



24.125 GHz Ranging Sensor Head, Single Channel, Short Range

Description:

Model SSD-24303-27M-SW 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 and speed. The sensor head has a center frequency of 24.125 GHz and takes a nominal bias of +5 VDC/250 mA. The frequency modulation bandwidth of ± 100 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 single channel receiver and a transmitter/receiver oscillator in an integrated die-cast housing. Sensor heads with a dual receiver are offered under model number **SSD-24303-27M-DW** and can also detect the direction of a target in addition to the range and speed.



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
Antenna 3 dB Beamwidth		4.6° (H) x 6.8° (V)	
Antenna Side Lobes			-20 dBc
Antenna Gain		27 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	
IF Frequency Range	DC		100 MHz
IF Offset Voltage		-0.5 V _{DC}	
Frequency Stability		-1.5 MHz/°C	
Power Stability		-0.03 dB/°C	
DC Supply Voltage		+5 V _{DC} /250 mA	+5.5 V _{DC}
Varactor Bias	0		+20 V
Specification Temperature		+25 °C	
Operating Temperature	-40 °C		+85 °C



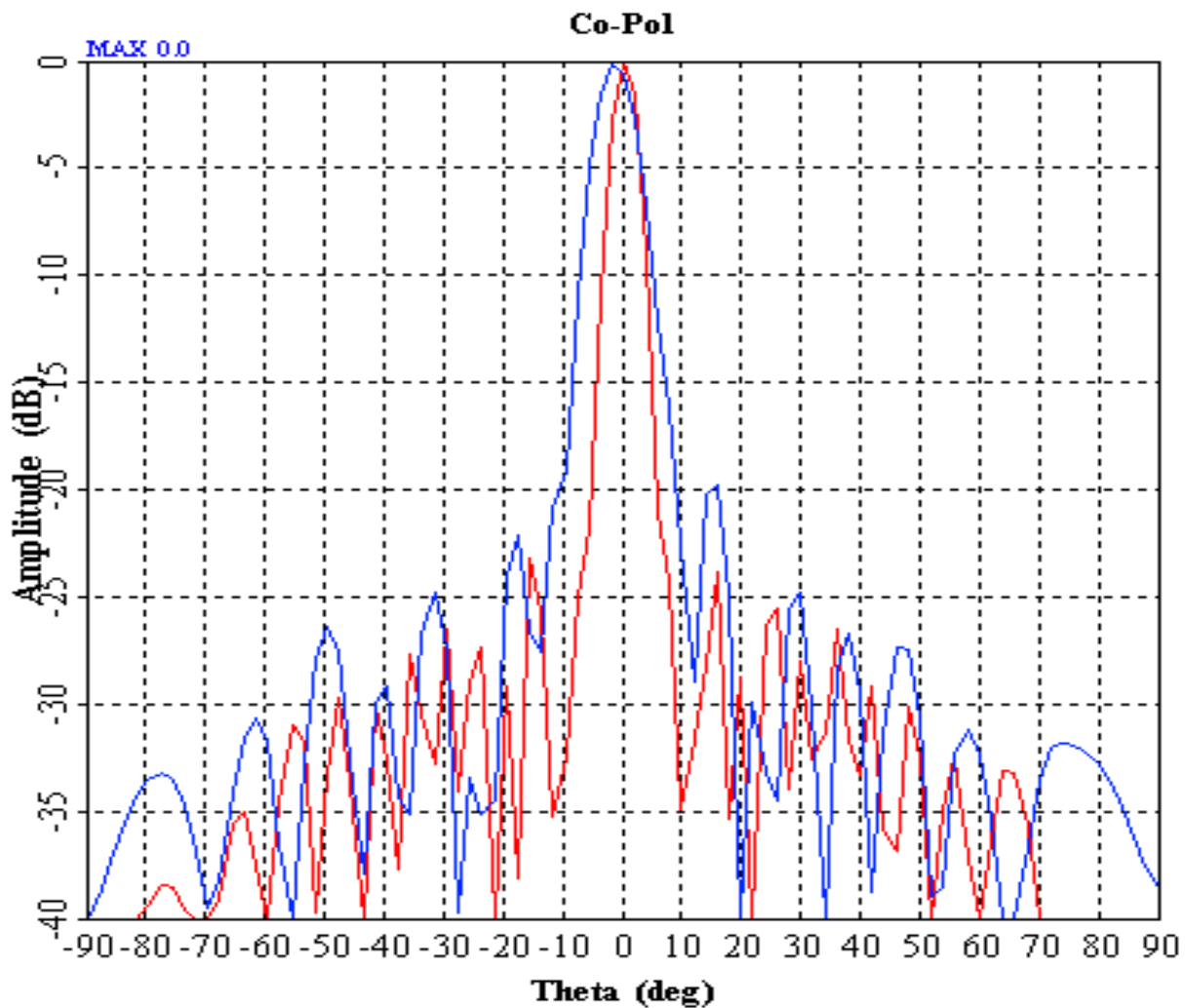


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Mechanical Specifications:

Item	Specification
Gunn Oscillator Bias Port	Solder Pad
Varactor Tuning Port	Solder Pad
Mixer IF Port	Solder Pad
Material	Die Casted Zinc (Housing), Aluminum Plate (Antenna)
Finish	Chem Film
Weight	6.0 Oz
Size	6.90" (W) X 4.53" (L) X 1.20" (H)
Outline	SD-MK-27W

