

# DAQ6116 0.1 TO 6.0 GHz PEAK TO PEAK ANALOG DETECTOR

Typical Values @ +25 °C

<b>Wide Frequency Range</b> .....	<b>0.05 to 8.0 GHz</b>
<b>Wide Power Range</b> .....	<b>-5.0 to +25.0 dBm</b>
<b>Temperature Stability</b> .....	<b>± 0.5 dB</b>
<b>Flatness</b> .....	<b>± 0.5 dB</b>
<b>Low VSWR</b> .....	<b>1.5:1</b>
<b>Even Order Harmonics Suppression</b> .....	<b>40 dB</b>
<b>No Power Supply Required / Zero Bias</b>	
<b>Cougar Q Package or Standard SMTO-8 package</b>	

## SPECIFICATIONS\*

Parameter	Typical	Guaranteed	
		0 to 50 °C	-55 to +85 °C
Frequency (Min.)	0.05-8.0 GHz	0.1-6.0 GHz	0.1-6.0 GHz
Input Power Range (Min.)	-5 to +25 dBm	0 to +20 dBm	0 to +20 dBm
VSWR (Max.)	1.5:1	2.0:1	2.0:1
Sensitivity, Vout (Min.)	180 mV†	120 mV†	90 mV†
Power Flatness (Max.)	±0.5 dB	±0.75 dB	±0.75 dB
Temperature Stability (Max.)	—	±0.5 dB <sup>^</sup>	±0.5 dB <sup>^</sup>
Pulse Response, Pin > +10 dBm	360 μsec‡	25/500 μsec‡	25/500 μsec‡
Pulse Response, Pin = 0 to +10 dBm	380 μsec‡	500/500 μsec‡	500/500 μsec‡

\* Measured in a 50-Ohm system and R load = 1 MOhm unless otherwise specified.  
† Pin = 0 dBm. ^ Vout = 1.0 V. ‡ Tr/Tf, 50% RF to 90% or 10% Video, Rload = 80 KOhms.

## MAXIMUM RATINGS

<b>Continuous RF Input Power</b> .....	<b>+25.0 dBm</b>
<b>Operating Case Temperature</b> .....	<b>-55 °C to +150 °C</b>
<b>Storage Temperature</b> .....	<b>-65 °C to +150 °C</b>
<b>Burn-In Temperature</b> .....	<b>+125 °C</b>
<b>Detector Thermal Resistance<sup>1</sup> (θjc)</b> .....	<b>+1000 °C/Watt</b>
<b>Temperature Rise @ 20 dBm (Tjc)</b> .....	<b>+4 °C</b>
<b>Temperature Rise @ 25 dBm (Tjc)</b> .....	<b>+68 °C</b>

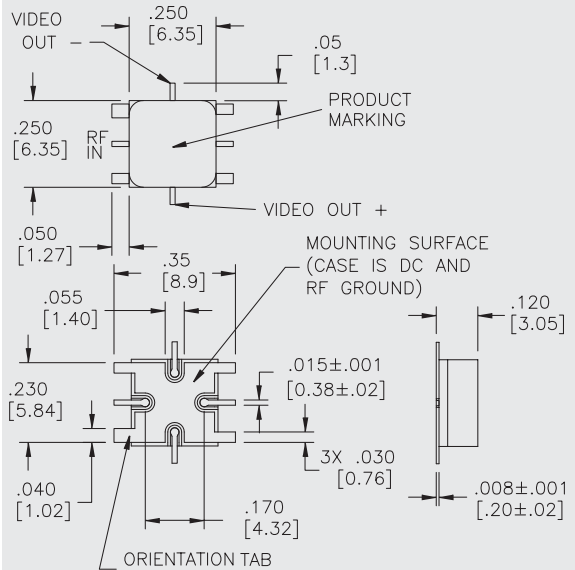
<sup>1</sup> Thermal resistance is based on total power dissipation. Ratings based on +25 °C.

