SSM-77323-S1

Advanced

E Band Doppler Sensor Module, Single Channel, 76.5 GHz, +23 dBm

Description:

Model SSM-77323-S1 is an E band Doppler sensor module that is designed and manufactured for medium range measurements of a moving target's speed. The sensor module has an operating frequency of 76.5 GHz and takes a nominal bias of +8.0 V_{DC}/950 mA. The sensor module is configured with a mechanically tuned oscillator, an isolator, a directional coupler, a circulator, a balanced 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:

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

Applications:

- True Ranging Radar Systems
- Automotive Radar Systems

Electrical Specifications:

Parameter	Minimum	Typical	Maximum
Tx Frequency Range*	76.00 GHz	76.50 GHz	77.00 GHz
Tx Output Power		+23 dBm	
Rx Frequency Range	76.00 GHz	76.50 GHz	77.00 GHz
Rx IF Frequency Range	DC		3 GHz
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		600 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 75 to 80 GHz. The new model number may be assigned. For example, the 96 GHz center frequency models would take the model number of SSM-79323-S1.

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

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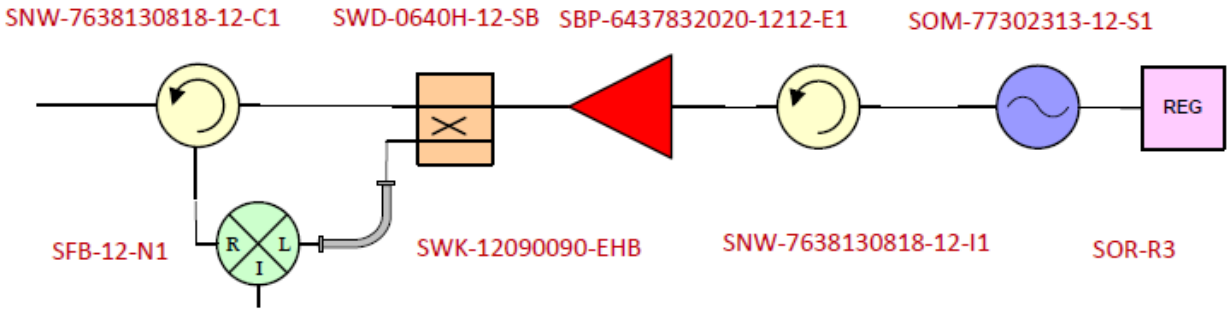
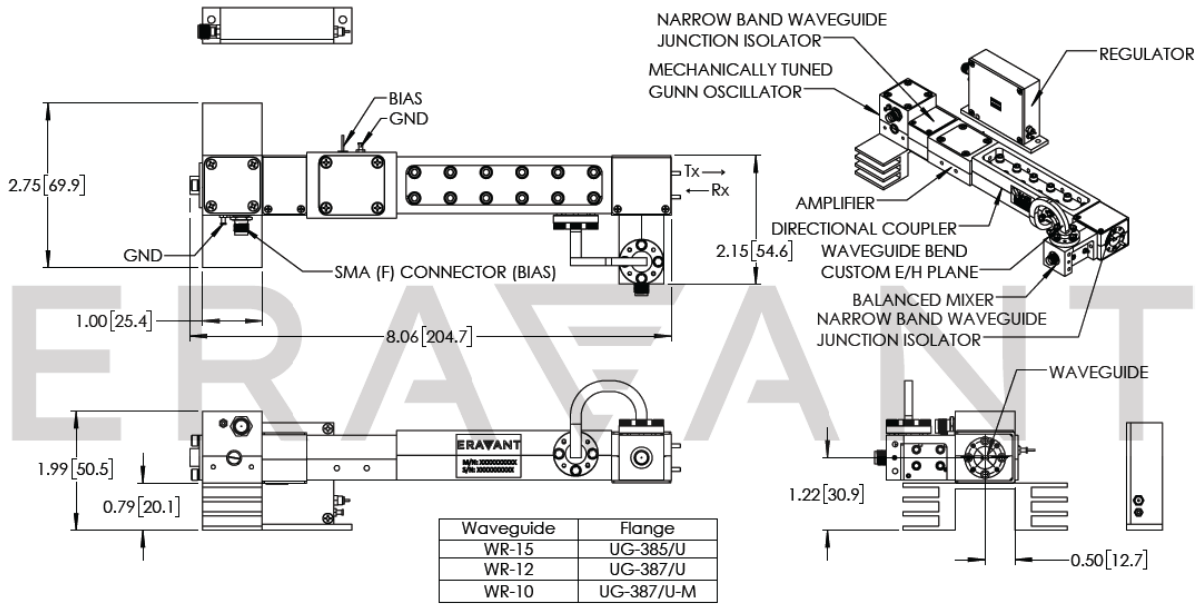
Mechanical Specifications:

Item	Specification
Tx/Rx Port	WR-12 Waveguide with UG-387/U Anti-Cocking Flange
IF Port	SMA (F)
Gunn Bias Port (Bias)	SMA (F)
Amplifier Bias Port	Soldered Pin
Case Material	Aluminum and Brass
Finish	Gold Plated
Size	2.25” (W) X 1.71” (H) X 6.35” (L)
Weight	5.0 Oz
Outline	SP-NWEV-S1-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:

- All data are presented using a limited sample lot. Actual data may vary unit to unit.
- All testing was performed under +35 ˚C case temperature.
- 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.
- Proper torque, 8.0 ± 0.4 inch-pounds (0.90 ± 0.02 Nm), should be applied. **Eravant torque wrench, model SCH-08008-S1, is highly recommended.**
- 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.

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