Avantek Products

Threshold Detector 10 to 2000 MHz

Technical Data

UTD-2004

Features

- **Frequency Range: 10 to 2000 MHz**
- **Sensitive Threshold: –25dBm**
- **Threshold Externally Programmable with One Resistor**
- **Wide Threshold Range: –25 to –10 dBm**
- **TTL Output**
- **Temperature Compensated Threshold**
- **2.5 mA (Typ) Power Consumption @ +5 VDC**

Applications

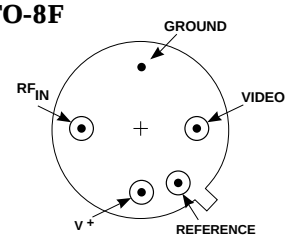
- **Specifically Designed for System Built-in Test**
- **Built for Retrofitting**
- **Channel RF Activity Monitoring**

Description

The UTD-2004 is a sensitive microwave threshold detector which provides efficient and accurate RF level measurement at critical system points. It contains a planar tunnel diode detector, precision integrated circuit operational amp, comparator, and a temperature compensated voltage reference assembly. The unit is built with chip and wire construction on a thin-film substrate for small size and ruggedness.

Pin Configuration

TO-8F



Maximum Ratings

Parameter	Maximum
DC Voltage	+20 V
Continuous RF Input Power	+10 dBm
"R" Series Burn-In Temperature	+100°C
Operating Case Temperature	–55°C to +100°C
Storage Temperature	–55°C to +100°C

Weight: (typical) 2.1 grams

Electrical Specifications

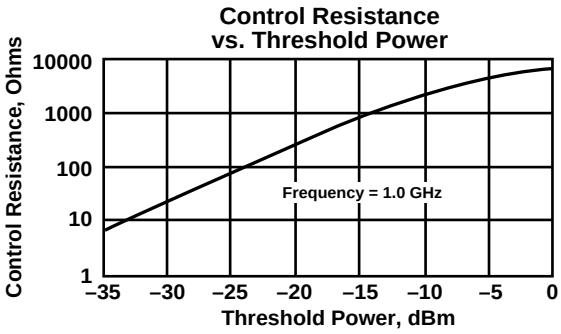
(Measured in 50 Ω system @ +5 VDC)

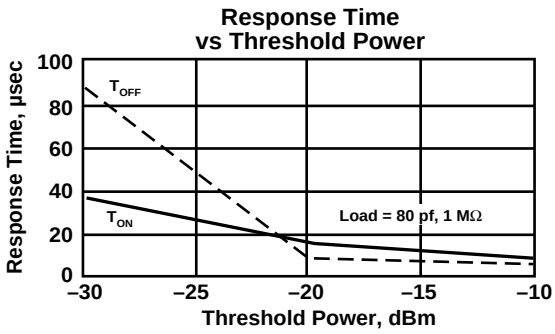
Symbol	Characteristic	Typical T_C = 25°C	Guaranteed Specifications T_C = 0 to 50°C	Guaranteed Specifications T_C = –55 to +85°C	Unit
—	Frequency (Min.)	10-2000	10-2000	100-2000	MHz
—	Input Operating Range	–25 to –10	–25 to –10	–25 to –10	dBm
—	Input Flatness (Max.)	±0.5	±1.0	±1.0	dB
—	Input VSWR (Max.)				
—	–25 < P_{IN} < –20 dBm	1.5:1	2.0:1	2.0:1	—
	–20 < P_{IN} < –10 dBm	1.8:1	2.2:1	2.2:1	—
—	Threshold Temperature Stability (Max.)	—	—	±1.5	dB
—	Threshold Hysteresis (Max.)	0.7	1.5	1.5	dB
—	Response Time (see Note 1) (Max.)				
	T_{ON}, 90% RF to TTL "1"	20	300	300	µs
	T_{OFF}, 10% RF to TTL "0"	30	300	300	µs
—	Control Resistance at Threshold Level:				
	P_{IN} = –25 dBm	50	—	—	Ω
	P_{IN} = –20 dBm	200	—	—	Ω
	P_{IN} = –10 dBm	2000	—	—	Ω
—	Output Compatibility (Standard TTL Loads) (Min.)	2	1	1	—
—	Output Voltage (see Note 2) (Min.)	3.6	2.7	2.7	V
—	Supply Voltage	5-20	5	5	V
—	Supply Current @ +5 VDC (Max.)	2.5	5.0	5.0	mA

