TELEDYNE
MICROWAVE SOLUTIONS
Everywhereyoulook™

Rev. 7/10

DAC4101 0.01 TO 4.0 GHz ANALOG DETECTOR

Typical Values @ +25 °C	DAC4101
Wide Frequency Range	0.01 to 4.5 GHz
Wide Power Range	–30.0 to +5.0 dBm
Temperature Stability	± 0.25 dB
Power Flatness	± 0.6 dB
Low VSWR	1.5:1
Single Power Supply	
Standard Size TO-8 Package	

SPECIFICATIONS*

Parameter	Typical	Guaranteed 0 to 50 °C	Guaranteed -55 to +85 °C
Frequency (Min.)	**0.01-4.5 GHz**	**0.01-4.0 GHz**	**0.01-4.0 GHz**
Input Power Range (Min.)	-30 to +5 dBm	-25 to 0 dBm	-25 to 0 dBm
VSWR (Max.)	1.5:1†	1.8:1†	1.8:1†
Sensitivity, Vout (Min.)	120 mV†	90 mV†	90 mV†
Power Flatness (Max.)	±0.6 dB^	±0.75 dB^	±0.75 dB^
Temperature Stability (Max.)	±0.25 dB^	±0.5 dB^	±0.5 dB^
Output Offset Voltage, no RF (Max.)	+0.5 mV	+2.0 mV	+2.0 mV
1 dB Square Law Departure	-10 dBm	—	—
Tangential Sensitivity	-45 dBm^^	—	—
Pulse Response, Pin = -15 dBm	1.5 µsec‡	—	—
Pulse Response, Pin = 5 dBm	4.0 µsec‡	—	—
Max Output Voltage	Vs-1 Volts		
Supply Current, no RF	2 +mA, 2 -mA	—	—
Supply Current, Pin = 5 dBm	9 +mA, 2 -mA		

* 50-Ohm source impedance, 2 KΩ||50 pF output load, +5 Vdc. † Pin = –15 dBm.
^ Vout = 100 mV. ^^ 3 dB NF, 1 MHz Bandwidth. ‡ 50% RF to 10 or 90% Video.

MAXIMUM RATINGS

DC Voltage	+18 V
Continuous RF Input Power	+14.0 dBm
Operating Case Temperature	-55 °C to +100 °C
Storage Temperature	-65 °C to +125 °C
Burn-In Temperature	+100 °C
Detector Thermal Resistance[1] (θjc)	+3500 °C/Watt
Temperature Rise @ 0 dBm (Tjc)	+3.5 °C
Temperature Rise @ 5 dBm (Tjc)	+35 °C

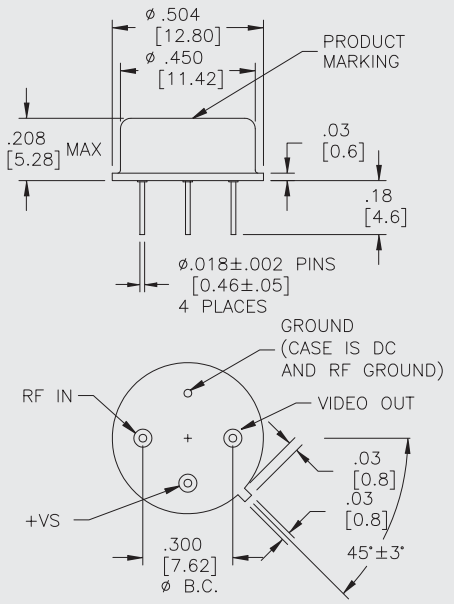
[1] Thermal resistance is based on RF input power. Ratings based on +25 °C.

APPLICATION NOTES

- This unit is DC coupled and employs a RF choke at the input (DC short). If the application calls for the input to sink current there will be approximately an additional 1 mV of output offset voltage for each 3 mA of current. Sink current should be limited to 100 mA max to avoid choke burnout.
- For higher supply voltages, up to ±15 volts, the positive supply pin must include a series current limiting resistor, Rs = (Vs – 5) / 0.01 (e.g., Vs = +15v, Rs = 1.0KΩ).
- Average power detection is obtained at power levels below approximately –13 dBm.
- For best pulse response the supply pins should be bypassed with an additional 1.0 µF capacitor. The unit contains 0.01 µF internal capacitors.

