

DTS8003 0.1 TO 8.0 GHz THRESHOLD DETECTOR

Typical Values @ +25 °C

DTS8003

Wide Frequency Range	0.1 to 8.0 GHz
Wide Power Range	-10.0 to +15.0 dBm
Temperature Stability	± 0.50 dB
Power Flatness	± 0.50 dB
Standard Size TO-8 or Surface Mount Package	
External Adjustable Threshold Level, Fast Response Time, Low Drift, Insensitive Threshold Level to Applied Voltage	

SPECIFICATIONS*

Parameter	Typical	Guaranteed	
		0 to 50 °C	-40 to +85 °C
Frequency (Min.)	0.1-9.0 GHz	0.1-8.0 GHz	0.1-8.0 GHz
Input Power Range (Min.)	-10 to +15 dBm*	-5 to +15 dBm*	-5 to +15 dBm*
VSWR (Max.)	1.2:1	1.7:1‡	1.7:1‡
Power Flatness (Max.)	±0.5 dB	±0.75‡ dB	±0.75‡ dB
Threshold Temperature Stability (Max.)	±0.25 dB	±0.5 dB	±0.5 dB
Threshold Hysteresis (Max.)	±0.2 dB	±0.5 dB	±0.5 dB
Pulse Response (Max.)	50 [^] μsec	100 [^] μsec	100 [^] μsec
Logic: Pin > Pth	1	1	1
Output Voltage Hi @ 5mA source	4.4 Volts	3.5 Volts	3.5 Volts
Output Voltage Lo @ 5mA sink	0.1 Volts	0.25 Volts	0.25 Volts
Supply Current (Max.)	1.0 mA	2.0 mA	2.0 mA

* Measured in a 50 Ohm system at $V_S=+5.0$ Vdc. $R_{TH}=100$ ohm to 100 KOhm unless otherwise specified.
[^] 50% RF to 10 or 90% Video Response time for input change 3 dB above Pth. ‡ For TO-8 model (DTC8003) VSWR degraded to 2.0:1 above 4 GHz and flatness degraded to ±1.0 dB above 7 GHz.

MAXIMUM RATINGS

DC Voltage	+15 V
Continuous RF Input Power	+20.0 dBm
Operating Case Temperature	-40 °C to +125 °C
Storage Temperature	-65 °C to +150 °C
Burn-In Temperature	+125 °C
Detector Thermal Resistance ¹ (θjc)	+3500 °C/Watt
Temperature Rise @ 0 dBm	+3.5 °C

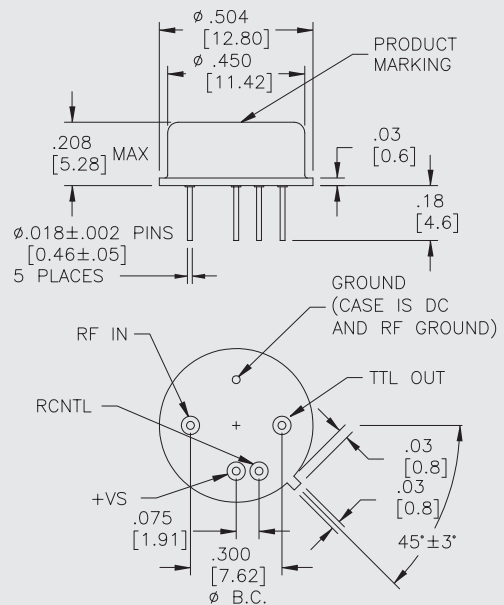
¹ Thermal resistance is based on RF input power. Ratings based on +25 °C.

APPLICATION NOTES

- ✦ This unit is DC coupled and employs a RF choke at the input (DC short).
- ✦ DO NOT bypass the Threshold Control pin. Capacitance greater than 50pF may cause instabilities. Keep the threshold programming resistor or circuit close to this pin.
- ✦ Average power detection is obtained at power levels below approximately +7 dBm.
- ✦ The output of this unit is derived from an op-amp, not a true logic device.
- ✦ Connect external threshold resistor from Rcntl port to ground.

