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DATA SHEET

8471D
Coaxial RF Microwave Detectors
100 kHz to 2 GHz

Features and Description

- Zero bias
- Environmentally rugged
- BNC connector

The Keysight Technologies, Inc. 8471D detector is a planar doped barrier detector offering the characteristics of the Keysight 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.



KEYSIGHT TECHNOLOGIES

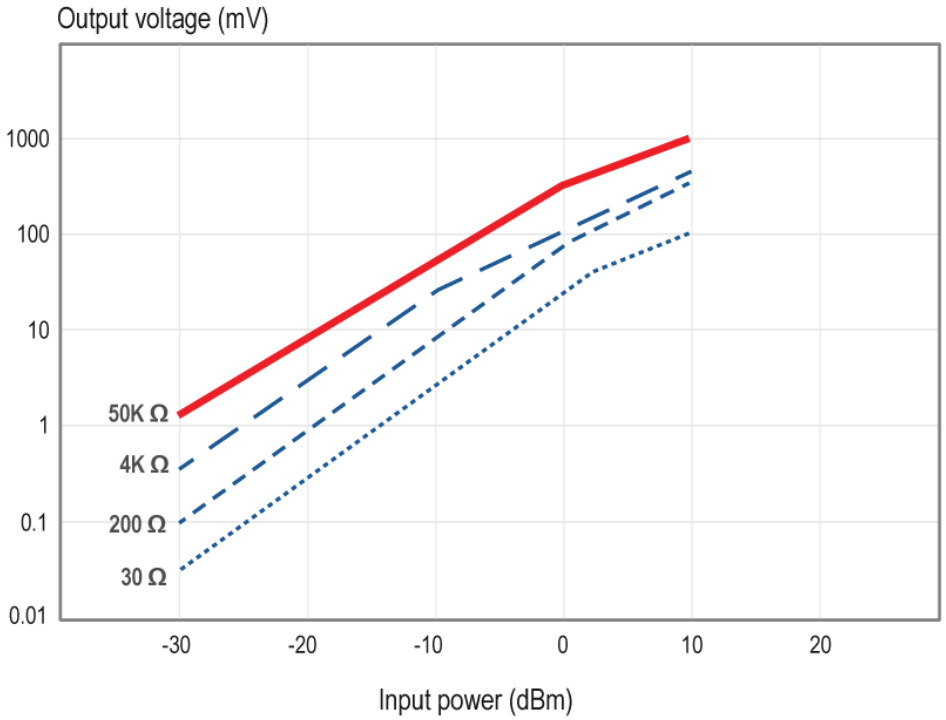


Figure 1. Typical transfer characteristics.

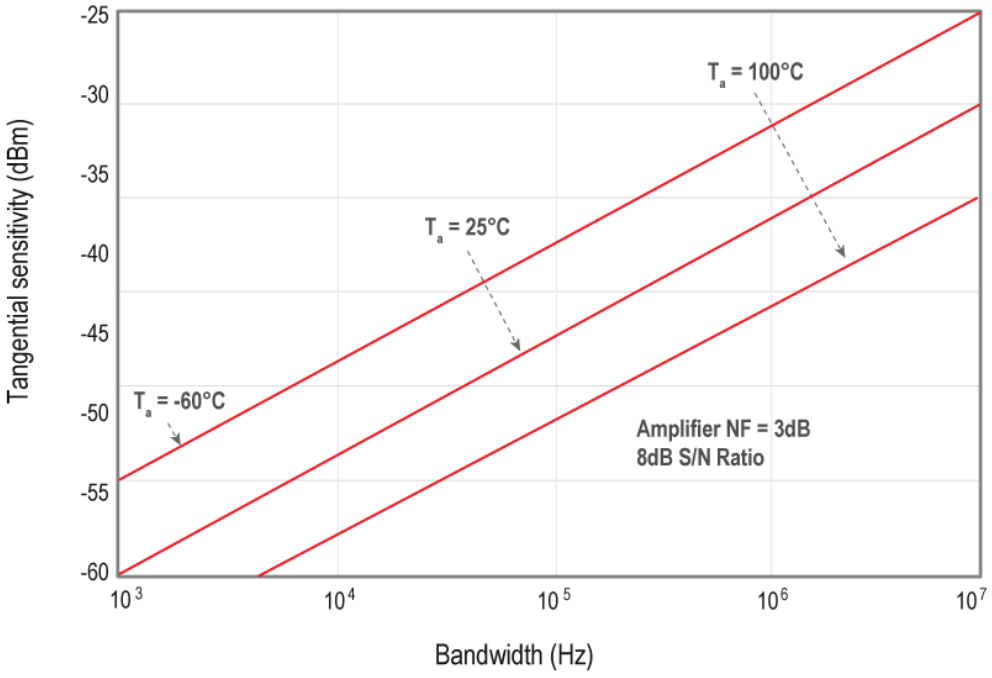


Figure 2. Typical tangential sensitivity.

