



24.125 GHz Ranging Sensor Head, Dual Channel, Short Range

Description:

Model SSD-24303-20M-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 ± 150 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-24303-20M-SW** and can only detect the range and speed of a target.



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		12°(H) x 12°(V)	
Antenna Side Lobes			-20 dBc
Antenna Gain		20 dBi	
Antenna Polarization		Linear, Vertical	
RF Center Frequency		24.125 GHz	
FMCW Tuning Bandwidth	± 150 MHz		
FMCW Tuning Voltage		0 to +20 V	
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		-0.8 MHz/°C	
Power Stability		-0.03 dB/°C	
DC Supply Voltage		+5.0 V _{DC} /250 mA	+5.5 V _{DC}
Varactor Bias		0 to +20 V	
Specification Temperature		+25°C	
Operating Temperature	-30°C		+60°C



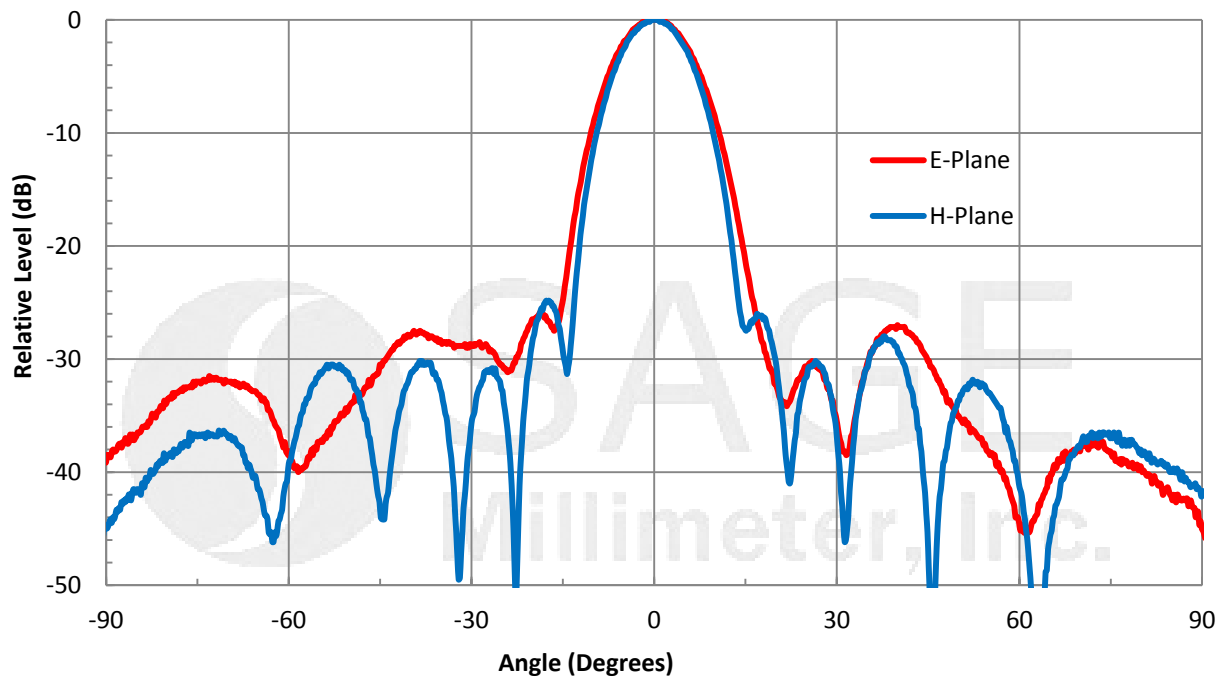


24.125 GHz Ranging Sensor Head, Dual Channel, Short Range

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	2.95" (W) X 2.95" (H) X 1.38" (L)
Sensor Module Case Material	Die Casted Zinc
Finish	Chem Film
Weight	3.9 Oz
Outline	SD-MK-DW