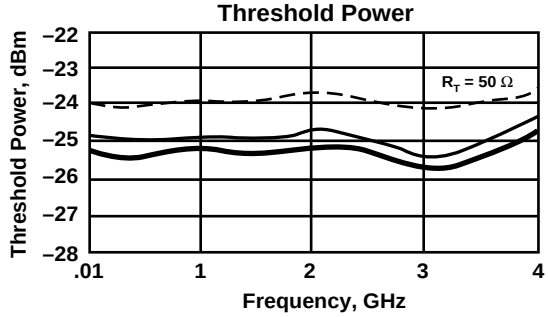
Notes: 1. Response time for input change > 3 dB above CW threshold. R_{LOAD} = 1 M Ω, C_{LOAD} = 80 pF.
2. Output voltage for P_{IN} = > threshold, R_{LOAD} = 1 M Ω.

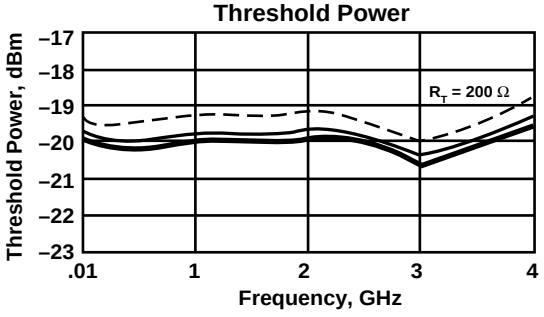
Typical Performance Over Temperature (@ +5 VDC unless otherwise noted)

