TELEDYNE
MICROWAVE SOLUTIONS
Everywhereyoulook™

Analog Level Detectors
10 to 1000 MHz

Technical Data

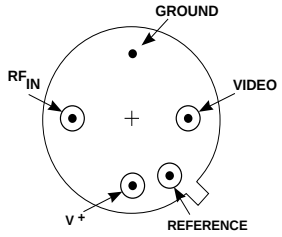
UTD-1000/1001

Features
- **–120 mV Output for –10 dBm Pin**
- **±1.0 dB Flatness**
- **50- or 300-Ohm Impedance**

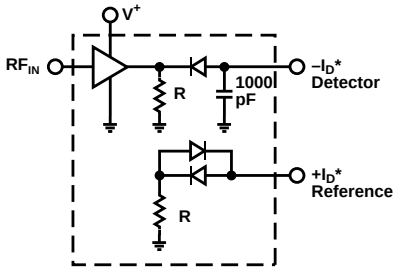
Applications
- **Specifically Designed for System Built-in Test**
- **RF/IF Monitor**
- **Level Control**
- **UTD-1001 Can Be Used Without a Coupler in Many Cases**

Description
The UTD-1000 has an input impedance of 50 ohms. The UTD-1001 has an input impedance of greater than 300 ohms. In all other respects the detectors are similar. The level detector consists of an amplifier stage that drives a Schottky-barrier detector diode. Matched back-to-back silicon diodes which are closely thermally-coupled to the detector provide a DC tracking reference.

Pin Configuration
TO-8F



Schematic



* Requires external bias resistors see "Application Note", Section 7.

Maximum Ratings

Parameter	Maximum
Bias Current (diode)	1 mA
Continuous RF Input Power	+17.0 dBm
Operating Case Temperature	–54°C to +125°C
Storage Temperature	–62°C to +150°C
"R" Series Burn-In Temperature	+125°C
Pulse Input Power (1.0 minute max.)	100 mW
Junction Temperature Above Case Temperature	3°C

Weight: (typical) 2.1 grams

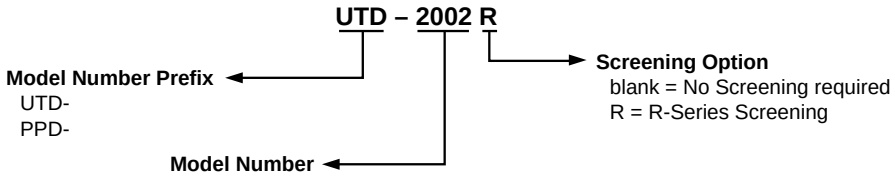
Electrical Specifications

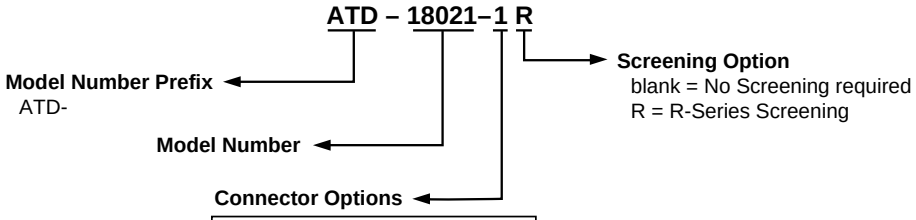
(Measured in 50 Ω system @ +15 VDC nominal)

Symbol	Characteristic	Typical T_C = 25°C	Guaranteed Specifications T_C = 0 to 50°C	Guaranteed Specifications T_C = –55 to +85°C	Unit
—	Detected Voltage (Min.) f = 500 MHz, cond.[1,2]	–120	–90	—	mV
—	Flatness (referred to input) (Max.) f = 10-1000 MHz, cond.[1,2]	±0.7	±1.0	—	dB
—	Variation Over Temperature (referred to input), f = 500 MHz, cond.[1,2,3]	±1.0	—	—	dB
—	Input VSWR, 50 Ω (UTD-1000 only) (Max.) f = 10-500 MHz	1.5:1	1.7:1	—	—
—	Input Impedance (UTD-1001 only) Equivalent resistance	300Ω	—	—	—
	Equivalent capacitance	3.3 pf	—	—	—
—	Input 3rd Order Intercept Point f = 10-500 MHz	+20	—	—	dBm
—	Output Offset Voltage (Max.) $I_D = I_{REF}$ = 50 µA, no RF drive	±10.0	±15.0	—	mV
—	Differential Voltage Tracking	±5.0	—	—	mV
—	Output Capacitance	1000	1300	—	pf

Conditions:
1. I_D = 50 µA, R = 10K Ω
2. P_{IN} = –10 dBm (RF input)
3. Typical variation over –55° to +85°C

