

# DAC4103

## 0.01 TO 4.0 GHz ANALOG DETECTOR

Typical Values @ +25 °C

	DAC4103
Wide Frequency Range .....	0.01 to 4.0 GHz
Wide Power Range .....	-10.0 to +25.0 dBm
Temperature Stability .....	± 0.25 dB
Power Flatness .....	± 0.6 dB
Low VSWR .....	1.2:1
Single Power Supply	
Standard Size TO-8 Package	

### SPECIFICATIONS\*

Parameter	Guaranteed -55 to +85 °C	
	Typical	
Frequency (Min.)	0.01-4.5 GHz	0.01-4.0 GHz
Input Power Range (Min.)	-10 to+ 25 dBm	-5 to +20 dBm
VSWR (Max.)	1.2:1†	1.5:1†
Sensitivity, Vout (Min.)	120 mV†	90 mV†
Power Flatness (Max.)	±0.6 dB^	±0.75 dB^
Temperature Stability (Max.)	±0.25 dB^	±0.4 dB^
Output Offset Voltage, no RF (Max.)	±0.5 mV	+2.0 mV
1 dB Square Law Departure	+10 dBm	—
Tangential Sensitivity	-5 dBm^^	—
Pulse Response, Pin = +5 dBm	1.5 µsec‡	—
Pulse Response, Pin = +25 dBm	3.0 µsec‡	—
Max Output Voltage	Vs-1 Volts	—
Supply Current, no RF	2 +mA	—
Supply Current, Pin = +25 dBm	10 +mA	—

\* Measured in a 50-Ohm system at +5 Vdc, 2 KΩ||50 pF unless otherwise specified.  
† Pin = +5 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 .....	+27.0 dBm
Operating Case Temperature .....	-55 °C to +100 °C
Storage Temperature .....	-65 °C to +125 °C
Burn-In Temperature .....	+100 °C
Detector Thermal Resistance <sup>1</sup> (θjc) .....	+3500 °C/Watt
Temperature Rise @ +20 dBm (Tjc) .....	+3.5 °C

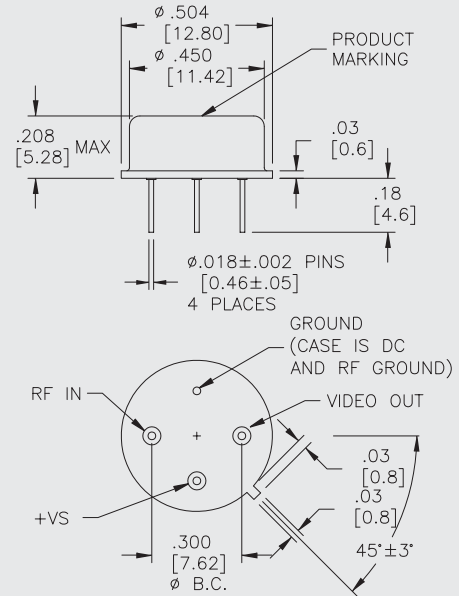
<sup>1</sup> Thermal resistance is based on RF input power. Ratings based on +25 °C.

### 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 approximately be 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,  $R_s = (V_s - 5)/0.01$ . (e.g.:  $V_s = 15V$ ,  $R_s = 1K$ )
- ✦ Average power detection is obtained at power levels below approximately +7 dBm.
- ✦ For best pulse response both supply pins should be bypassed with an additional 1.0 µF capacitor. The unit contains 0.01 µF internal capacitors.

