TELEDYNE
MICROWAVE SOLUTIONS
Everywhereyoulook™

DA2CP20047 0.5 TO 20.0 GHz LOG VIDEO AMP ANALOG DETECTOR

Typical Values @ +25 °C	DA2CP20047
Wide Frequency Range	0.5 – 20 GHz
40 dB Power Range	-20 to +20 dBm
Provides a Compressed Transfer Response	Vo = 0 to 1.3 V
Temperature Stable Detection	+/- 1 dB
Small, Rugged, Hermetic Sealed Cougar Pak	
Wideband Power Monitor for Medium to High Power	

SPECIFICATIONS*

Parameter	Typical	Guaranteed 0 to 50 °C	Guaranteed -40 to +85°C
Frequency (Min.)	**0.5 – 22.0 GHz**	**0.5 – 20.0 GHz**	**0.5 – 20.0 GHz**
Input Power Range (Min.)	-25 to +20 dBm	-20 to +20 dBm	-20 to +20 dBm
VSWR (Max.)	1.6:1	2.0:1	2.0:1
Sensitivity, Vout (Min.) at 0 dBm	+0.70 V	+0.68 V	+0.65V
Temperature Stability (Max.)	± 0.4 dB	± 1.0 dB	± 1.5 dB
Power Flatness (Max.) (constant Vo) 0.5 -20 GHz 0.5 - 16 GHz	 ± 1.0 dB ±0.5 dB	 ±1.5 dB ±0.5 dB	 ±1.5 dB ±0.75 dB
Rise Time (Max.)‡	30 ms	40 ms	40 ms
Fall Time (Max.) ‡	90 ms	100 ms	100 ms
Supply Current (Max.)	± 1.5 mA	± 2.5 mA	± 2.5 mA
Output Offset Voltage, no RF	-0.2 V	0V to -0.3 V	0V to -0.3V

* Measured in a 50 Ohm system at ±5.0 Vdc unless otherwise specified.
‡ Total response time, Tr/Tf: 50% RF to 90 or 10% Video. 10k Ohm output load.

MAXIMUM RATINGS

DC Voltage	±10.0 V
Continuous RF Input Power	+23.0 dBm
Operating Case Temperature	-40 °C to +85 °C
Storage Temperature	-55 °C to +125 °C
Burn-In Temperature	+85 °C
Detector Thermal Resistance[1] (θjc)	+150 °C/Watt
Temperature Rise	<1 °C

[1] Thermal resistance is based on RF input power. Ratings based on +25 °C.

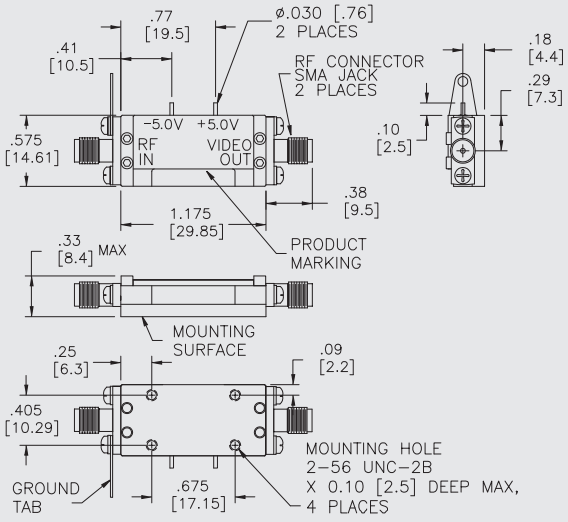
APPLICATION NOTES

- Input is AC coupled
- Output voltage noise increases as RF signal is decreased (due to increasing video gain) and can be > 500mV with no RF
- Response time increases as RF signal is decreased (also due to increasing video gain)
- A logging amplifier follows this RF detector. Since the power range covers both the square law and linear regions of the detector, the transfer curve is not linear with Pin (dB). However, a smooth relationship exists which can be easily programmed and calibrated.

  This detector is accurate for CW signals and will have a different output for signals containing harmonics or AM levels exceeding about -20 dBc.

DA2CP20047

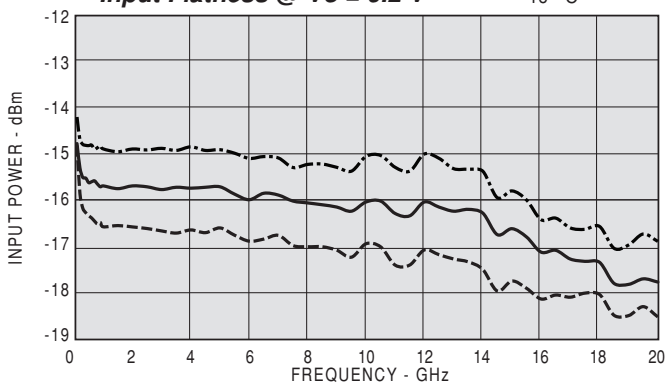
High Frequency CougarPak™ Package for Detectors