Product Options

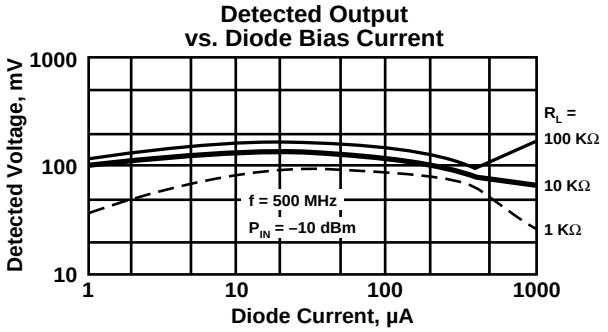


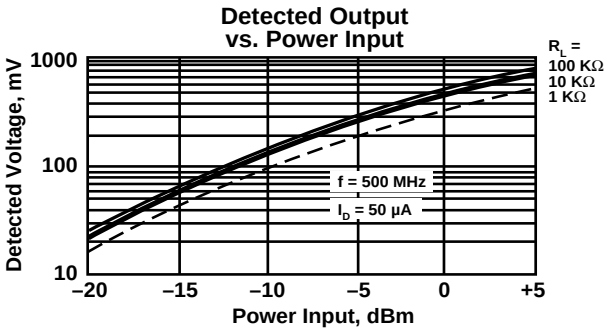


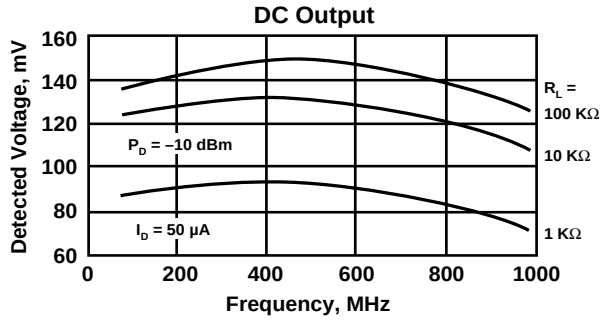
Connector Option Table		
Dash No.	RF_{IN}	RF_{OUT}
-1	Female	Female
-2	PIN	PIN
-3	Male	Male
-4	Male	Female
-5	Female	Male

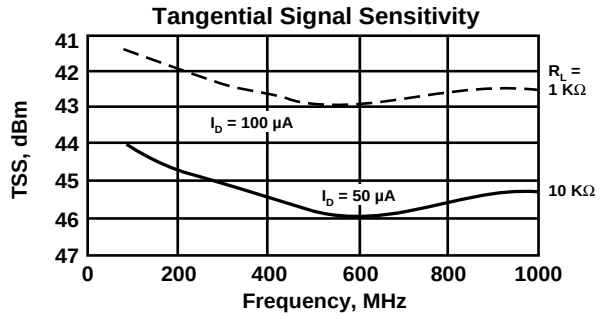
Typical Performance @ 25°C

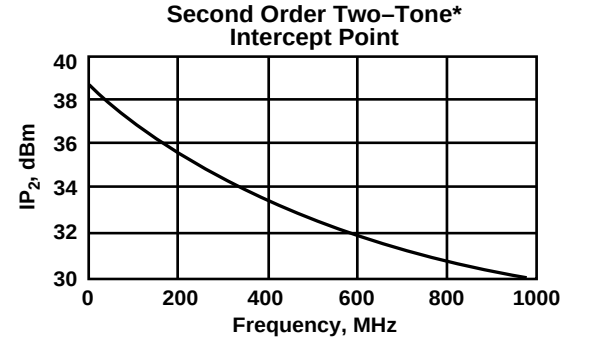
Key: +25°C ——
+85°C – – –
-55°C ▬▬

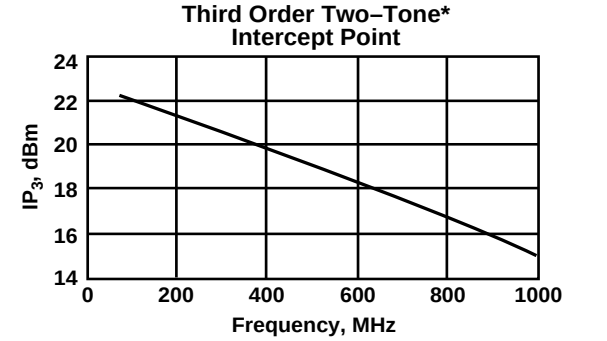






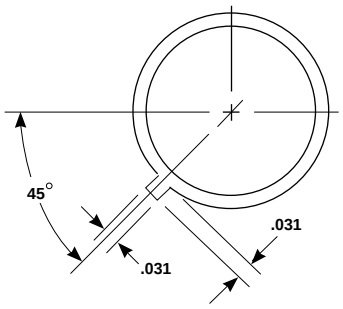


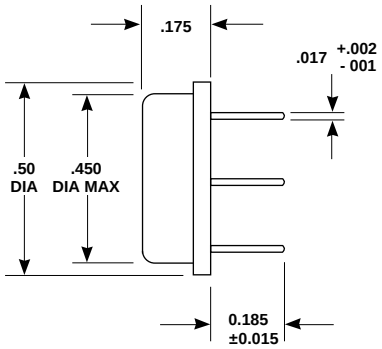


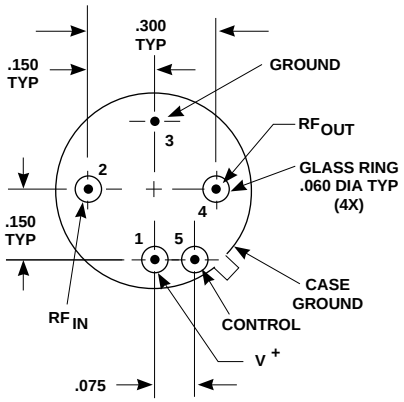


* Distortion Curves relative to the UTD-1001 operated in shunt with a 50Ω RF line.
(See “Application Note” in Section 7.)

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

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