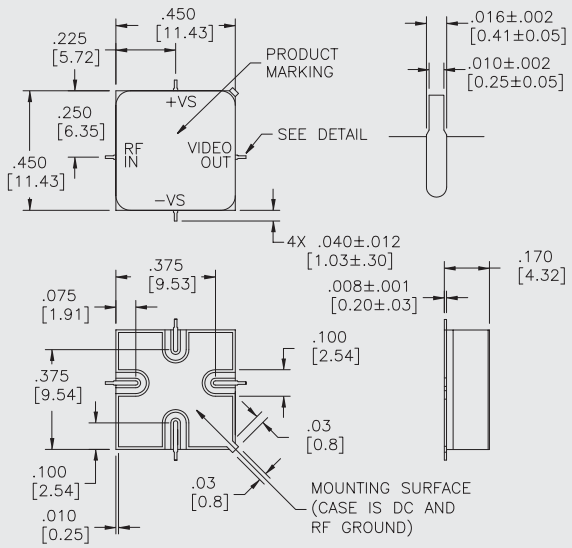
DAC4101

TO-8 Package for Detectors



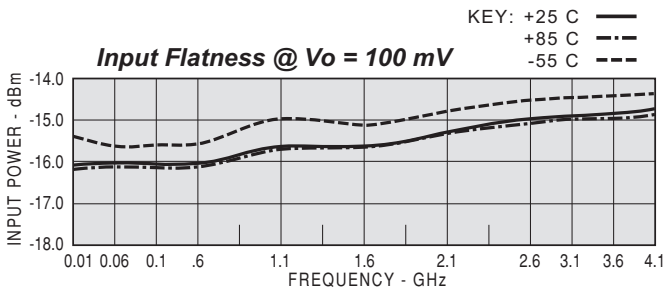
DAS4101

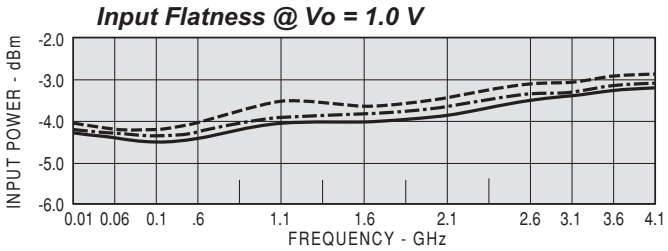
SMTO-8 Package for Detectors

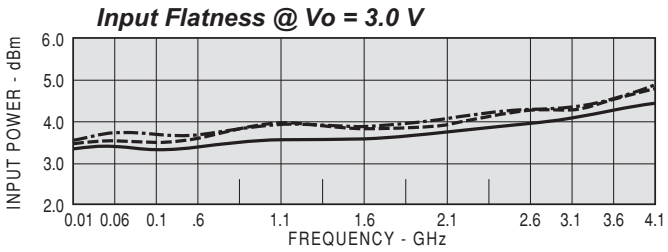


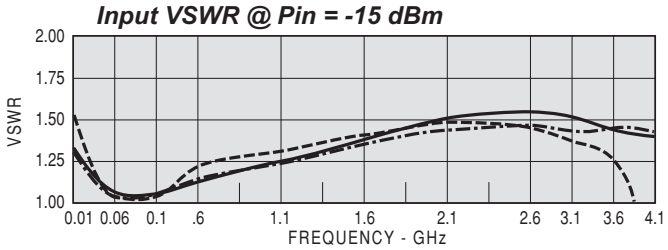
DIMENSIONS ARE IN INCHES [MILLIMETERS]

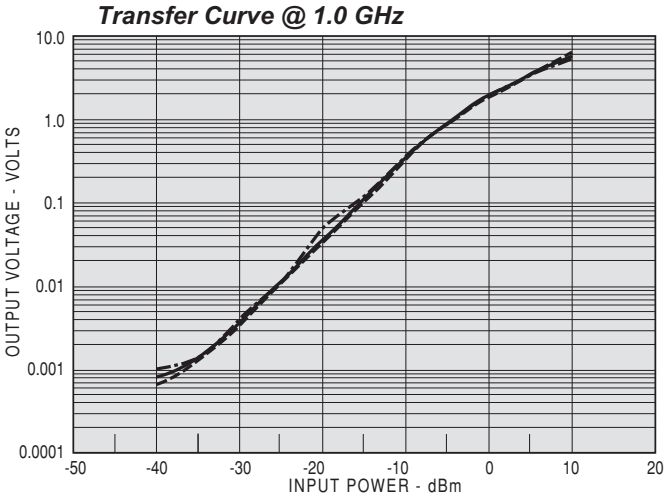
TYPICAL PERFORMANCE

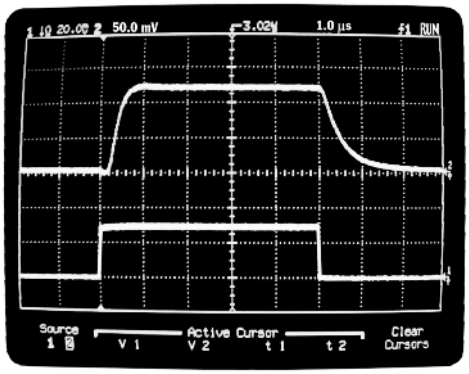




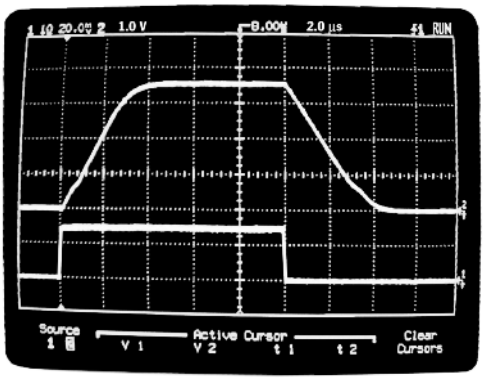








Pulse Response @ P_{in} = –15 dBm



Pulse Response @ P_{in} = 5 dBm