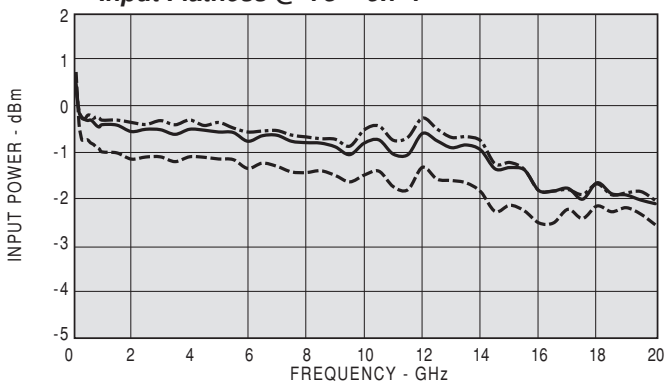
TYPICAL PERFORMANCE

KEY: +25 °C
+85 °C
-40 °C

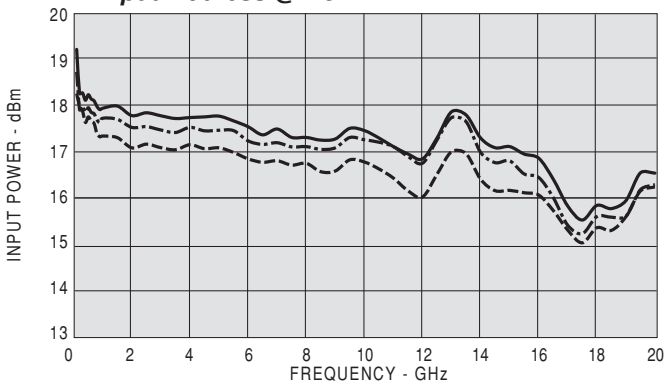
Input Flatness @ Vo = 0.2 V



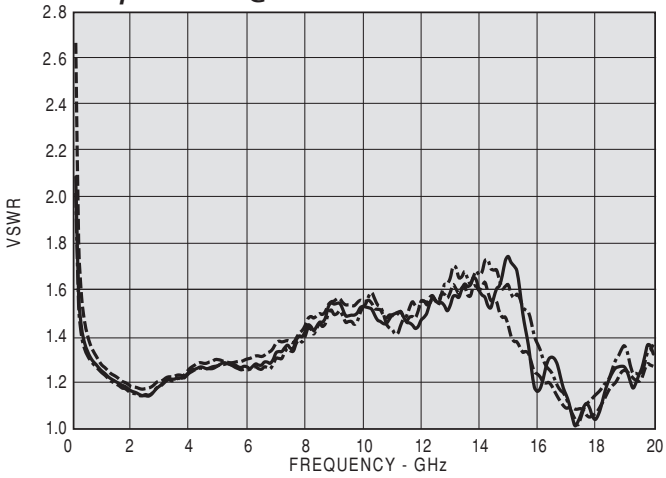
Input Flatness @ Vo = 0.7 V



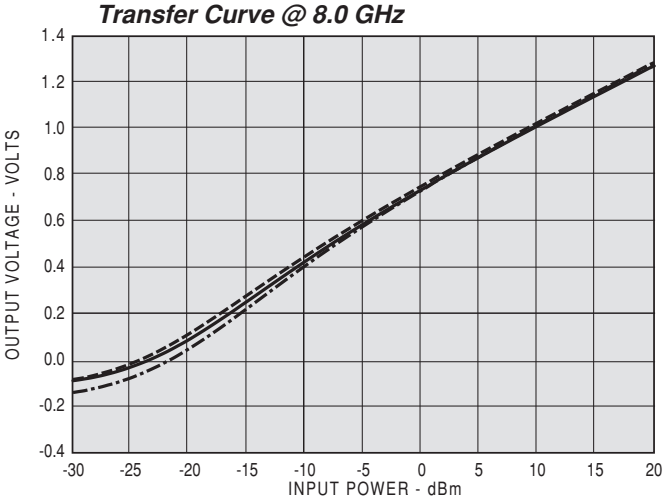
Input Flatness @ Vo = 1.2 V

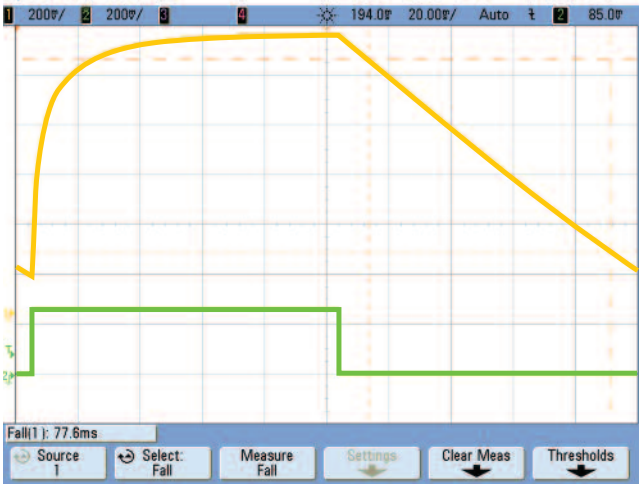


Input VSWR @ Pin = 0 dBm



Transfer Curve @ 8.0 GHz





Top Trace: Detector Response
Bottom Trace: RF Input
Time Base: 20 ms/div