## APPLICATION NOTES

- ☛ DAQ6116 is configured using two anti-parallel connected schottky diodes to form an unbiased peak to peak microwave detector with a differential output voltage.
- ☛ The harmonic distortion reflected back to the system can be significantly lower than single ended design because all even order harmonics are suppressed, typically > 40 dB.
- ☛ The output voltage (differential) is a closer representation of the true rms power of modulated or distorted signals because both positive and negative waveform peaks are detected.
- ☛ The DAQ6116 is intended for higher level detection applications (> 0 dBm) requiring good temperature stability and harmonic suppression.

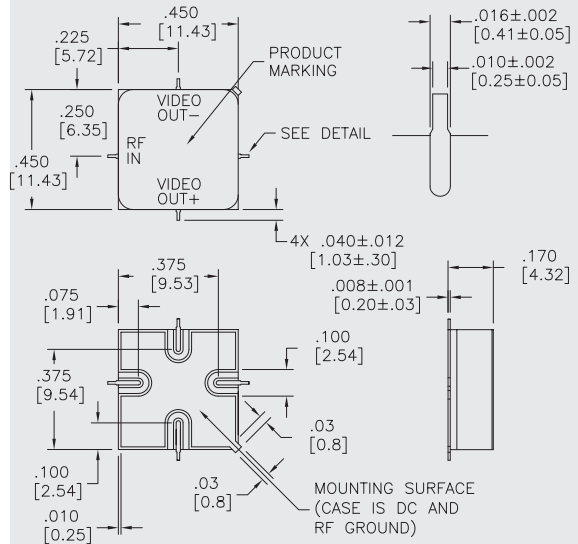
## DAQ6116

### SM-25 for Detectors



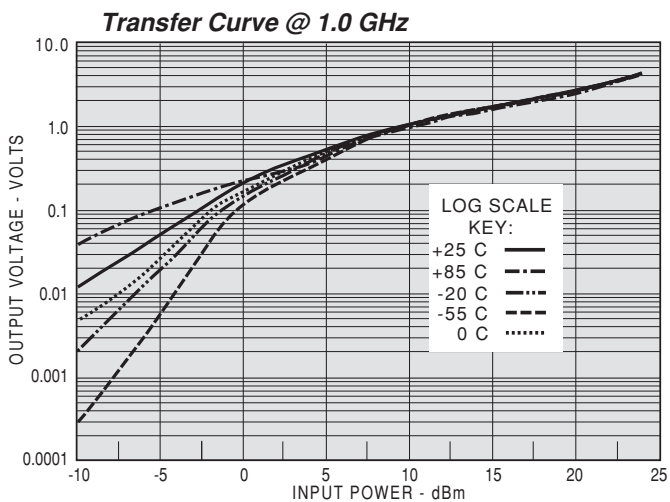
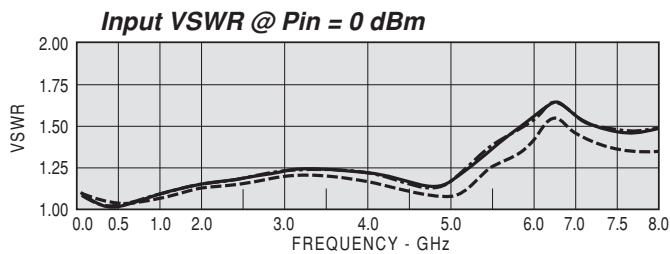
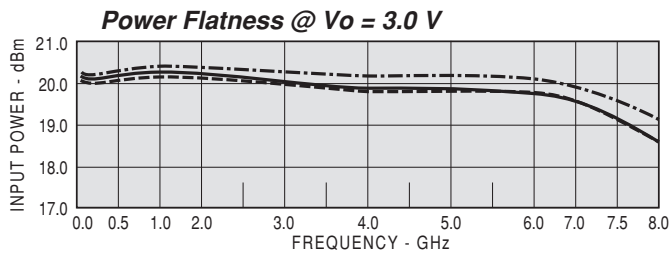
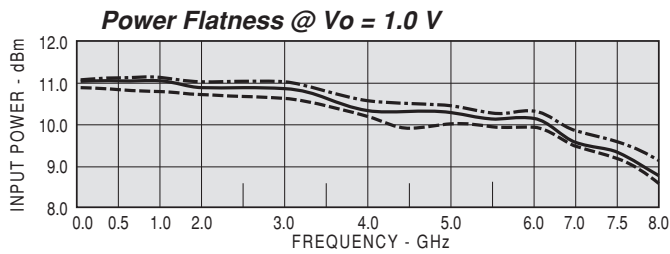
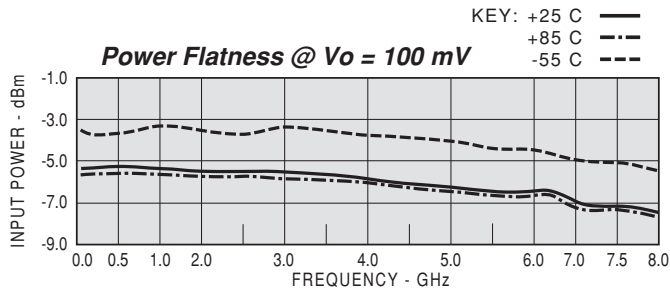
## DAS6116

