SFD-333503-22SF-N1

Rev. 1.0

Q-Band Amplitude Detector, Small Signal, Negative

Description:

Model SFD-333503-22SF-N1 is a Q Band amplitude detector that can be used for full or narrow band applications. The detector is zero biased and intended for small signal detection purposes. With a distinct circuitry design and careful diode selection, the detector exhibits high sensitivity and extremely flat output characteristics across the full waveguide operating bandwidth. The detector is designed to have a 10 MHz video bandwidth and a 1 MΩ video output impedance. The minimum detectable signal level is approximately -50 dBm.

Features:

- Full Waveguide Band Operation
- High Sensitivity Without Tuning
- High Sensitivity Stability Over Broad Temperature Range

Applications:

- Radar Systems
- Communication Systems
- Test instrumentations

Electrical Specifications:

Parameter	Minimum	Typical	Maximum
Frequency	33 GHz		50 GHz
Sensitivity*		1200 mV/mW	
Sensitivity Flatness		±2.0 dB	
RF Input Power		-20 dBm	
RF Power Handling			+17 dBm
Video Bandwidth		10 MHz	
Detection Speed, Raise Time (50 Ohm Load)		5 Nano Second	
Output Voltage Polarity		Negative	
Specification Temperature		+25 ˚C	
Operating Temperature	-40 ˚C		+85 ˚C

*Note: The sensitivity is for the input signal level -20 dBm or below.

Mechanical Specifications:

Item	Specification
RF Port	WR-22 Waveguide with UG-383/U Flange
DC Port	SMA (F)
Case Material	Aluminum
Finish	Gold Plated
Weight	0.6 Oz
Outline	FD-Q1

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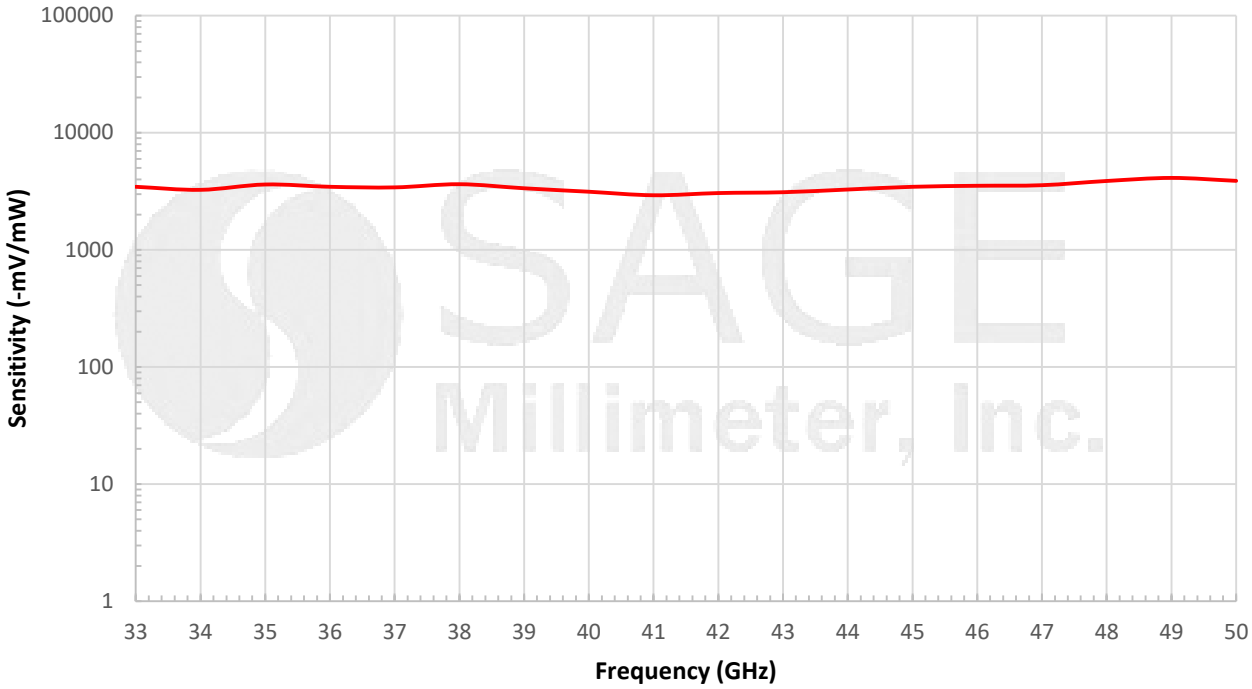
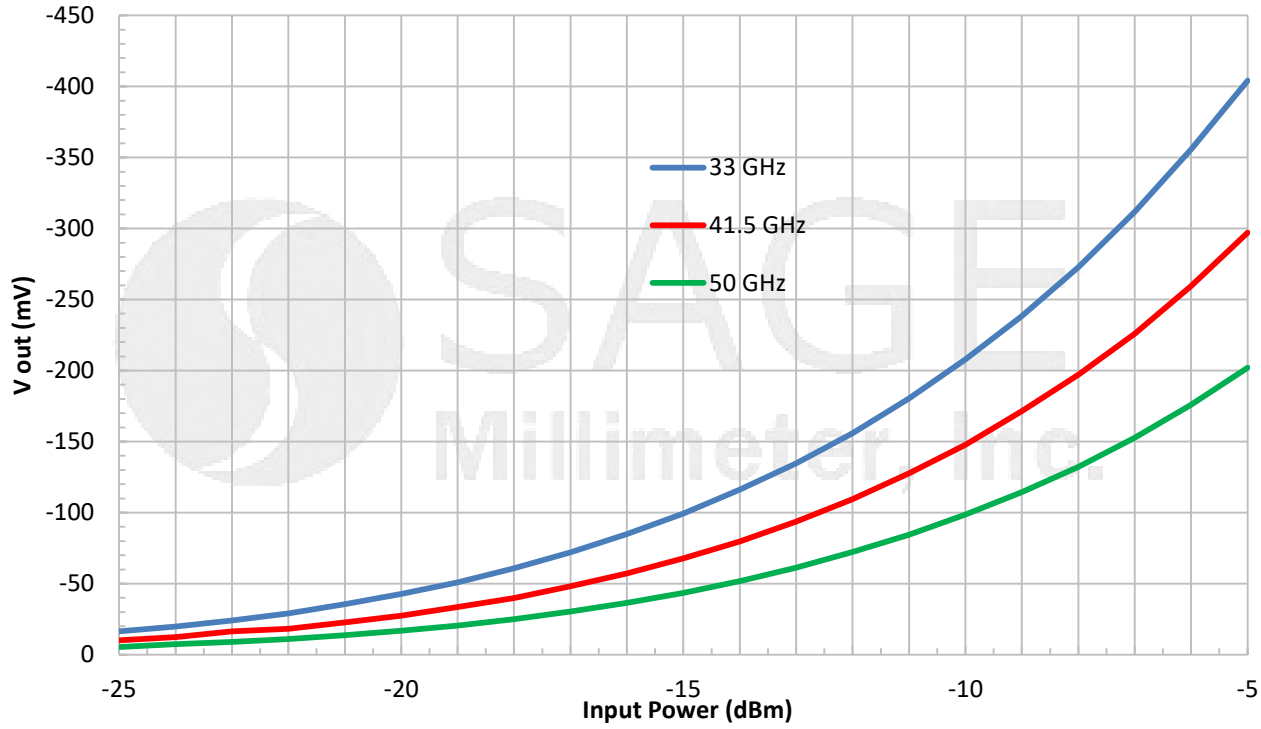
Typical Performance vs. Frequency

