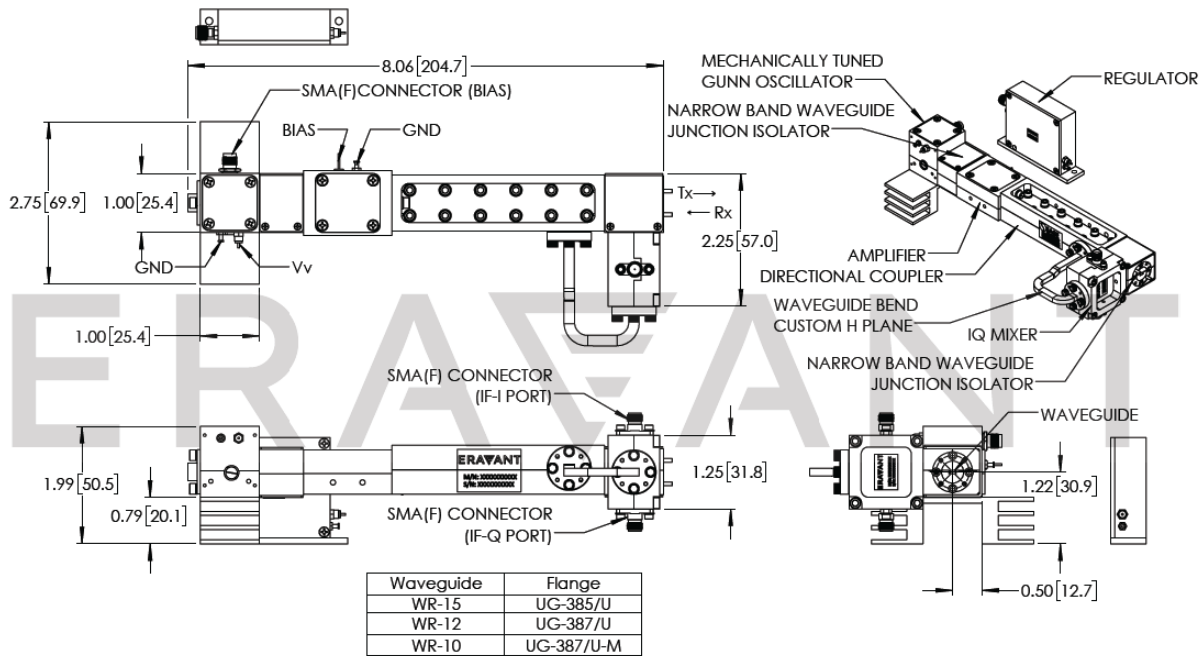
www.eravant.com | 501 Amapola Avenue, Torrance, CA 90501
 Phone: 424-757-0168 | Fax: 424-757-0188 | Email: support@eravant.com





W Band Ranging Sensor Module, Dual Channel, 94 GHz, 5 GHz

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.
- All testing as performed under +25 °C case temperature.
- Other mechanical configurations are available under different model numbers.
- Eravant reserves the right to change the information presented without notice.

Caution:

- Exceeding absolute maximum ratings shown will damage the device.
- The device is static sensitive. Always follow ESD rules when working with the device.
- Any foreign objects in the waveguide will cause performance degradation and possibly damage the device.
- The case temperature of the device shall never exceed +50 °C. Use a proper heatsink or fan if necessary.
- Proper torque, 8.0 ± 0.15 inch-pounds (0.90 ± 0.02 Nm), should be applied. **Eravant torque wrench, model SCH-08008-S1, is highly recommended.**



W Band Ranging Sensor Module, Dual Channel, 94 GHz, 5 GHz

The Outline of the Gunn Oscillator Regulator Model [SOR-R3](#). (Unless otherwise specified, all dimensions are in inches.)

