

24.125 GHz Ranging Sensor Head, Dual Channel, Short Range

Description:

Model SSD-24303-22M-DW is a K Band, microstrip antenna-based ranging sensor head that is designed and manufactured for **short range** measurements of a moving or stationary target's range, speed and direction. The sensor head has a center frequency of 24.125 GHz and takes a nominal bias of +5.0 VDC/250 mA. The frequency modulation bandwidth of ± 75 MHz minimum is realized via a tuning voltage of 0 to +20 Volts. The sensor heads are configured with a microstrip antenna, T/R diplexer, a dual channel (I/Q) receiver and a transmitter/receiver oscillator in an integrated die-cast housing. Sensor heads with a single receiver are offered under model number **SSD-24303-22M-SW** and can only detect the range and speed of a target.



Features:

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

Applications:

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

Electrical Specifications:

Parameter	Minimum	Typical	Maximum
Antenna 3 dB Beamwidth		4.6° (H) x 14.8° (V)	
Antenna Side Lobes			-20 dBc
Antenna Gain		22 dBi	
Antenna Polarization	Linear, Vertical		
RF Center Frequency		24.125 GHz	
FMCW Tuning Bandwidth	± 75 MHz	± 100 MHz	
FMCW Tuning Voltage		0 to +20 Volts	
Transmitting Power		+3 dBm	
Receiver I/Q Phase Δ	60°		120°
Receiver I/Q Amplitude Δ		0 dB	3 dB
IF Frequency Range	DC		100 MHz
IF Offset Voltage		-0.5 V _{DC}	
Frequency Stability		-0.3 MHz/°C	
Power Stability		-0.03 dB/°C	
DC Supply Voltage		+5.0 V _{DC} /250 mA	+5.5 V _{DC}
Varactor Bias	0		+20 V
Specification Temperature		+25°C	
Operating Temperature	-30°C		+60°C





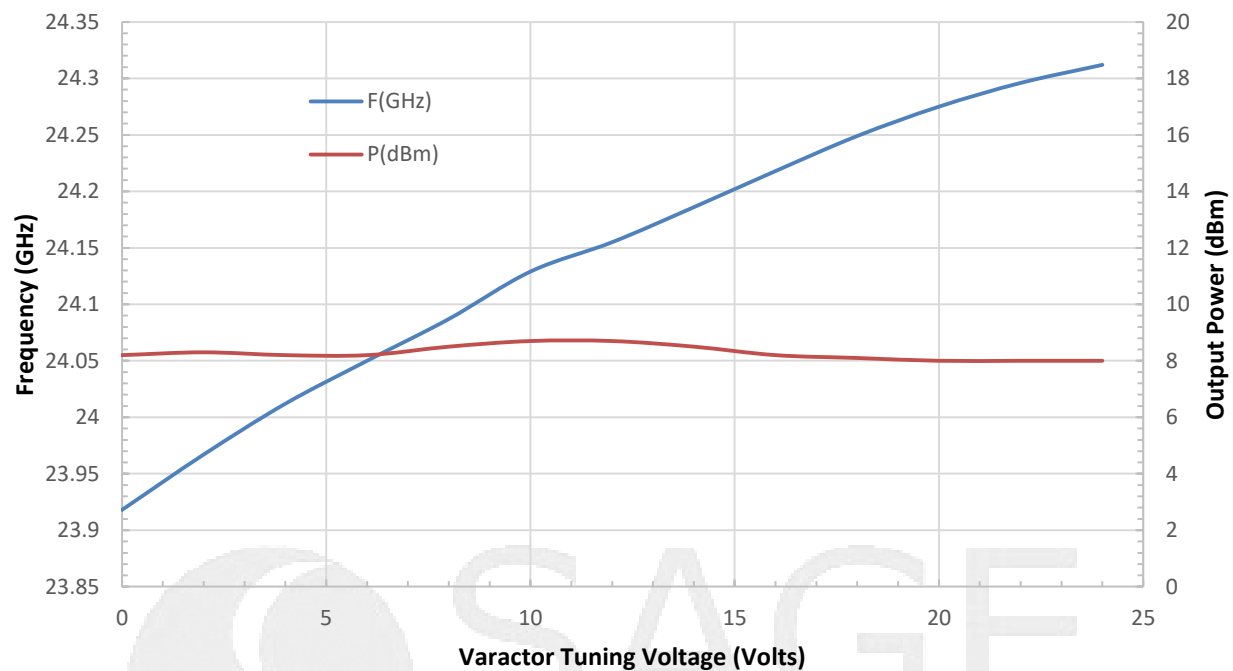
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Mechanical Specifications:

