SSM-94323-D1

Rev. 1.0

W Band Doppler Sensor Module, Dual Channel, 94 GHz, 23 dBm Pout

Description:

Model SSM-94323-D1 is a W band Doppler sensor module that is designed and manufactured for medium range measurements of a moving target's speed and travel direction. The sensor module has an operating frequency of 94 GHz and takes a nominal bias of +8.0 V_{DC}/2,350 mA. The sensor module is configured with a mechanically tuned oscillator, an isolator, a directional coupler, a circulator, a balanced I/Q mixer, and an oscillator voltage regulator. The directional coupler is used to sample the LO power to pump the mixer, and the circulator is used as a TX/RX diplexer. 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:

- Doppler Radar Systems
- Military Surveillance Systems

Electrical Specifications:

Parameter	Minimum	Typical	Maximum
Tx Frequency Range*		94.00 GHz	
Tx Output Power		+23 dBm	
Rx Frequency Range		94.00 GHz	
Rx IF Frequency Range	DC		3 GHz
I/Q Phase Unbalance		±15°	
Rx Conversion Loss		10 dB	
Frequency Stability		-6.0 MHz/°C	
Power Stability		-0.04 dB/°C	
Oscillator Bias Voltage**		+4.5 V_{DC}	+6.0 V_{DC}
Oscillator Bias Current**		350 mA	
Amplifier Bias Voltage	+7.0 V_{DC}	+8.0 V_{DC}	+9.0 V_{DC}
Amplifier Bias Current		2,000 mA	
Specification Temperature		+25 ˚C	
Operating Temperature	0 ˚C		+50 ˚C

***** The center frequency is factory preset per user's request. It can be set in the frequency range of 92 to 98 GHz. The new model number may be assigned. For example, the 96 GHz center frequency models would take the model number of SSM-96323-D1.

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

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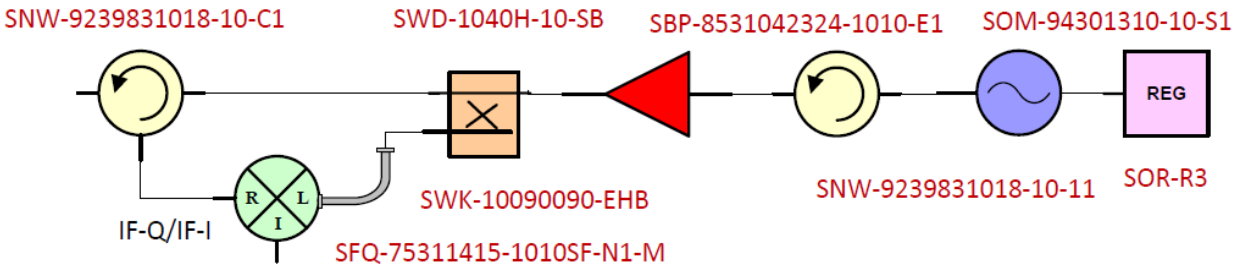
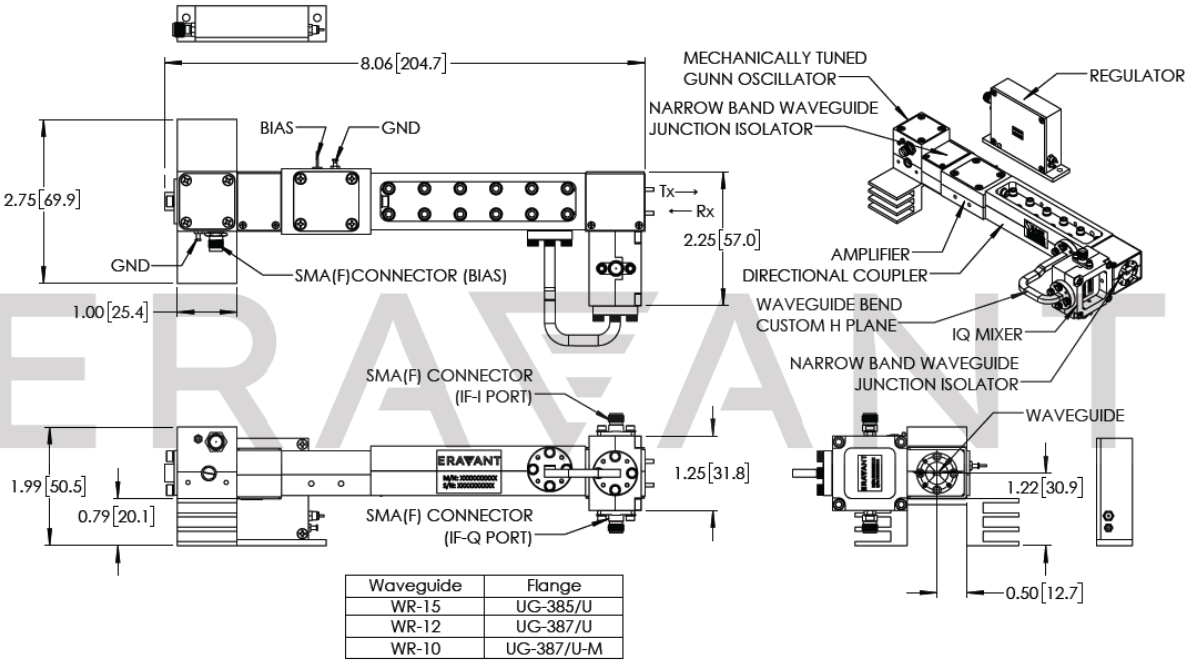
Mechanical Specifications:

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)
Amplifier Bias Port	Soldered Pins
Metal	Aluminum and Brass
Finish	Gold Plated
Size (Excluding the SOR-R3)	2.15” (W) X 1.74” (H) X 8.06” (L)
Weight	6.0 Oz
Outline	SP-NWEV-D1-A-2

Block Diagram:



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



Waveguide	Flange
WR-15	UG-385/U
WR-12	UG-387/U
WR-10	UG-387/U-M

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Note:

- The voltage regulator is provided for Gunn oscillator protection.
- The heatsink shown in the photo is optional for this model.
- 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.**

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