TELEDYNE
MICROWAVE SOLUTIONS
Everywhereyoulook™

Rev. 5/10

DAQ6116 0.1 TO 6.0 GHz PEAK TO PEAK ANALOG DETECTOR

Typical Values @ +25 °C	DAQ6116
Wide Frequency Range	**0.05 to 8.0 GHz**
Wide Power Range	**–5.0 to +25.0 dBm**
Temperature Stability	**± 0.5 dB**
Flatness	**± 0.5 dB**
Low VSWR	**1.5:1**
Even Order Harmonics Supression	**40 dB**

No Power Supply Required / Zero Bias
Cougar Q Package or Standard SMTO-8 package

SPECIFICATIONS*

Parameter	Typical	Guaranteed 0 to 50 °C	Guaranteed -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^	±0.5 dB^
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

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

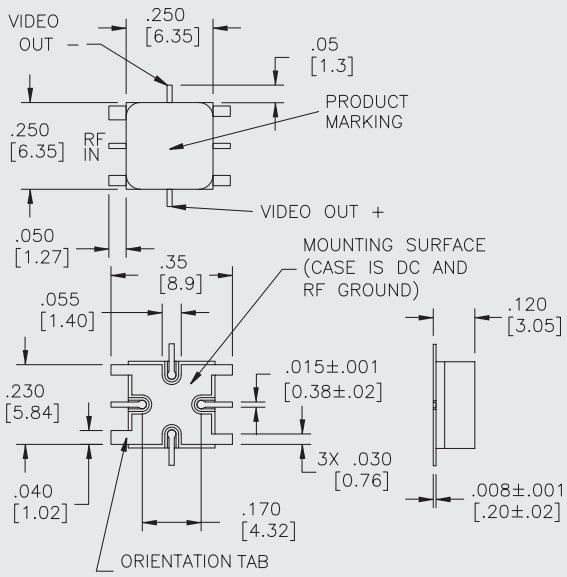
[1] Thermal resistance is based on total power dissipation. Ratings based on +25 °C.

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.

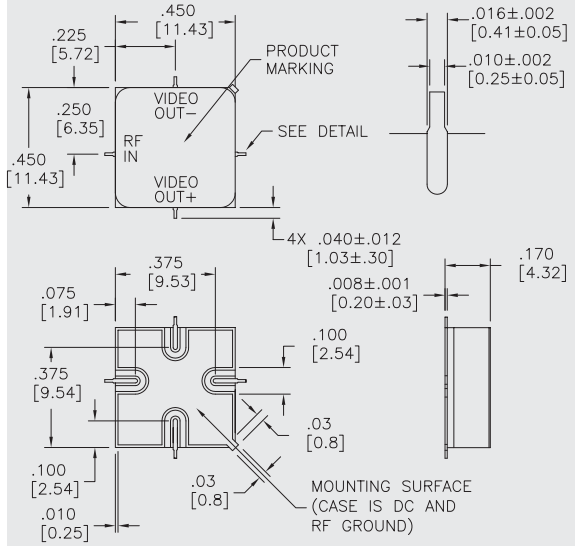
DAQ6116

SM-25 for Detectors



DAS6116

SMTO-8 Package for Detectors

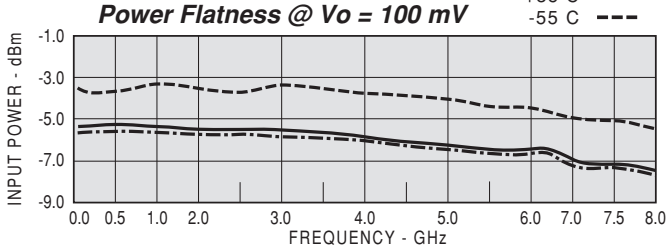


DIMENSIONS ARE IN INCHES [MILLIMETERS]

