

HP 8471E

Coaxial RF & Microwave Detectors

0.01 GHz – 12 GHz

Technical Data

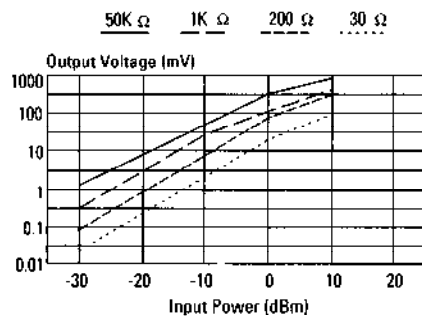


Figure 1. Typical transfer characteristics.

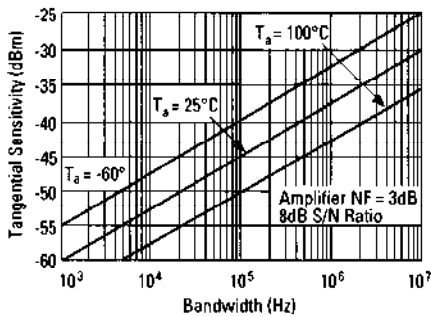


Figure 2. Typical tangential sensitivity.

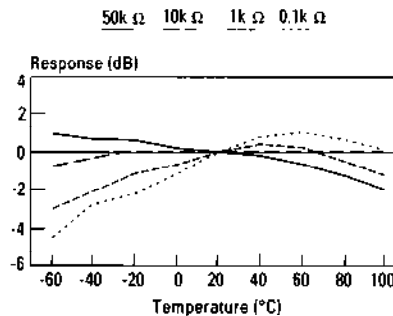


Figure 3. Typical output response with temperature ($P_{IN} \leq 20$ dBm).

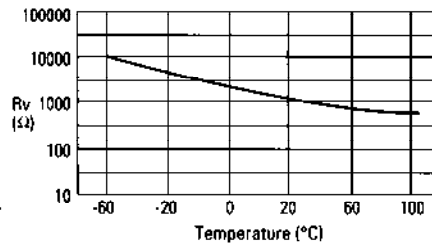
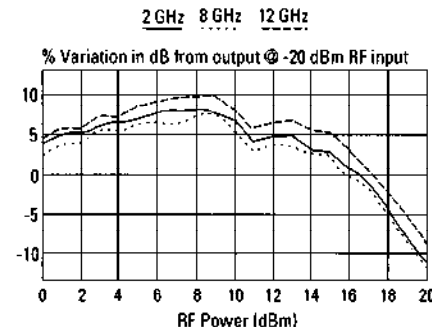


Figure 4. Typical video impedance variation with temperature.



Features and Description

- Zero Bias
- Environmentally Rugged
- SMA Connector

The HP 8471E 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 SMA RF connector and and SMC 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: 0.01 – 12 GHz

Frequency Response: ± 0.23 dB (0.01 – 4 GHz); ± 0.6 dB (4 – 8 GHz);
 ± 0.85 dB (8 – 12 GHz)

SWR: <1.2 (0.01 – 4 GHz); <1.7 (4 – 8 GHz); <2.4 (8 – 12 GHz)

Low Level Sensitivity: 0.4 mV/ μ W

Max. Operating Input: 200 mW

Typical Short-term Max. Input: 0.75 Watt

Noise: <50 μ V

(μ V peak-to-peak with CW power applied to produce 100 mV output, 400 kHz BW)

Output Polarity (STD): Negative

(003): Positive

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 80Hz 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, 15,240m)

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)

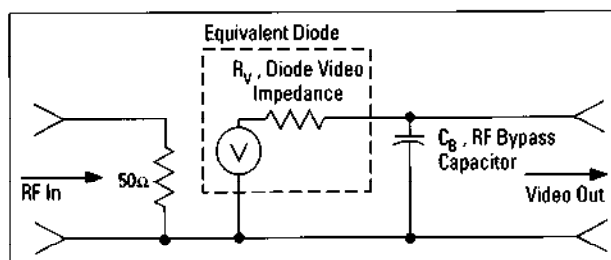


Figure 6. Equivalent circuit for HP 8471E with typical parameter values.

Typical Values:

R_v (diode video impedance) ≈ 1.5 k Ω *

C_b (RF bypass capacitor) ≈ 30 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 $P_{IN} \leq 20$ dBm (see Figure 3)

HP 8471E	
A:	7.9 (0.31)
B:	39.16 (1.54)
C:	9.26 (0.36)
Connector:	SMA (m) input; SMC (m) output
Net Weight:	38.8 grams (1.37 oz.)

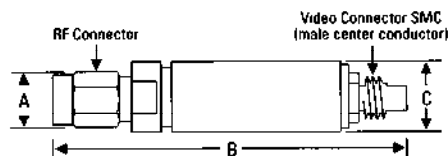


Figure 7. HP 8471E

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:

United States
P.O. Box 10301
Palo Alto, CA 94303-0890
U.S.A.

Canada
6877 Goreway Drive
Mississauga, L4V 1M8
Ontario

Europe, Africa, Middle East
Central Mailing Dept.
P.O. Box 529
1180 AM Amstelveen
The Netherlands

Japan
Yokogawa-Hewlett-Packard Ltd.
29-21, Takaido-Higashi 3-chome
Suginami-ku, Tokyo 168

Elsewhere in the World:
Hewlett-Packard Company
Intercontinental Headquarters
3495 Deer Creek Road
Palo Alto, CA 94304-1393 U.S.A.

**Data Subject to Change
September 1989**

**Printed in U.S.A.
5952-0802**