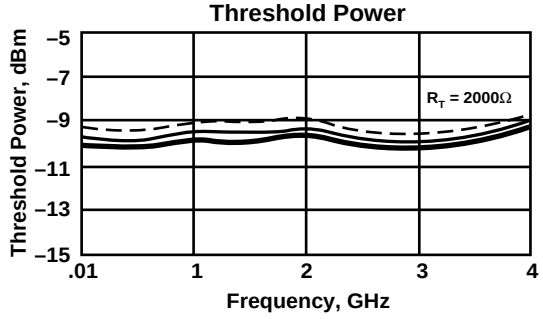
Key: +25°C
+85°C
-55°C

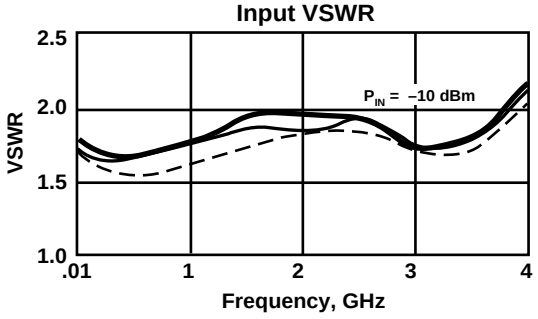




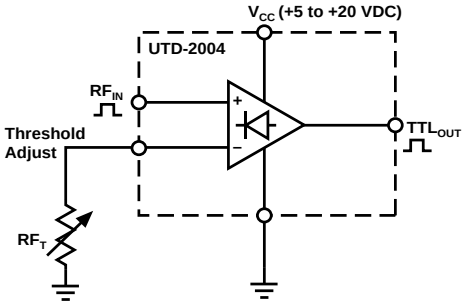








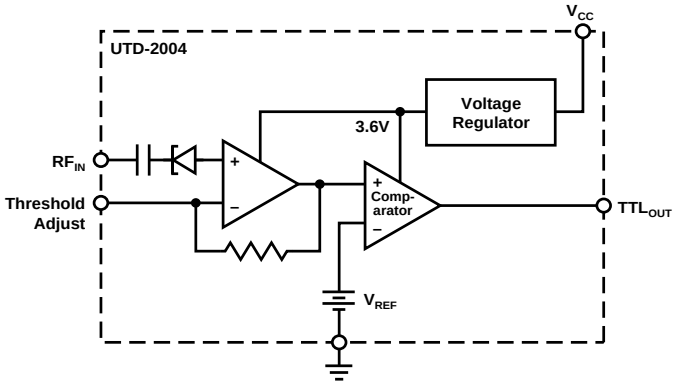
Threshold Adjust



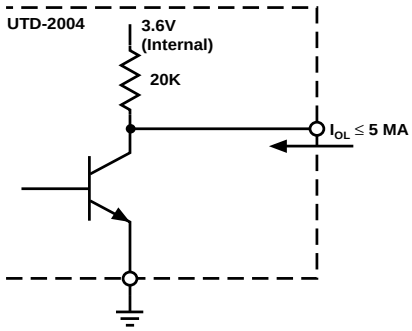
Threshold Adjust
at +15 VDC Bias

R_T, Ω	Sensitivity dBm, (typ)
50	–25
200	–20
2000	–10

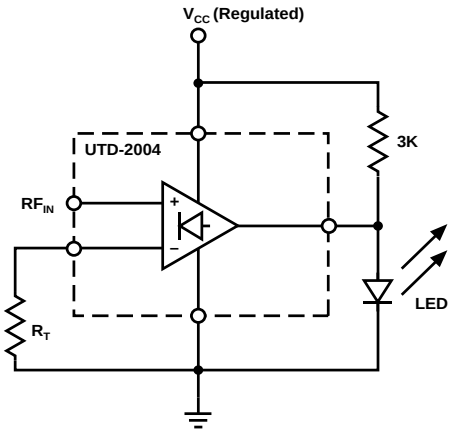
Simplified Schematic



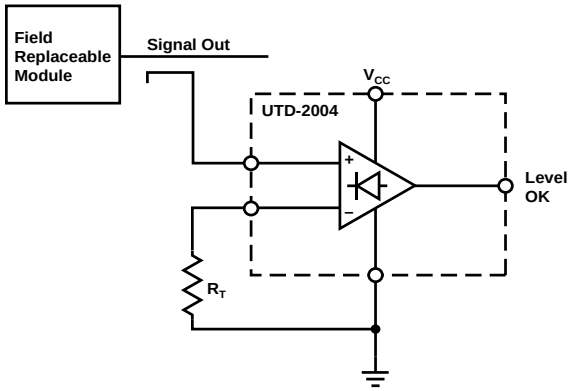
Output Schematic



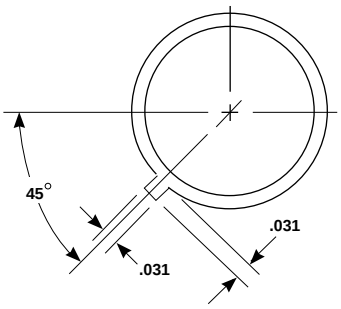
Indicator Drive Circuit

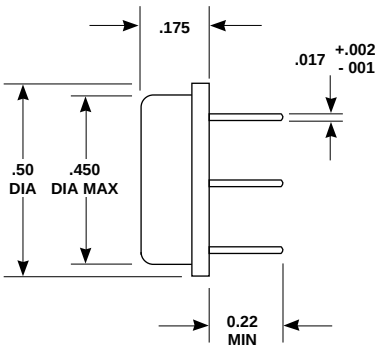


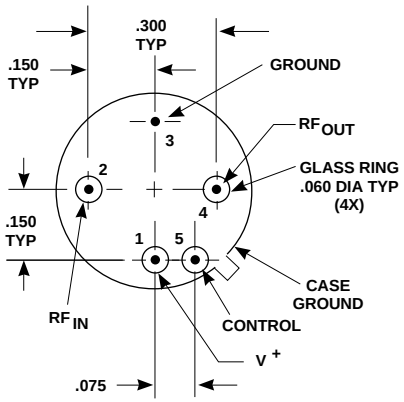
Built-In Test Detector



Case Drawings
TO-8F







APPROXIMATE WEIGHT 2.1 GRAMS

NOTES (UNLESS OTHERWISE SPECIFIED):
1. DIMENSIONS ARE SPECIFIED IN INCHES
2. TOLERANCES: xx ± .02
   xxx ± .010

H

For more information:

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Europe*

Far East/Australasia: (65) 290-6305

Canada: (416) 206-4725

Japan: (81 3) 3331-6111

*Call your local HP sales office listed in your telephone directory. Ask for a Components representative.

Data Subject to Change

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