P_{in} = -20 dBm



Typical Detected Voltage vs. Input Power



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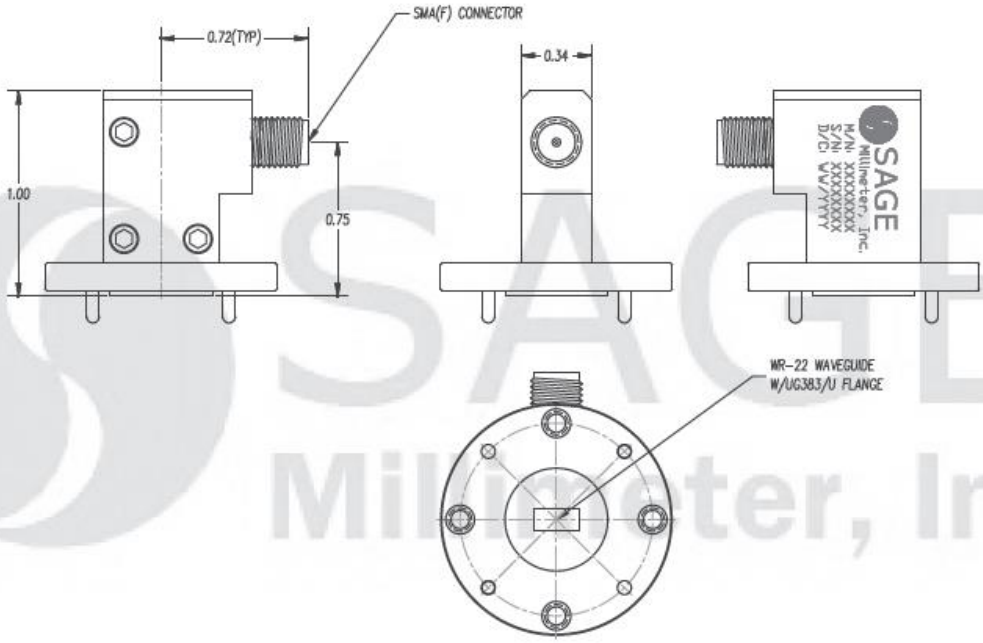
Mechanical Outline: (Unless otherwise specified, all dimensions are in inches)



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.
- The positive output voltage polarity is offered under the model number **SFD-333503-22SF-P1**.
- The amplitude detector is a small signal detector. The sensitivity shown is for RF signal -20 dBm or lower.
- SAGE Millimeter, Inc. reserves the right to change the information presented without notice.

Caution:

- Exceeding absolute maximum ratings will damage the device.
- The device is static sensitive. Always follow ESD rules when working with the device.
- Any foreign objects in the waveguide will cause performance degradation and can possibly damage the device.
- Proper torque, 8.0 ± 0.15 inch-pounds (0.92 ± 0.05 Nm), should be applied. **SAGE Millimeter torque wrench, model SCH-08008-S1, is highly recommended.**