Measured Co-pol E and H Plane Patterns

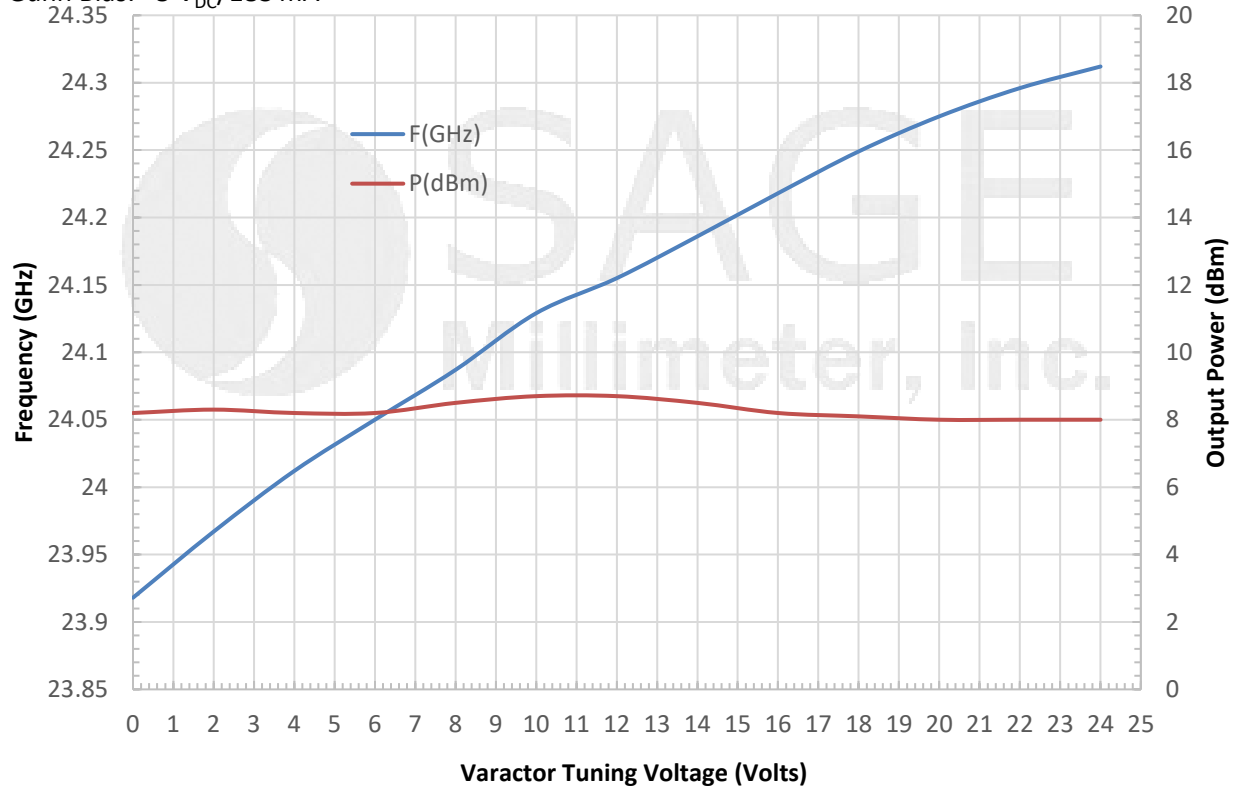




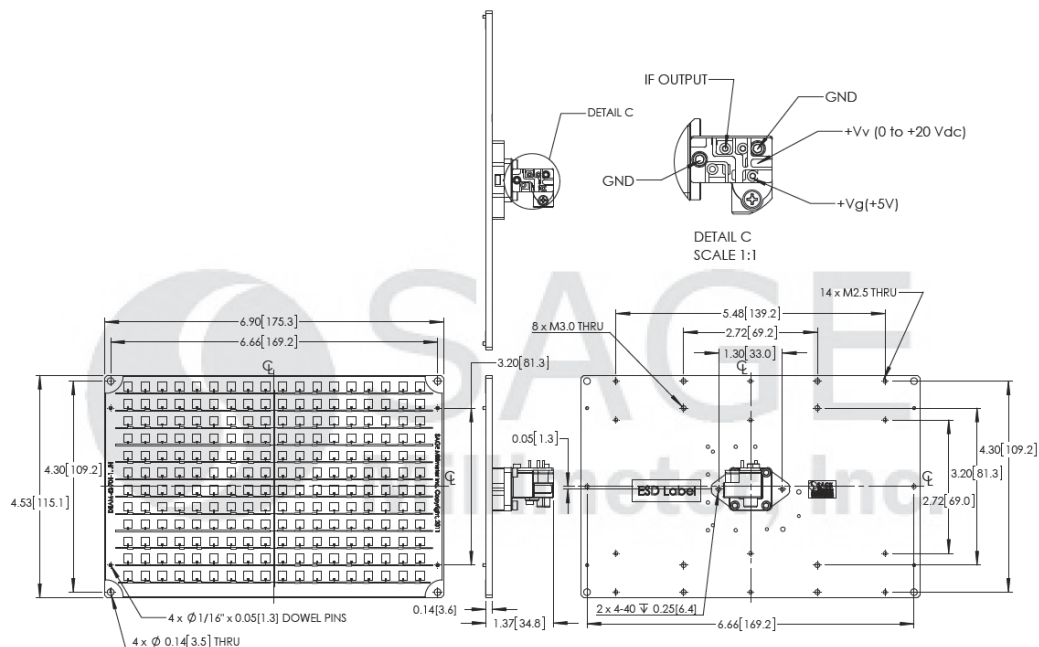
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Typical Varactor Tuned Oscillator Performance

Gunn Bias: +5 V_{DC}/183 mA



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



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Note:

- All data presented is collected from a sample lot. Actual data does vary unit to unit, slightly.
- 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.
- Wrong bias or reverse bias on the sensor will damage the device.