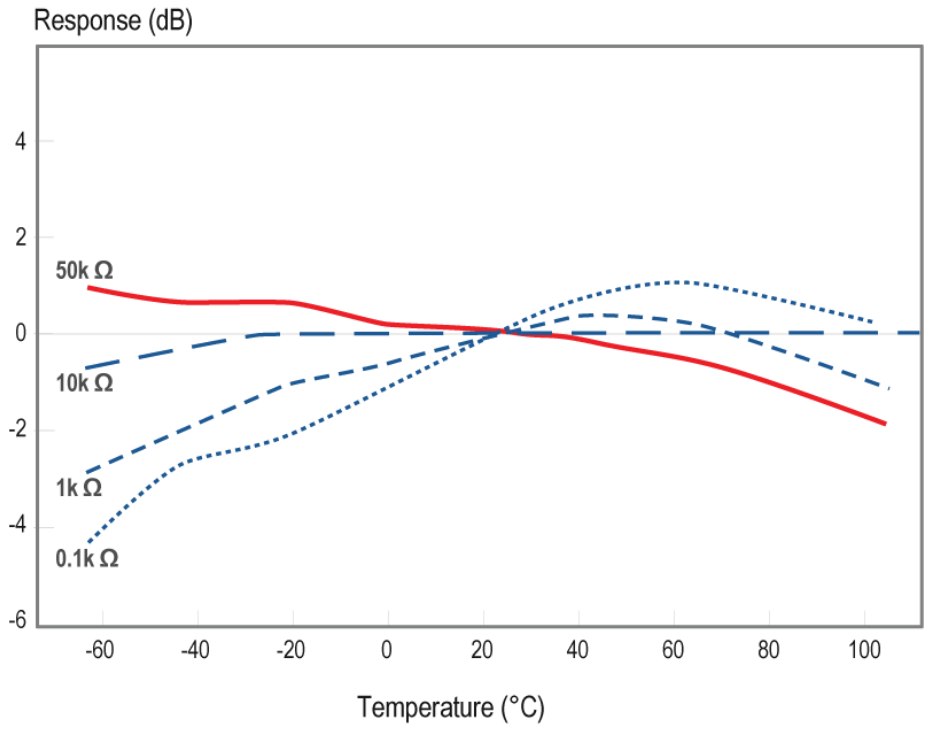


Figure 3. Typical output response with temperature (pin ² 20 dBm).

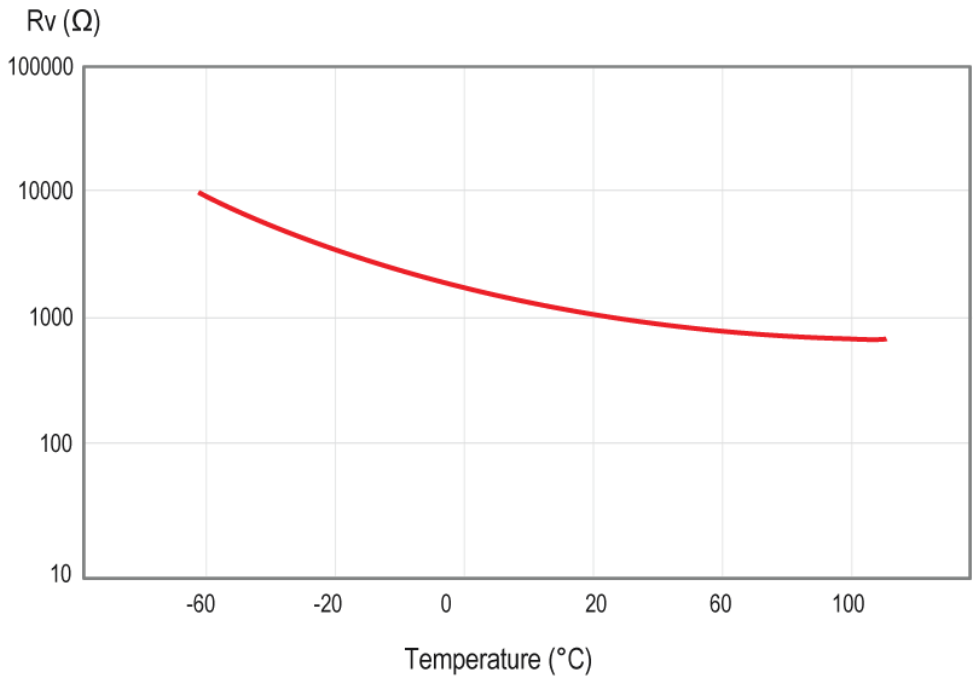


Figure 4. Typical video impedance variation with temperature.

