

W-Band Amplitude Detector, Small Signal, Positive

Description:

Model SFD-753114-103-10SF-P1-WP is a W 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 | 75 GHz | | 110 GHz |
| Sensitivity (@75-90 GHz)* | | 1000 mV/mW | |
| Sensitivity (@ 91-110 GHz)* | | 500 mV/mW | |
| Sensitivity Flatness | | ±2.0 dB | |
| RF Input Power | | -20 dBm | |
| RF Power Handling | | | +17 dBm |
| Video Bandwidth** | | 10 MHz | |
| Detection Speed, Rise Time (50 Ohm Load) | | 10 ns | |
| Output Voltage Polarity | | Positive | |
| Specification Temperature | | +25 °C | |
| Operating Temperature | -40 °C | | +85 °C |

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

**Note: The video bandwidth can extend up to 10 GHz.

Mechanical Specifications:

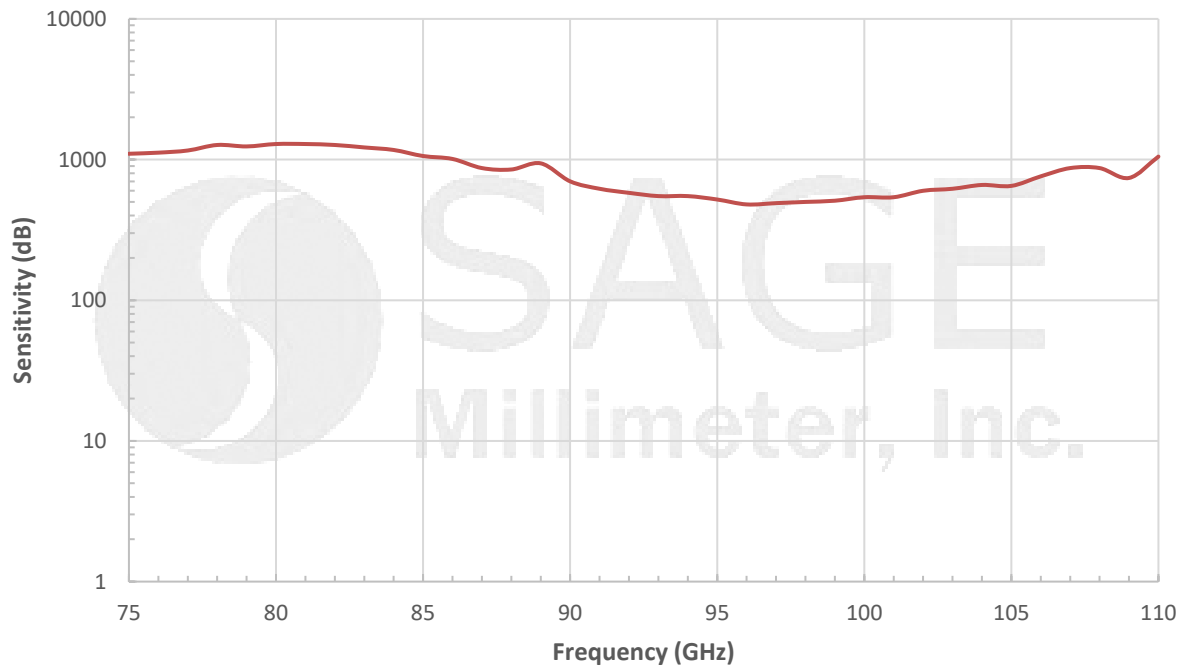
| Item | Specification |
|--------------------|---|
| RF Port | WR-10 Waveguide with UG-387/U-M Anti-Cocking Flange |
| DC Port | SMA (F) |
| Case Material | Aluminum |
| Finish | Gold Plated |
| Weight | 0.4 Oz |
| 91-110 GHz Outline | FD-W1-103-A |



