Agilent
8471D Coaxial RF Microwave Detectors

100 kHz to 2 GHz

Data Sheet

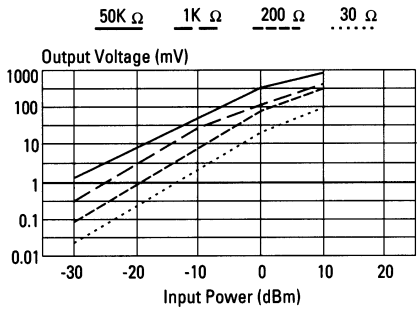

Figure 1. Typical transfer characteristics.

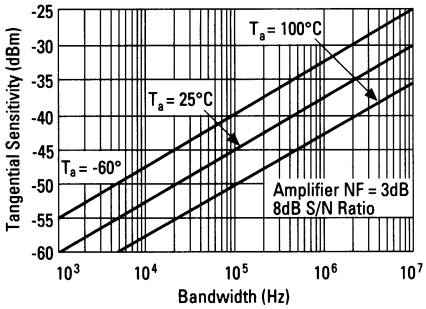

Figure 2. Typical tangential sensitivity.

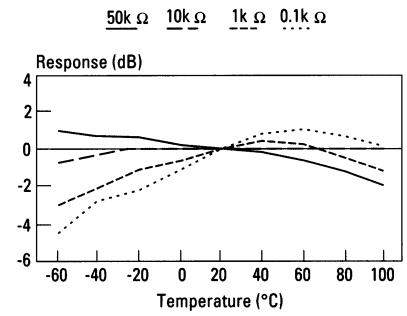

Figure 3. Typical output response with temperature (pin ≤ 20 dBm).

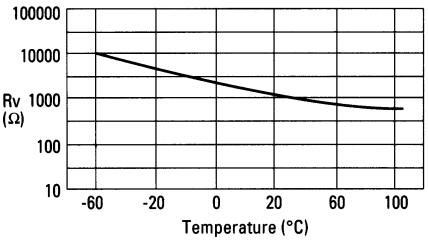

Figure 4. Typical video impedance variation with temperature.

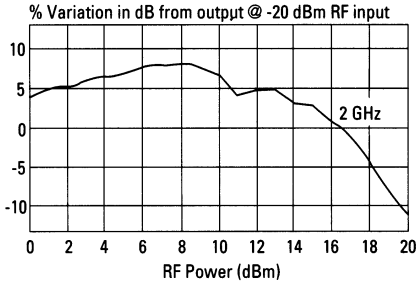

Figure 5. Typical square law deviation.

Features and Description

- **Zero bias**
- **Environmentally rugged**
- **BNC connector**

The Agilent 8471D detector is a planar doped barrier detector offering the characteristics of the Agilent 8474 line of PDB detectors in an economical package. It is available with an BNC RF connector and BNC video connector.

The detector is designed for use in RF and microwave instrumentation and systems applications as the detecting element in leveling loops, for power monitoring and for wideband video detection.

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Specifications

Frequency range		100 kHz to 2 GHz
Frequency response		±0.2 dB 100 kHz to 1 GHz; ±0.4 dB 1 to 2 GHz
SWR		< 1.23 0.0001 to 1 GHz; < 1.46 1 to 2 GHz
Low level sensitivity		0.5 mV/µW
Max operating input		100 mW
Typical short-term max input		0.7 Watt
Noise		< 50 µV (µV peak-to-peak with CW power applied to produce 100 mV output, 400 kHz BW)
Output polarity	(STD)	Negative
	(103)	Positive
Option (102)		Optimal square law load option

Note: *Above specifications are at 25° C and ≤ 20 dBm unless otherwise specified.*

Environmental

Operating temperature	–20° to +85° C
Non-operating temperature	MIL-STD 883, Method 1010: (–55° to +85°)
Vibration	MIL-STD 883, Method 2007: (0.6"D.A 20 to 80 Hz and 20g, 80 to 2000 Hz)
Shock	MIL-STD 883, Method 2002.1: (500g, 0.5 ms)
Altitude	MIL-STD 883, Method (50,000 ft, 15,240 m)
Moisture resistance	MIL-STD 883, Method 1004.1 (25° to 40° C, 95% RH)
RFI	MIL-STD 461C (meets Part 7, degraded by 10 dB)

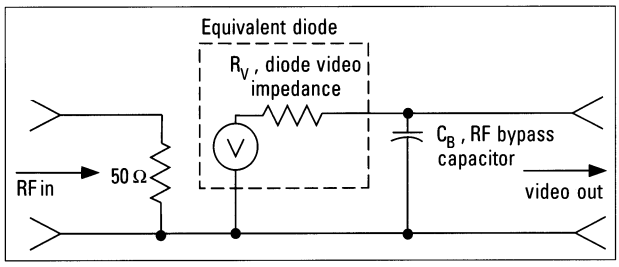

Figure 6. Equivalent circuit for 8471D with typical parameter values.

Typical values:

R_V (diode video impedance) ≈ 1.5 kΩ[1]

C_B (RF bypass capacitor) ≈ 6800 pF nominal

$$T_R \text{ (10 to 90\% risetime} \approx 2.2 \frac{(R_{LOAD})(R_V)}{R_{LOAD}+R_V} (C_B+C_{LOAD}) = \frac{0.35}{BW}$$

Agilent 8471D

A	13.72 (0.54)
B	63.4 (2.50)
C	15.64 (0.62)
Connector	BNC (m) input: BNC (f) output
Net weight:	38.8 grams (1.37 oz.)

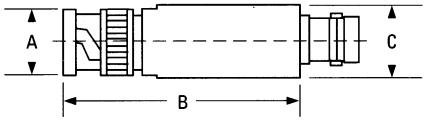

Figure 7. 8471D

1. At 25° C and PIN ≤ 20 dBm (see Figure 3)

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Product specifications and descriptions in this document subject to change without notice.

Printed in USA, December 22, 2004
5952-0644

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