

# DAQ6101

## 0.1 TO 6.0 GHz ANALOG DETECTOR

### Typical Values @ +25 °C

**DAQ6101**

|                             |                   |
|-----------------------------|-------------------|
| Wide Frequency Range .....  | 0.1 to 8.0 GHz    |
| Wide Power Range .....      | -30.0 to +5.0 dBm |
| Temperature Stability ..... | ± 0.25 dB         |
| Flatness .....              | ± 0.5 dB          |
| Low VSWR .....              | 1.5:1             |
| Single or Dual Power Supply |                   |
| Cougar Q Package            |                   |

## SPECIFICATIONS\*

| Parameter                              | Typical       | Guaranteed   |               |
|----------------------------------------|---------------|--------------|---------------|
|                                        |               | 0 to 50 °C   | -55 to +85 °C |
| Frequency (Min.)                       | 0.1-8.0 GHz   | 0.1-6.0 GHz  | 0.1-6.0 GHz   |
| Input Power Range (Min.)               | -30 to +5 dBm | -25 to 0 dBm | -25 to 0 dBm  |
| VSWR (Max.)                            | 1.5:1†        | 2.0:1†       | 2.0:1†        |
| Sensitivity, Vout (Min.)               | 120 mV†       | 90 mV†       | 90 mV†        |
| Power Flatness (Max.)                  | ±0.5 dB^      | ±0.75 dB^    | ±0.75 dB^     |
| Temperature Stability (Max.)           | ±0.25 dB†     | ±0.5 dB†     | ±0.5 dB†      |
| Output Offset Voltage,<br>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 = 0 dBm            | 3.0 µsec‡     | —            | —             |
| Supply Current, no RF                  | 2 +mA, 2 -mA  | —            | —             |
| Supply Current, Pin = +5 dBm           | 10 +mA, 2 -mA |              |               |

\* Measured in a 50-Ohm system at  $\pm 5$  Vdc, 2 K $\Omega$ ||50 pF unless otherwise specified.

† Pin = -15 dBm. ^ Vout = 100 mV. ^^ 3 dB NF. 1 MHz Bandwidth. ± 50% RF to 10 or 90% Video.

## MAXIMUM RATINGS

|                                                      |                    |
|------------------------------------------------------|--------------------|
| DC Voltage (no RF) .....                             | +18 V              |
| Continuous RF Input Power .....                      | +14.0 dBm (±5 Vdc) |
| 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 @ 0 dBm (Tjc) .....                 | +3.5 °C            |
| Temperature Rise @ +5 dBm (Tjc) .....                | +35 °C             |

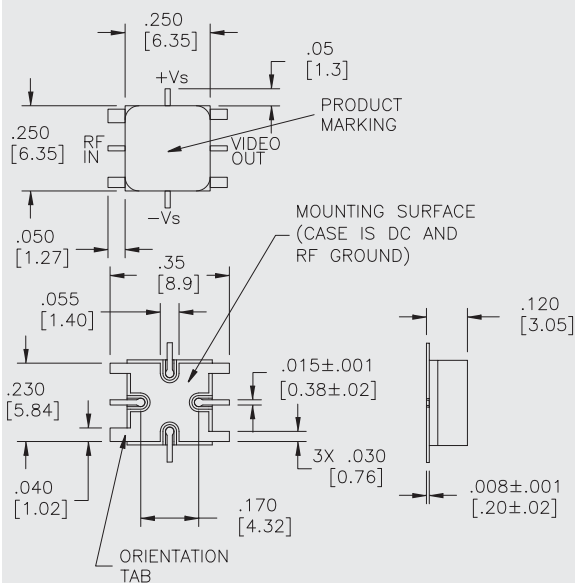
<sup>1</sup> Thermal resistance is based on RF input power. Ratings based on +25 °C.

## 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  $\pm 15$  volts, the positive supply pin must include a series current limiting resistor,  $R_s = (V_s - 5)/0.01$ . (e.g.:  $V_s = 15\text{V}$ ,  $R_s = 1\text{K}$ )
- ✿ Average power detection is obtained at power levels below approximately  $-13$  dBm.
- ✿ For best pulse response both supply pins should be bypassed with an additional  $1.0 \mu\text{F}$  capacitor. The unit contains  $0.01 \mu\text{F}$  internal capacitors.

