HP 8471D
Coaxial RF & Microwave Detectors
100 kHz – 2 GHz

HEWLETT PACKARD

Technical Data

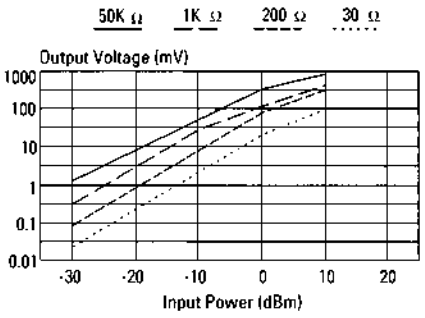

Figure 1. Typical transfer characteristics.

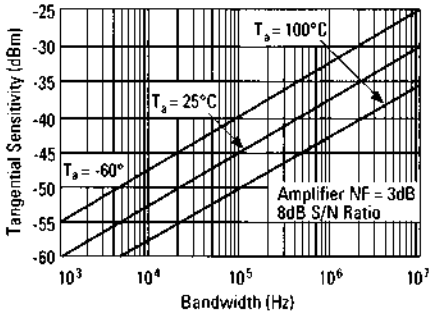

Figure 2. Typical tangential sensitivity.

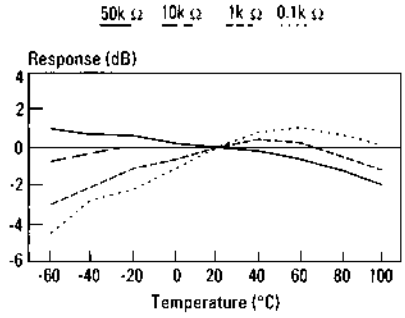

Figure 3. Typical output response with temperature ($P_{IN} \leq 20$ dBm).

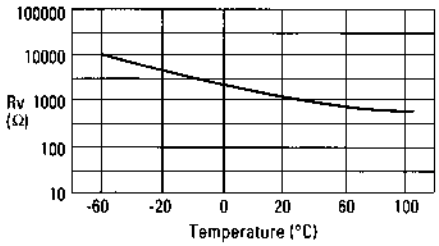

Figure 4. Typical video impedance variation with temperature.

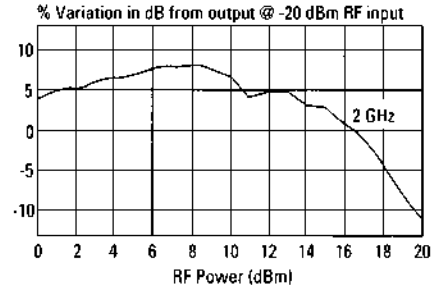

Figure 5. Typical square law deviation.

Features and Description

- Zero Bias
- Environmentally Rugged
- BNC Connector

The HP 8471D Detector is a Planar Doped Barrier detector offering the characteristics of the HP 8474 line of PDB detectors in an economical package. It is available with an BNC RF connector and and BNC video conector.

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

Specifications

Frequency Range: 100 kHz - 2 GHz
Frequency Response: ±0.2 dB 100 kHz - 1 GHz; ±0.4 dB 1 - 2 GHz
SWR: <1.23 0.0001 - 1 GHz; <1.46 1 - 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 1001: (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)

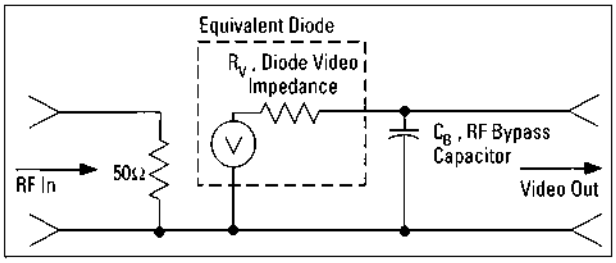

Figure 6. Equivalent circuit for HP 8471D with typical parameter values.

Typical Values:

R_V (diode video impedance) ≈ 1.5 kΩ*
C_B (RF bypass capacitor) ≈ 6800 pF nominal

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

*@ 25° C and P_{IN} ≤20 dBm (see Figure 3)

HP 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.)

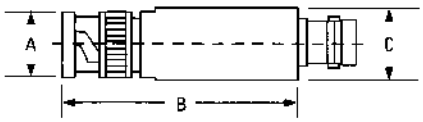

Figure 7. HP 8471D

For more information, call your local HP sales office listed in the telephone directory white pages. Ask for the Test and Measurement Department, or write to Hewlett-Packard:

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