



K Band Ranging Sensor Module, Single Channel, 24.125 GHz

Description:

Model SSP-24307-S1 is a K band ranging sensor module based on FMCW radar principles. This sensor module is designed and manufactured for **short range** measurements of a moving target's speed. The sensor module has a center frequency of 24.125 GHz and takes a nominal bias of +5.0 VDC/250 mA. The frequency modulation bandwidth of ± 100 MHz minimum is realized via a tuning voltage of 0 to +20 Volts. The sensor modules are configured with a T/R diplexer, a single channel receiver and a transmitter/receiver oscillator in a die-cast housing. Various antennas can be integrated with the module to form sensor heads for many system applications.



Features:

- 24.125 GHz FMCW Operation
- Low Flick Noise and High Sensitivity
- Low Harmonic Emission

Applications:

- Traffic Management Systems
- True Ranging Systems
- Military Surveillance Systems

Electrical Specifications:

Parameter	Minimum	Typical	Maximum
TX Center Frequency		24.125 GHz	
TX Power		+7 dBm	
FMCW Tuning Bandwidth	± 100 MHz	± 150 MHz	
FMCW Tuning Voltage		0 to +20 Volts	
IF Frequency Range	DC		100 MHz
IF Offset Voltage		-0.5 to -1.0 V _{DC}	
Frequency Stability		-0.8 MHz/°C	
Power Stability		-0.03 dB/°C	
DC Supply Voltage		+5.0 V _{DC} /250 mA	+5.5 V _{DC}
Specification Temperature		+25°C	
Operating Temperature	-40°C		+85°C





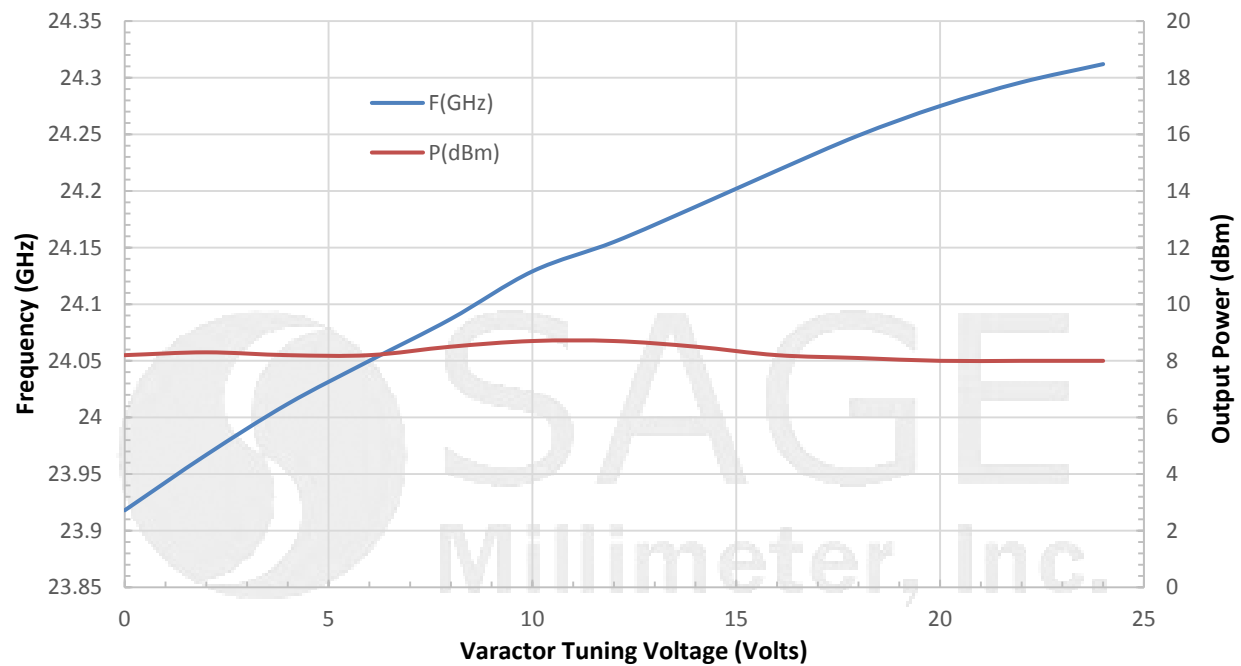
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Mechanical Specifications:

Item	Specification
Gunn Oscillator Bias Port	Solder Pad
Varactor Tuning Port	Solder Pad
Mixer IF Port	Solder Pad
RF Port	WR-42 Waveguide with UG595/U Flange
Size	1.00" (W) X 1.02" (H) X 1.10" (L)
Case Material	Die Casted Zinc
Finish	Chem Film
Weight	1.0 Oz
Outline	SP-DK-S1

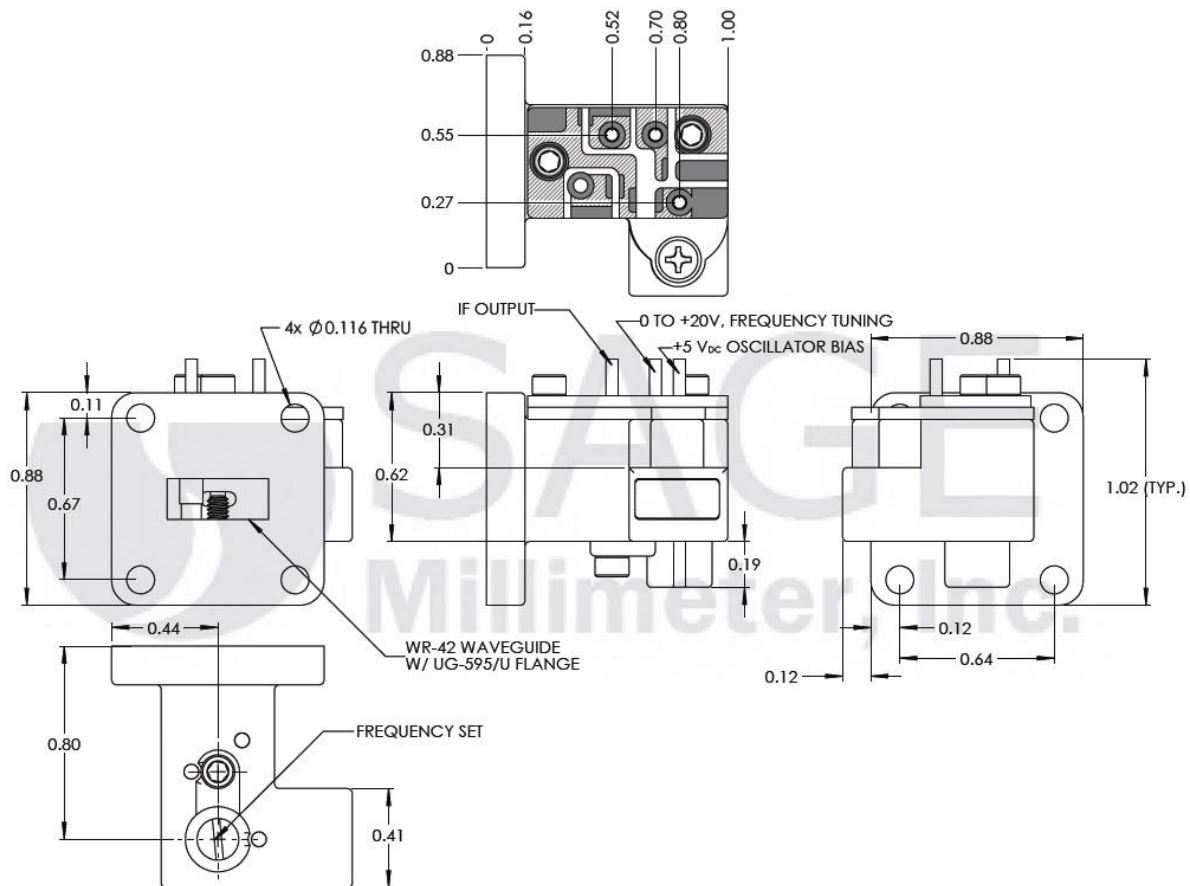
Typical Performance of Varactor Tuned Oscillator

Gunn Bias: +5.0 V_{DC}/183 mA



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



Note:

- All data are presented using a limited sample lot. Actual data may vary unit to unit.
- All testing was performed under +25 °C case temperature.
- SAGE Millimeter, Inc. 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 into the waveguide will cause performance degradation and possible device damage.
- The case temperature of the device shall never exceed +85°C. Use proper heatsink or fan if necessary.