Item	Specification
Gunn Oscillator Bias Port	Solder Pad
Varactor Tuning Port	Solder Pad
Mixer IF _I Port	Solder Pad
Mixer IF _Q Port	Solder Pad
Size	6.90" (W) X 2.30" (L) X 1.38" (H)
Material	Die Casted Zinc (Housing), Aluminum Plate (Antenna)
Finish	Chem Film
Weight	5.1 Oz
Outline	SD-MK-25DW

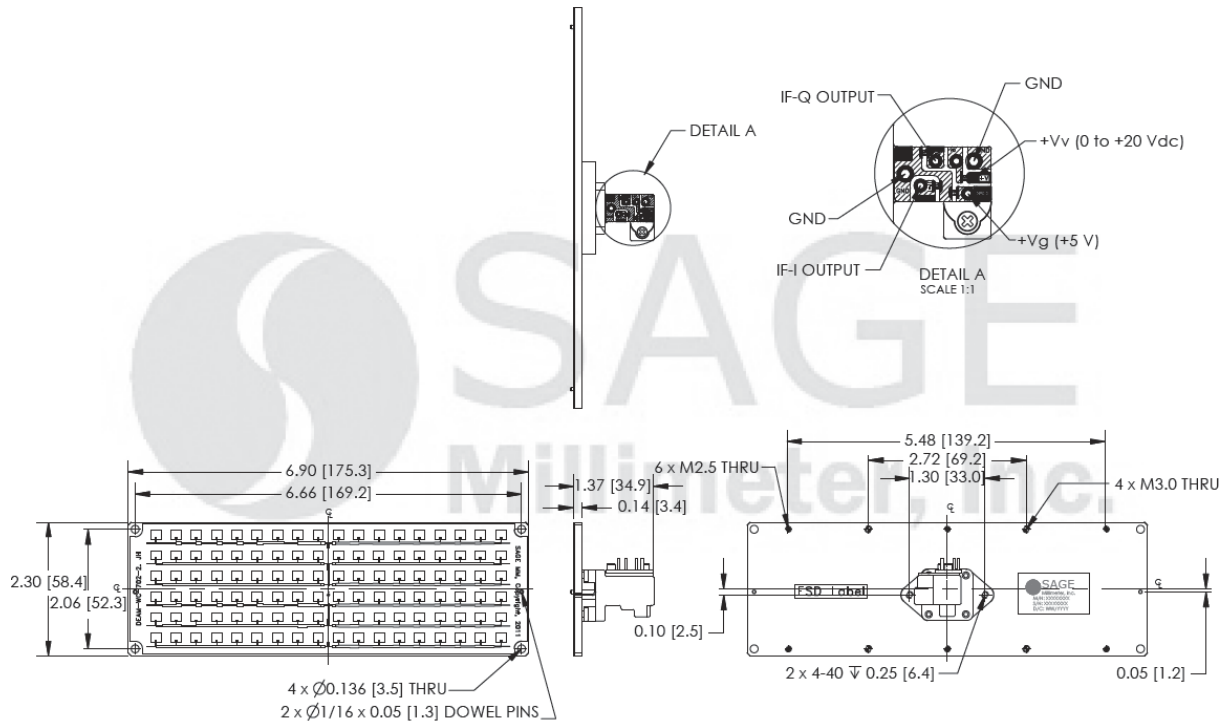
Typical Varactor Tuned Oscillator Performance

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



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



Note:

- All data presented is collected from a 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:

- The device is static sensitive. Always follow ESD rules when working with the device.
- Wrong bias or reverse bias on the sensor will damage the device.
- Exceeding absolute maximum ratings shown will damage the device. Use additional heatsink or fan if necessary.

