

DACP20021 0.5 TO 20.0 GHz HIGH-SPEED ANALOG DETECTOR

Typical Values @ +25 °C

DACP20021	
Wide Frequency Range	0.5 to 20.0 GHz
Wide Power Range	-30.0 to +5.0 dBm
Temperature Stability	± 0.5 dB
Power Flatness	± 1.0 dB
Low VSWR	1.75:1
Super fast pulse response	15-20 ns
High Freq CougarPak® Package	
Fast Response Time, Low Drift	

SPECIFICATIONS*

Parameter	Typical	Guaranteed	
		0 to 50 °C	-40 to +85°C
Frequency (Min.)	0.5-20.0 GHz	0.5-18.0 GHz	0.5-18.0 GHz
Input Power Range (Min.)	-30 to +5 dBm	-25 to 0 dBm	-25 to 0 dBm
VSWR (Max.)	1.0-20.0 GHz 0.5-1.0 GHz	1.5:1 2.0:1	2.0:1 2.3:1
Sensitivity, Vout (Min.)	140 mV†	90 mV†	90 mV†
Power Flatness (Max.)	±0.75 dB	±1.0 dB	±1.0 dB
Temperature Stability (Max.)	±0.4 dB	±0.5 dB	±0.5 dB
Pulse Response, Pin = -15 dBm	15 ns‡	35/50 ns‡	35/50 ns‡
Pulse Response, Pin = 0 dBm	22 ns‡	50/70 ns‡	50/70 ns‡
Supply Current, no RF (Max.)	9 mA	10 mA	12 mA
Supply Current, Pin = 5 dBm (Max.)	13 mA	16 mA	18 mA
Output Offset Voltage, no RF (Max.)	2 mV	4 mV	5 mV
1 dB Square Law Departure	-10 dBm	—	—

*Measured in a 50 Ohm system at ±5.0 Vdc unless otherwise specified.

†Pin = -15 dBm. ‡Total response time, Tr/Tf: 50% RF to 90 or 10% Video. 50 Ohm output load.

MAXIMUM RATINGS

DC Voltage	±6.0 V
Continuous RF Input Power	+14.0 dBm
Operating Case Temperature	-40 °C to +85 °C
Storage Temperature	-65 °C to +125 °C
Burn-In Temperature	+125 °C
Detector Thermal Resistance ¹ (θjc)	+3500 °C/Watt
Temperature Rise @ 0 dBm (Tjc)	+3.5 °C
Temperature Rise @ +5 dBm (Tjc)	+35 °C

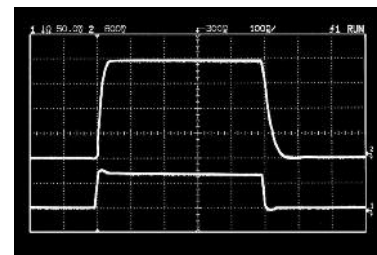
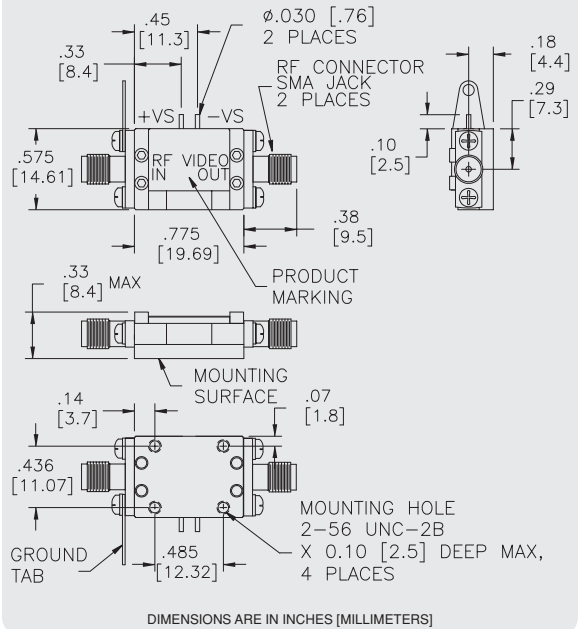
¹ Thermal resistance is based on RF input power. Ratings based on +25 °C.

APPLICATION NOTES

- ✦ Average power detection is obtained at power levels below approximately -13dBm.
- ✦ RF input is AC coupled (DC block).
- ✦ DACP20021 contains a plastic packaged IC.
- ✦ DACP20021 provides maximum video performance with no output load capacitance. However, the detector is capable of driving capacitive loads up to 100 pF without oscillations. Load capacitance above that specified may produce pulse overshoot and ringing.
- ✦ DACP20021 contains 50-Ohm series resistor at the output.