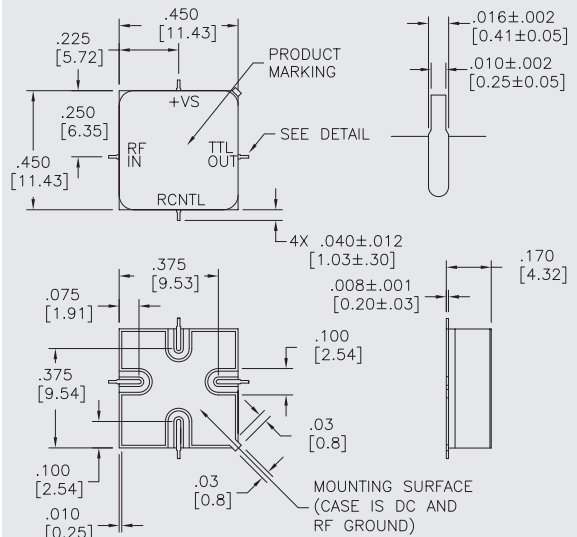
DTC8003

TO-8 Package for Detectors



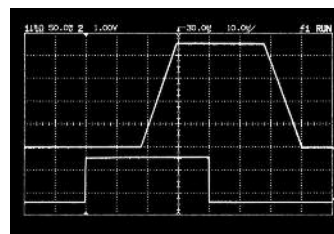
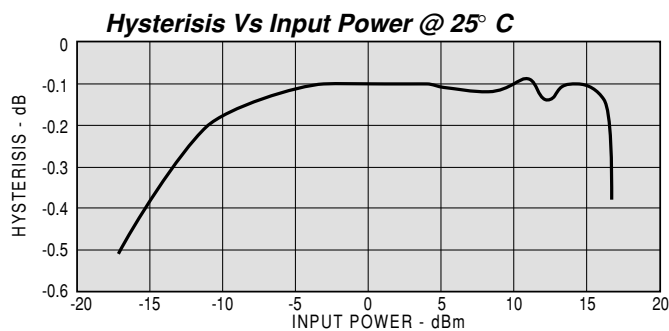
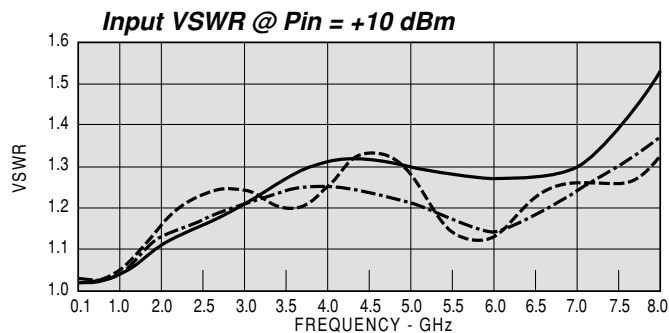
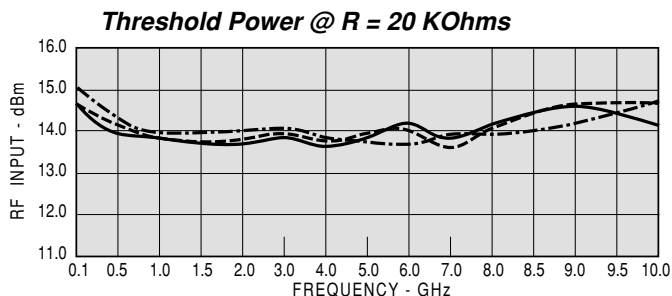
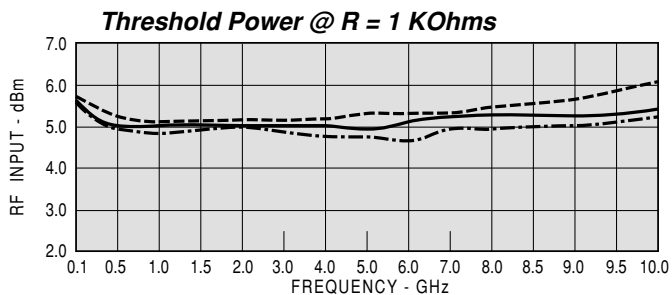
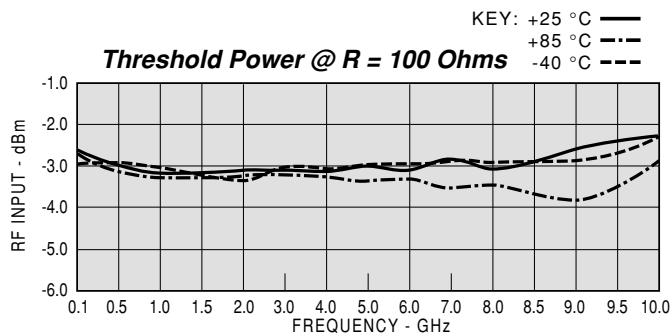
DTS8003

SMT0-8 Package for Detectors

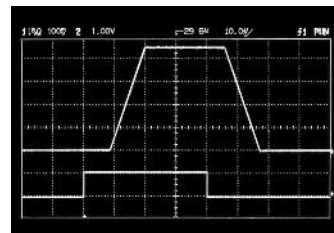


DIMENSIONS ARE IN INCHES [MILLIMETERS]

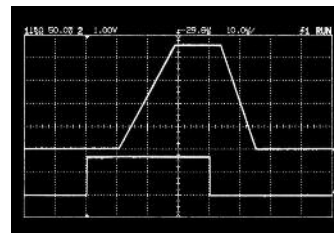
TYPICAL PERFORMANCE



Pulse Response @ R_{TH} = 100 Ohms



Pulse Response @ R_{TH} = 1 KOhms



Pulse Response @ R_{TH} = 20 KOhms

Top Trace: TTL Logic Out
Bottom Trace: RF Input
Time Base: 10.0 μs/div