



UTD-2004
Threshold Detector
10 to 2000 MHz

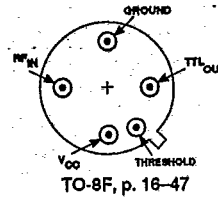
T-77-05-07

FEATURES

- Frequency Range: 10 to 2000 MHz
- Sensitive Threshold: -25 dBm
- 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 systems points. It contains a planar tunnel diode detector, precision integrated circuit operational amp,

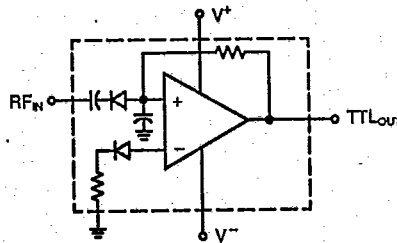
comparator, voltage regulator, and a temperature compensated voltage reference assembly. The unit is built with chip and wire construction on a thin-film substrate for small size and ruggedness.

ELECTRICAL SPECIFICATIONS (Measured in a 50-ohm system @ +15 VDC and -15 VDC nominal)

Symbol	Characteristic	Typical T = 25°C	Guaranteed Specifications		Unit
			T = 0° to 50°C	T = -55° to +85°C	
—	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.)	±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.)	1.0	1.2	1.2	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	20	—	—	Ω
	P _{IN} = -20 dBm	200	—	—	Ω
	P _{IN} = -10 dBm	2000	—	—	Ω
—	Output Compatibility (S-TTL Loads), (Min.)	—	3	3	—
—	Output Voltage (see Note 2)	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.

SCHEMATIC



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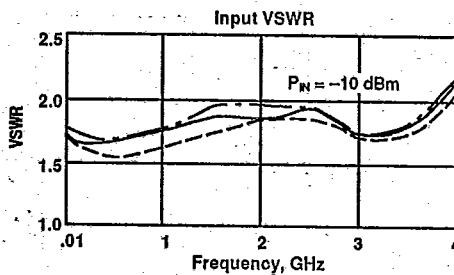
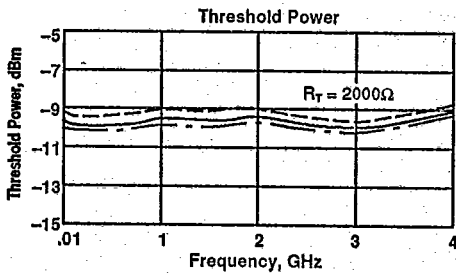
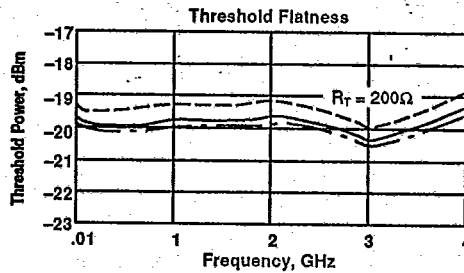
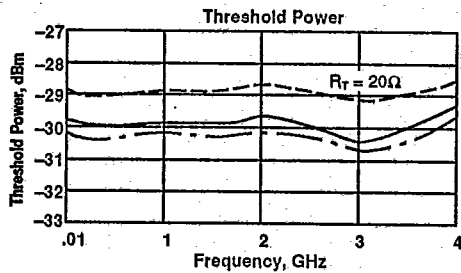
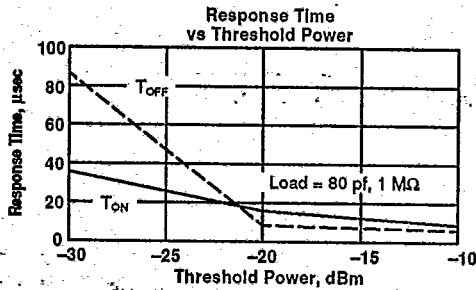
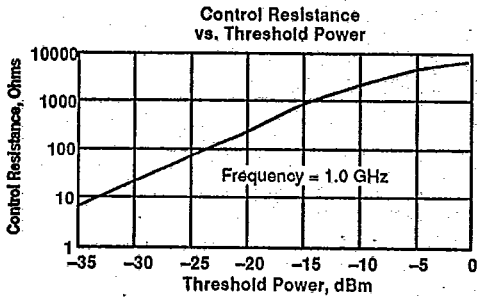
MAXIMUM RATINGS

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

WEIGHT: (typical) 2.1 grams

TYPICAL PERFORMANCE OVER TEMPERATURE (@ +5 VDC unless otherwise noted)

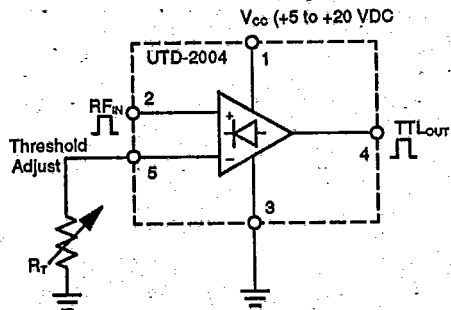
KEY: +25°C ———
+85°C - - - -
-55°C - · - · -



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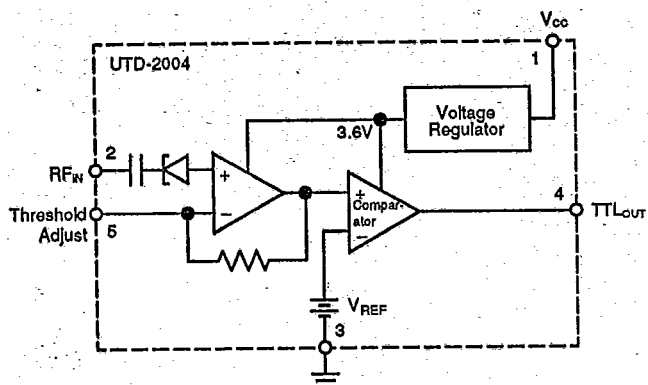
THRESHOLD ADJUST



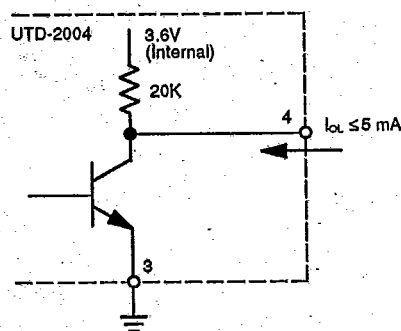
THRESHOLD ADJUST
AT +15 VDC BIAS

R_T, Ω	SENSITIVITY dBm (typ)
20	-25
200	-20
2000	-10

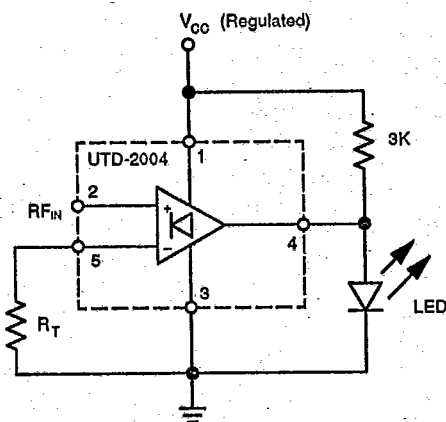
SIMPLIFIED SCHEMATIC



OUTPUT SCHEMATIC



INDICATOR DRIVE CIRCUIT



BUILT-IN TEST DETECTOR