DACP20021

High Frequency CougarPak® Package for Detectors



Pulse Response @ Pin = 0 dBm

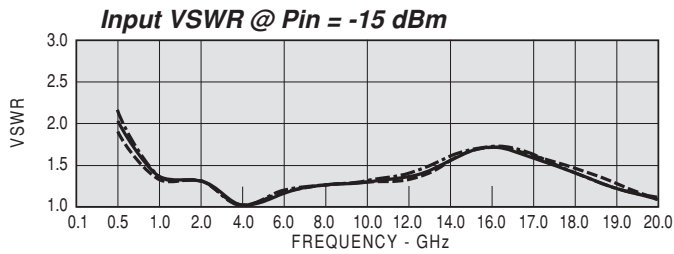
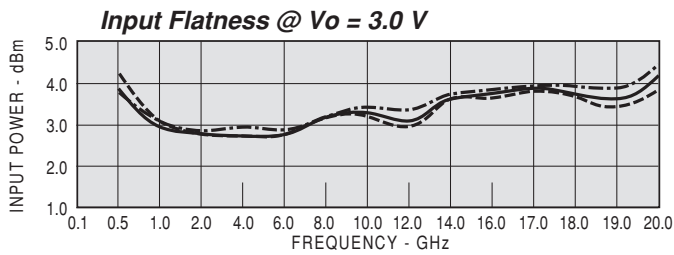
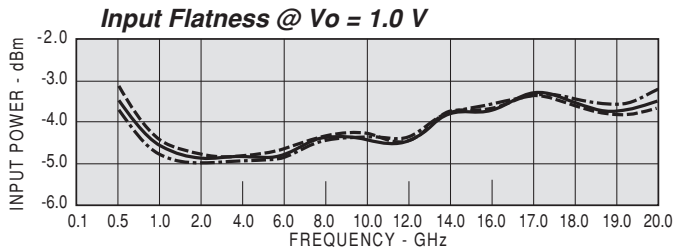
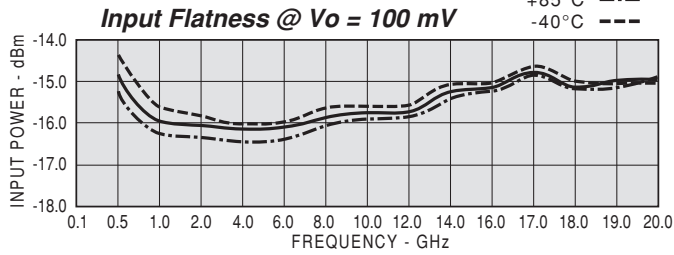


Pulse Response @ Pin = -15 dBm

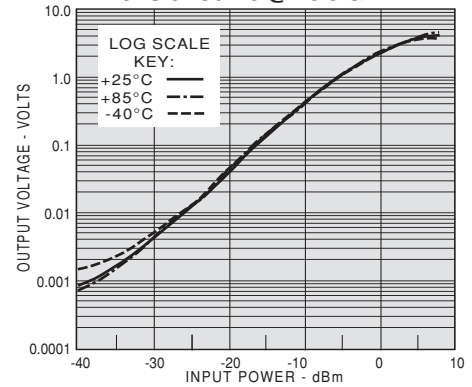
Top Trace: Detector Response
Bottom Trace: RF Input
Time Base: 100 ns/div

TYPICAL PERFORMANCE

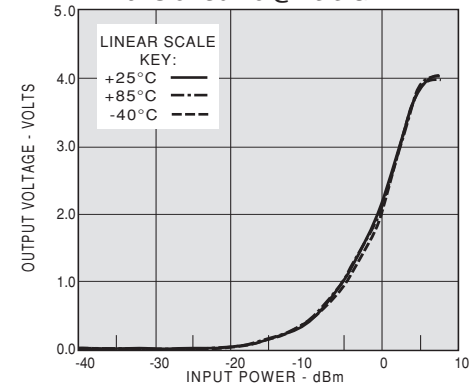
KEY: +25°C —
 +85°C - -
 -40°C - - -



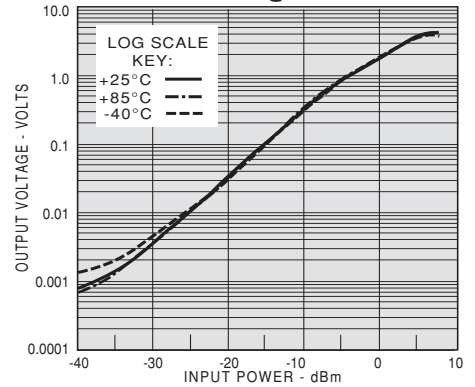
Transfer Curve @ 10.0 GHz



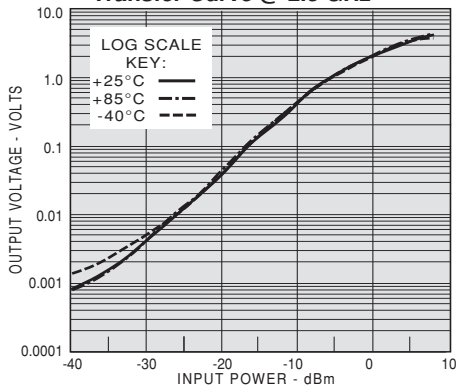
Transfer Curve @ 10.0 GHz



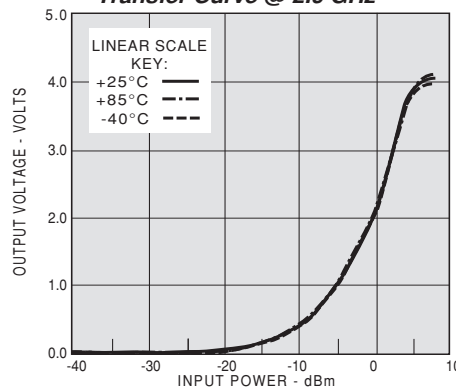
Transfer Curve @ 18.0 GHz



Transfer Curve @ 2.0 GHz



Transfer Curve @ 2.0 GHz



Transfer Curve @ 18.0 GHz