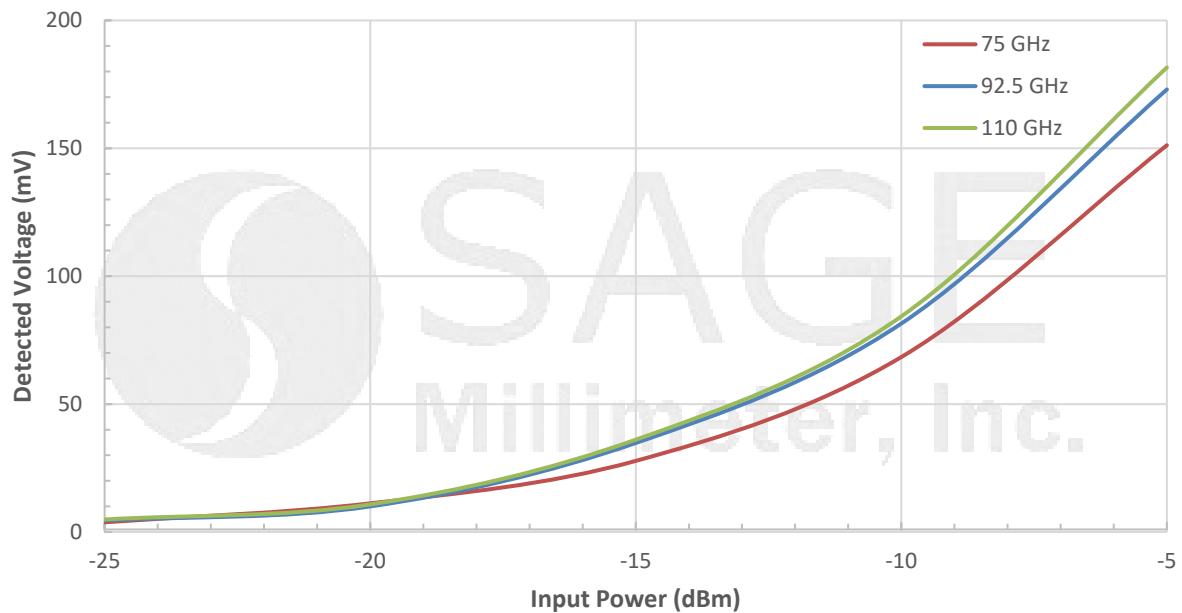


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Sensitivity vs. Frequency

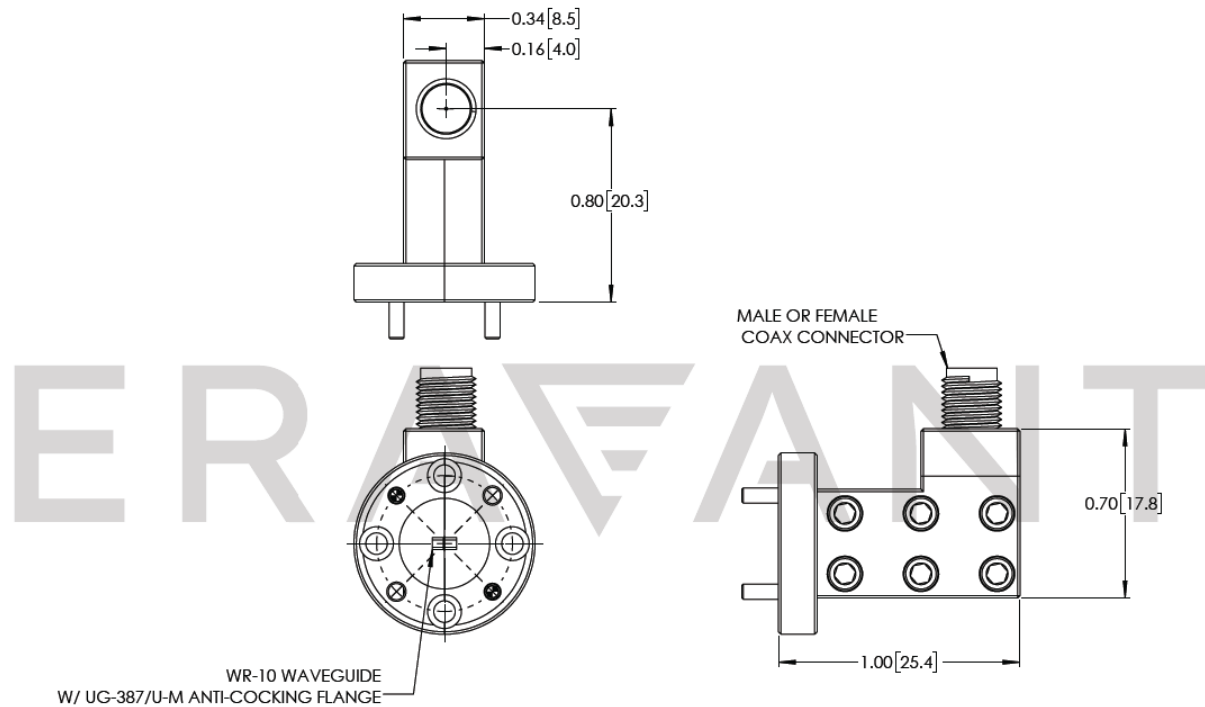


Typical Detected Voltage vs. Input Power



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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 negative output voltage polarity is offered under the model number **SFD-753114-103-10SF-N1**.
- The amplitude detector is a small signal detector. The sensitivity shown is for RF signal -20 dBm or lower.
- Eravant 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. **Eravant torque wrench, model SCH-08008-S1, is highly recommended.**