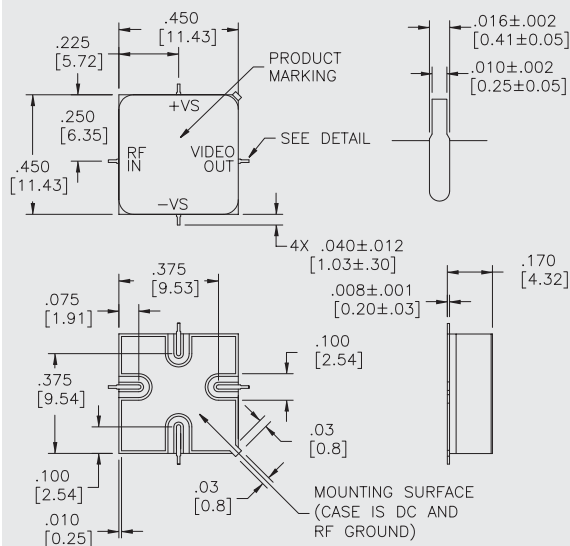
**DAQ6101**

## SM-25 for Detectors



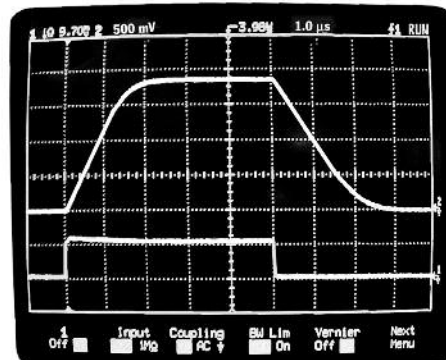
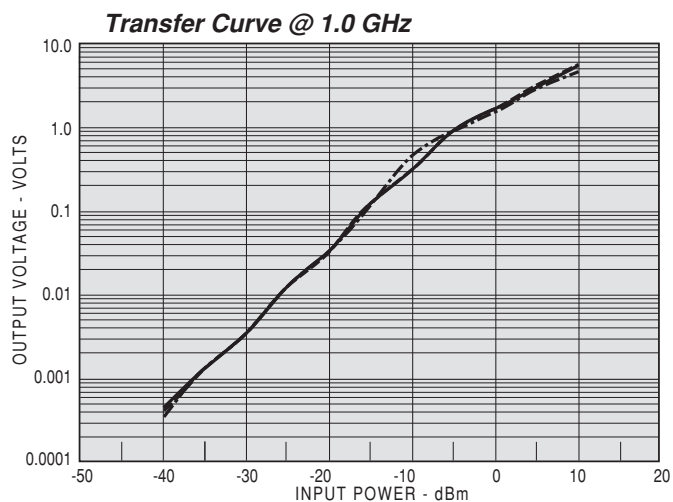
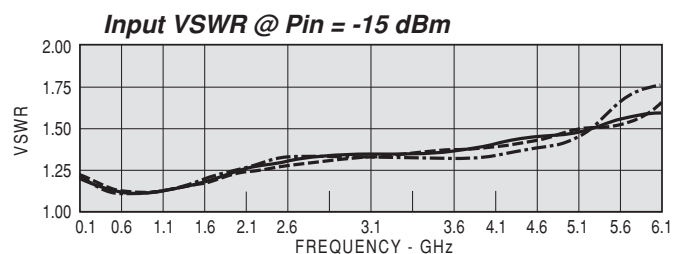
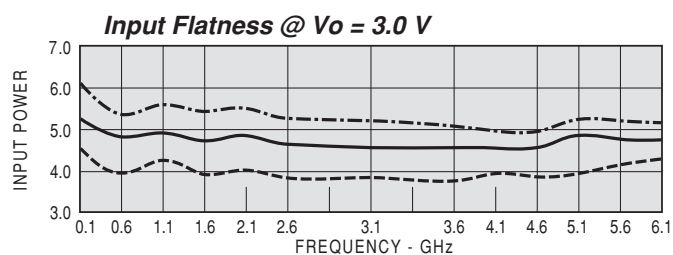
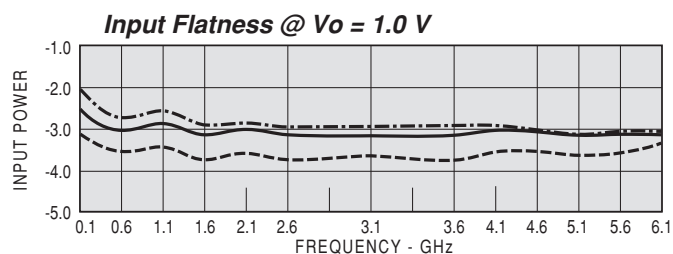
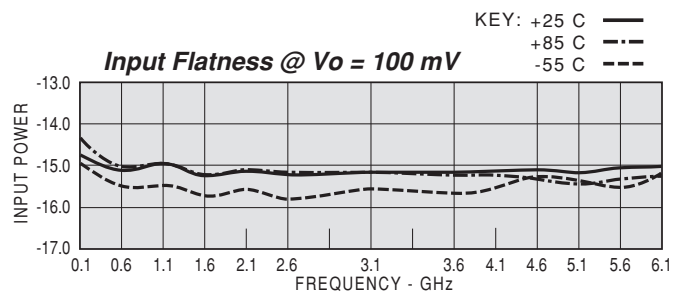
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## SMT0-8 Package for Detectors

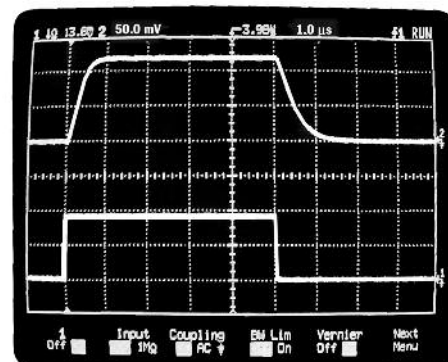


DIMENSIONS ARE IN INCHES [MILLIMETERS]

## TYPICAL PERFORMANCE



Pulse Response @  $P_{in} = 0$  dBm



Pulse Response @  $P_{in} = -15$  dBm