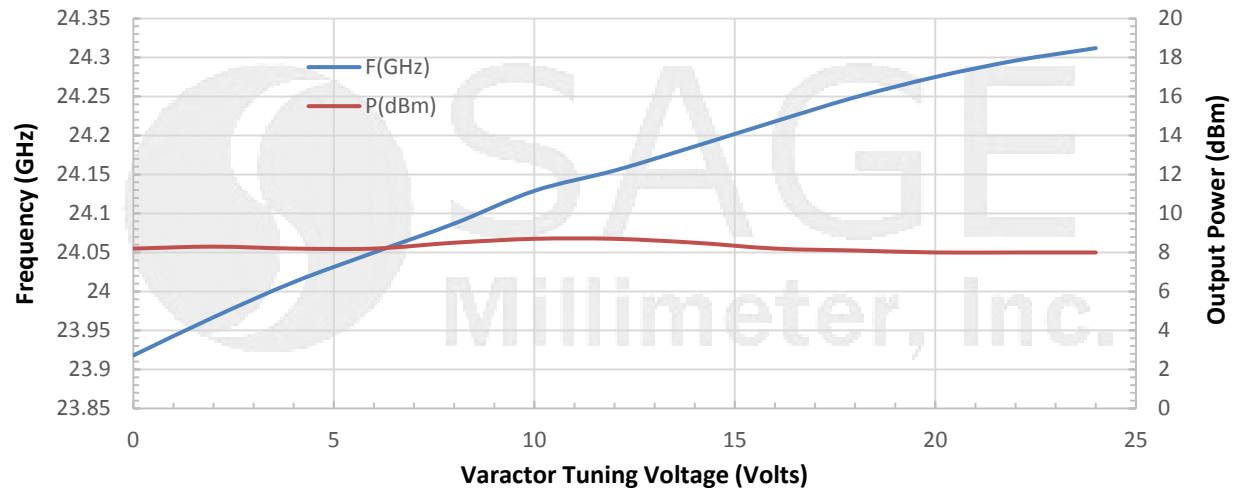
Typical Measured Co-pol E and H Plane Patterns @ 24.125 GHz



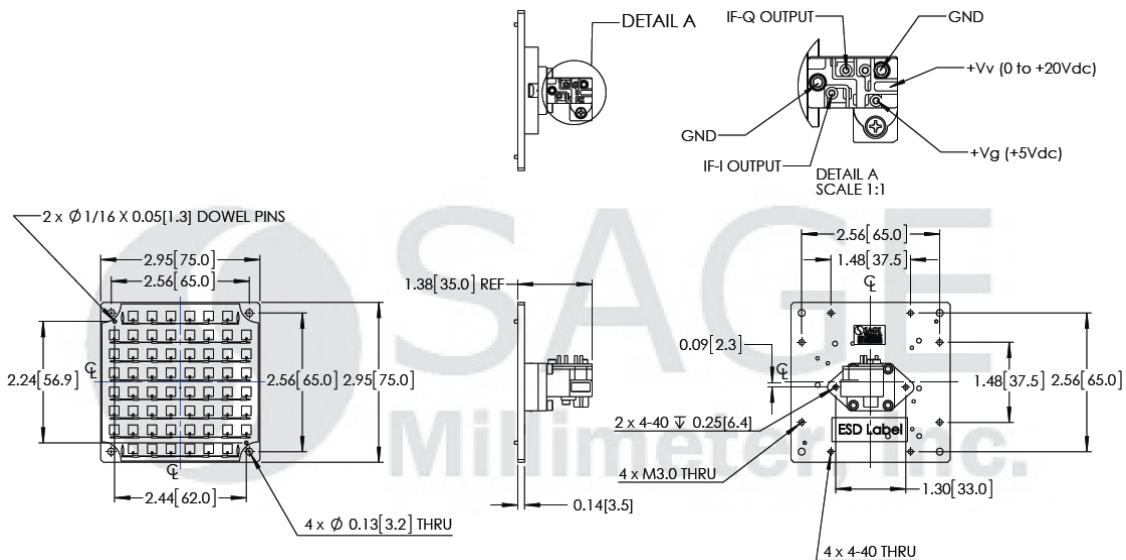
24.125 GHz Ranging Sensor Head, Dual Channel, Short Range

Typical Output Power and Frequency vs. Tuning Voltage

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



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



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:

- 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.



www.sagemillimeter.com | 3043 Kashiwa Street, Torrance, CA 90505
 Phone: 424-757-0168 | Fax: 424-757-0188 | Email: sales@sagemillimeter.com