### SMTO-8 Package for Detectors

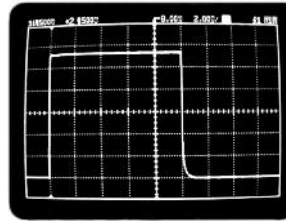


DIMENSIONS ARE IN INCHES [MILLIMETERS]

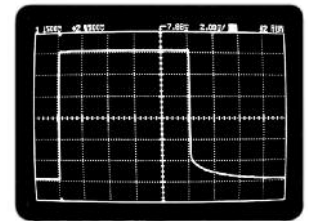
**TYPICAL PERFORMANCE**



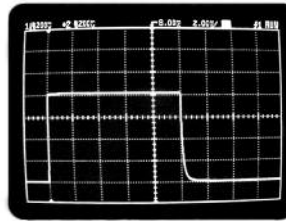
TIME BASE: 2 ms/div



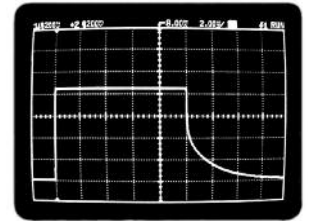
Pulse Response @  
 $P_{in} = +20\text{ dBm}$ ,  
 $R_{load} = 80\text{K}\Omega$



Pulse Response @  
 $P_{in} = +20\text{ dBm}$ ,  
 $R_{load} = 1\text{ MO}\Omega$

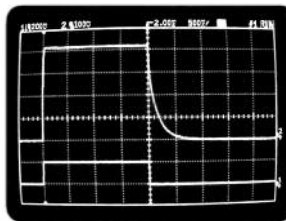


Pulse Response @  
 $P_{in} = +10\text{ dBm}$ ,  
 $R_{load} = 80\text{K}\Omega$

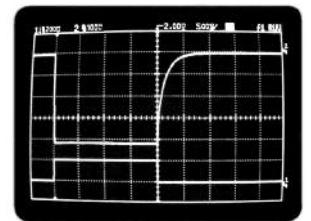


Pulse Response @  
 $P_{in} = +10\text{ dBm}$ ,  
 $R_{load} = 1\text{ MO}\Omega$

TIME BASE: 500  $\mu\text{s}$ /div



Top Trace: Video out +,  
 $R_{load} = 80\text{ K}\Omega$   
 Bottom Trace: RF input



Top Trace: Video out -,  
 $R_{load} = 80\text{ K}\Omega$   
 Bottom Trace: RF input