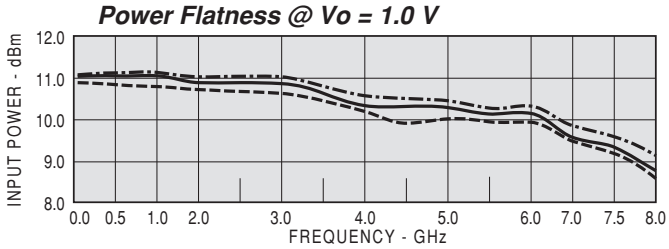
TYPICAL PERFORMANCE

KEY: +25 C
+85 C
-55 C

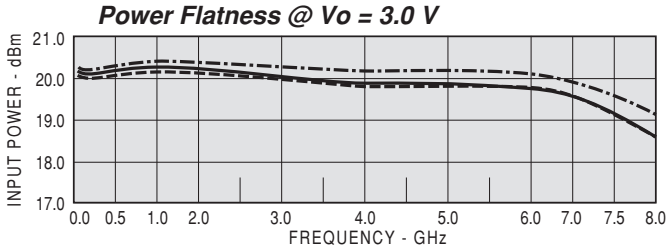
Power Flatness @ Vo = 100 mV



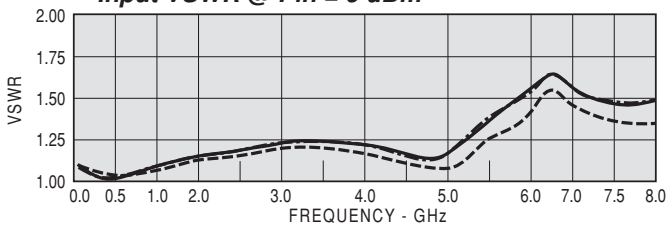
Power Flatness @ Vo = 1.0 V



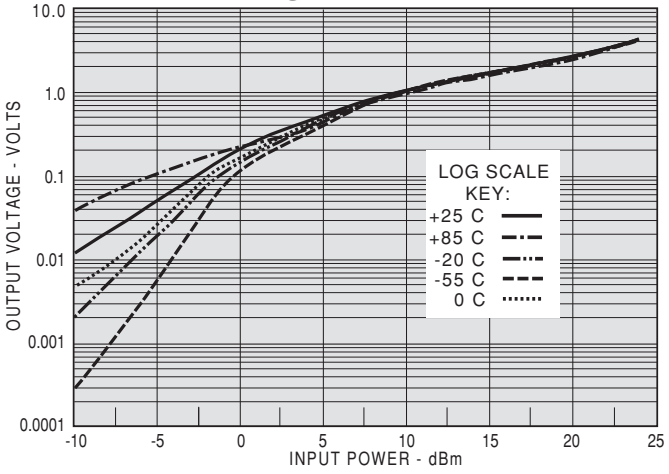
Power Flatness @ Vo = 3.0 V



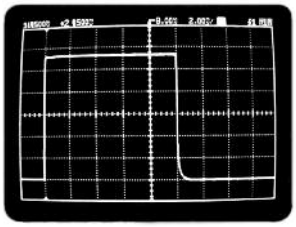
Input VSWR @ Pin = 0 dBm



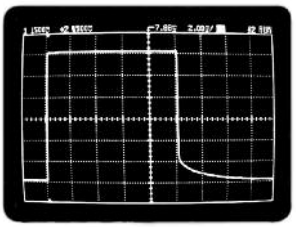
Transfer Curve @ 1.0 GHz



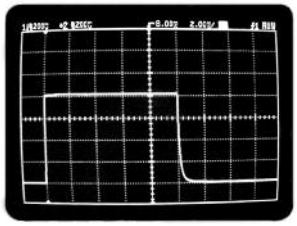
TIME BASE: 2 ms/div



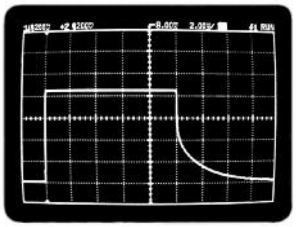
Pulse Response @
P_{in} = +20 dBm,
R load = 80KOhm



Pulse Response @
P_{in} = +20 dBm,
R load = 1 MOhm

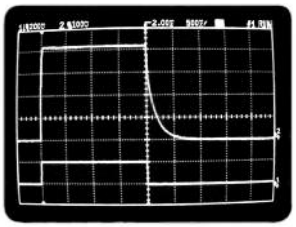


Pulse Response @
P_{in} = +10 dBm,
R load = 80KOhm

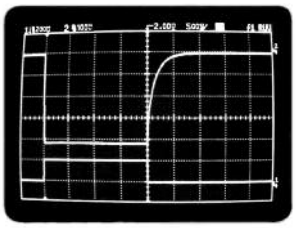


Pulse Response @
P_{in} = +10 dBm,
R load = 1 MOhm

TIME BASE: 500 µs/div



Top Trace: Video out +,
R load = 80 KOhm
Bottom Trace: RF input



Top Trace: Video out –,
R load = 80 KOhm
Bottom Trace: RF input

Transfer Curve @ 1.0 GHz