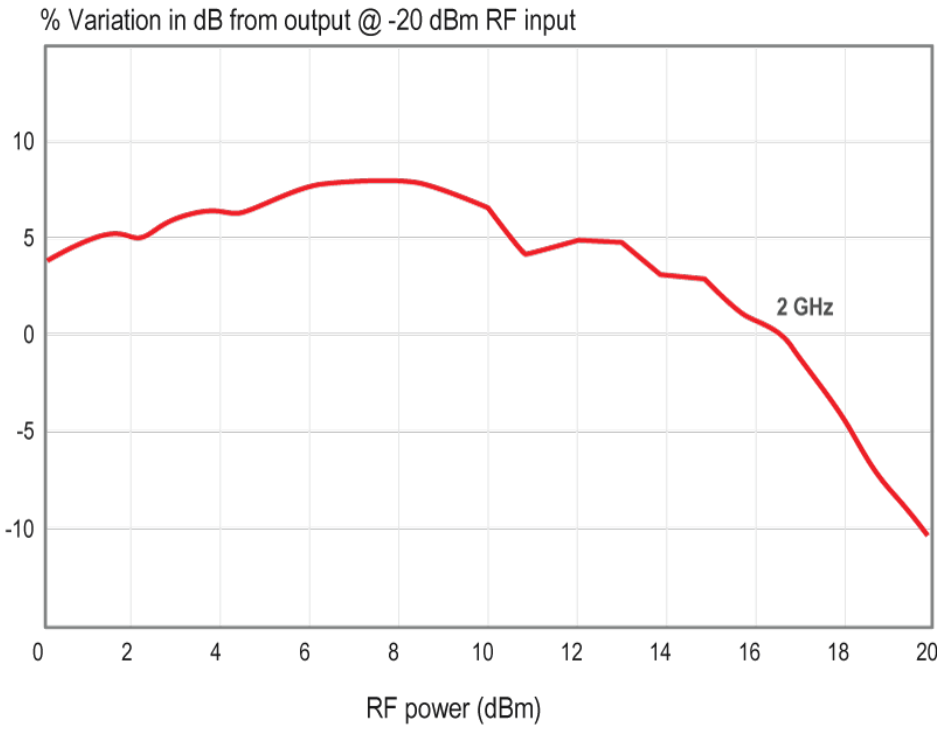


Figure 5. Typical square law deviation.

Specifications

Key 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)[1]	Optimal square law load option

Note: Above specifications are at 25° C and ² 20 dBm unless otherwise specified.

Environmental

Requirements	
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)

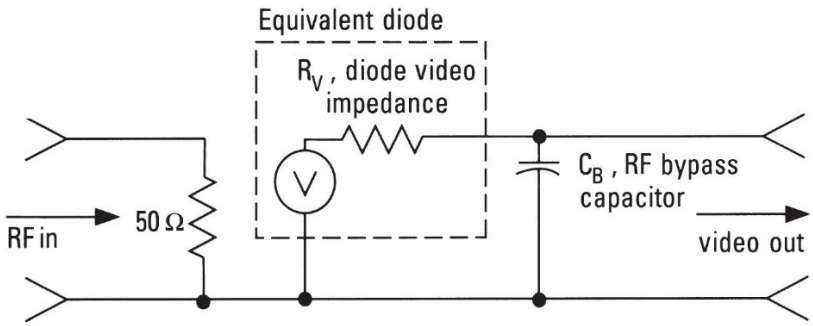


Figure 6. Equivalent circuit for 8471D with typical parameter values.

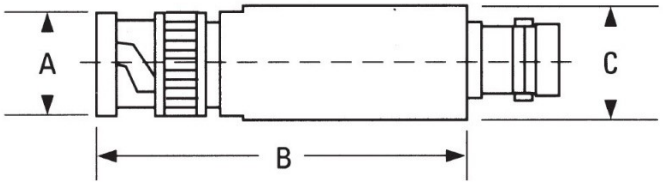
Typical values:

R_V (diode video impedance) _ 1.5 k½[2]

C_B (RF bypass capacitor) _ 6800 pF nominal

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

Keysight 8471D

A	13.72 (0.54)	 Figure 7. 8471D
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.)	

1. Option 102 external square law load extends the square law region of the detector with deviation of ± 0.5 dB from the ideal square law response.
2. At 25° C and PIN ² 20 dBm (see Figure 3)

www.keysight.com/find/8471D

Learn more at: www.keysight.com

For more information on Keysight Technologies' products, applications or services, please contact your local Keysight office. The complete list is available at: www.keysight.com/find/contactus

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