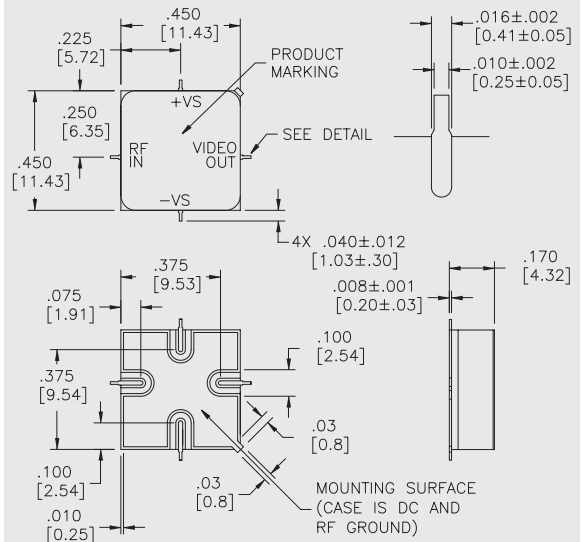
### DAC4103

#### TO-8 Package for Analog Detectors



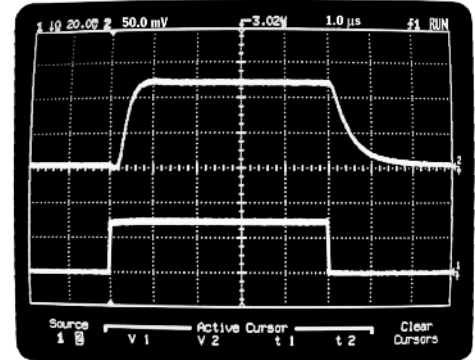
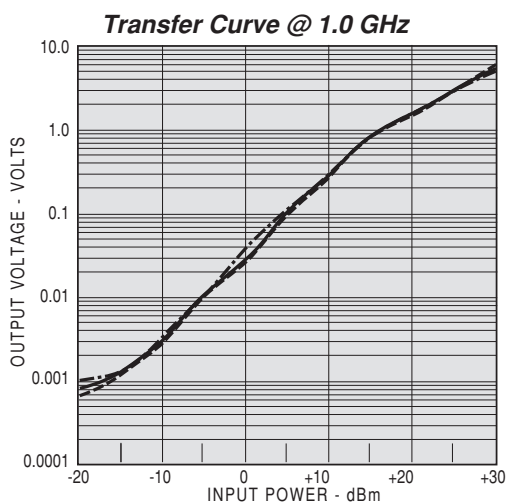
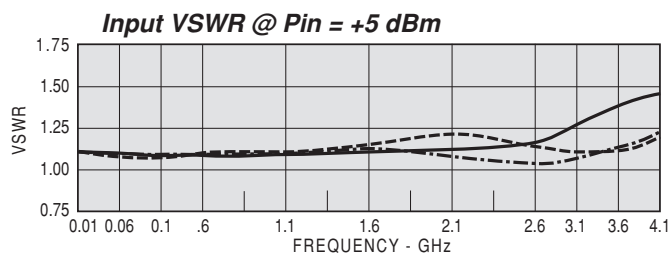
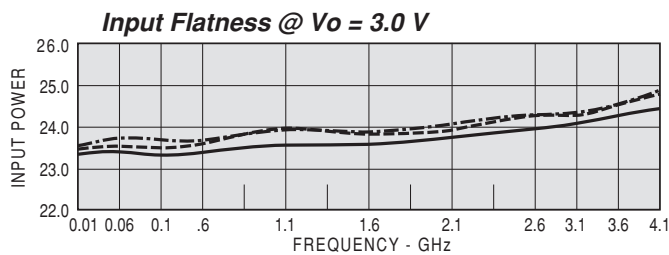
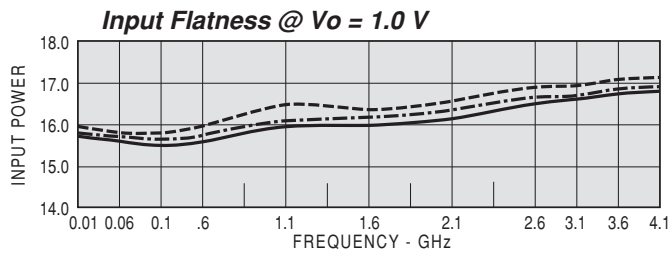
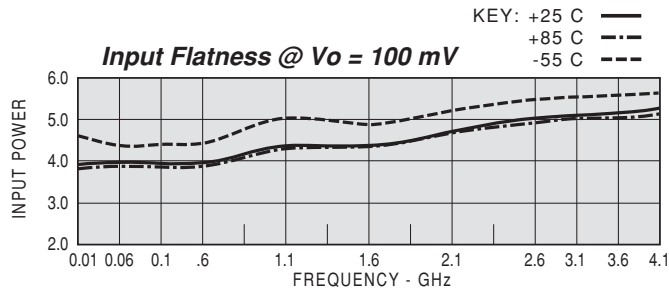
### DAS4103

#### SMT0-8 Package for Analog Detectors

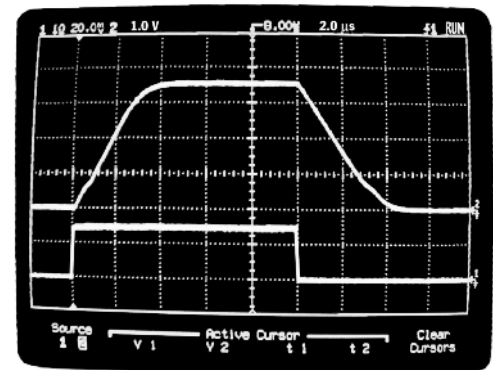


DIMENSIONS ARE IN INCHES [MILLIMETERS]

**TYPICAL PERFORMANCE**



**Pulse Response @  $P_{in} = +5\text{ dBm}$**



**Pulse Response @  $P_{in} = +25\text{ dBm}$**