

DTS8031

0.5 TO 8.0 GHz ULTRA HI-SPEED THRESHOLD DETECTOR

Typical Values @ +25 °C

Wide Frequency Range	DTS8031 0.5 to 8.0 GHz
Super-fast Pulse Response	5-10 ns
Temperature Stability	± 0.50 dB
Power Flatness	± 0.50 dB
Standard Size SMTO-8 Surface Mount Package	
External Adjustable Threshold Level, Low Drift	

SPECIFICATIONS*

Parameter	Typical	Guaranteed	
		0 to 50 °C	-40 to +85 °C
Frequency (Min.)	0.5-10.0 GHz	0.5-8.0 GHz	0.5-8.0 GHz
Input Power Range (Min.)	-15 to -3 dBm*	-15 to -5 dBm*	-15 to -5 dBm*
VSWR (Max.)	1.5:1	2.0:1‡	2.0:1‡
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	±1.0 dB	±1.5 dB
Pulse Response (Max.) At 50 Ω 8 pF load	5 ns	10 ^Δ ns	12 ^Δ ns
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	0.27 Volts	0.5 Volts	0.5 Volts
Supply Current (Max.)	7.0 mA	12.0 mA	15.0 mA

* Measured in a 50 Ohm system at V_S=+5.0 Vdc. R_{TH}=2 Ohm to 2 KOhm unless otherwise specified.

^Δ 50% RF to 10 or 90% Video Response time for input change 3 dB above Pth. ‡ Pin<=-15 dBm

MAXIMUM RATINGS

DC Voltage	+6 V
Continuous RF Input Power	+14.0 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

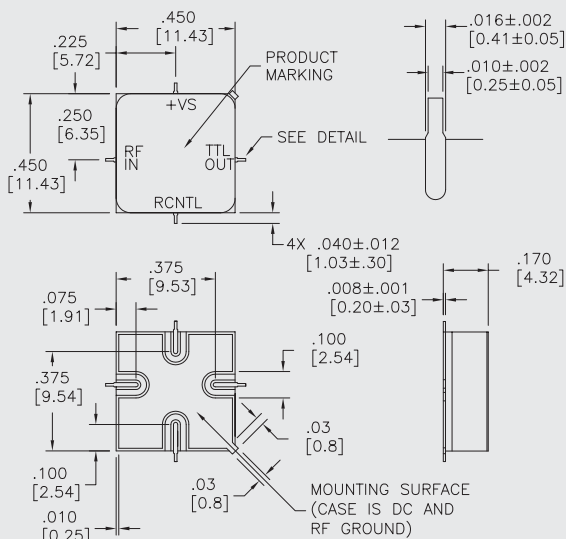
¹ Thermal resistance is based on RF input power. Ratings based on +25 °C.

APPLICATION NOTES

- ✦ RF input is AC coupled (DC block).
- ✦ DTS8031 contains a plastic packaged IC-Ultra Hi-speed comparator.
- ✦ DTS8031 provides maximum performance with minimum output capacitance. A heavy capacitive load slows down the TTL output response.
- ✦ Connect external threshold resistor from Rcntl port to ground.

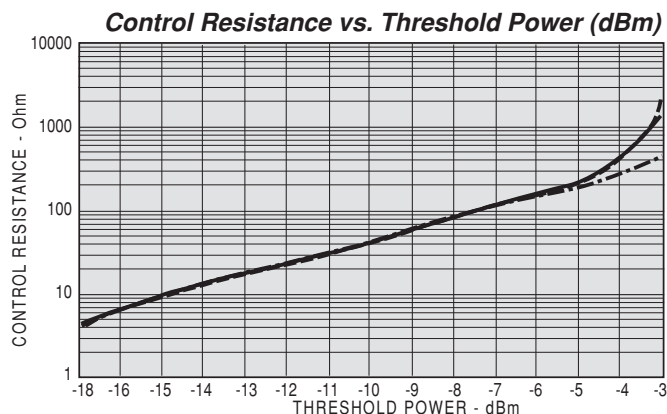
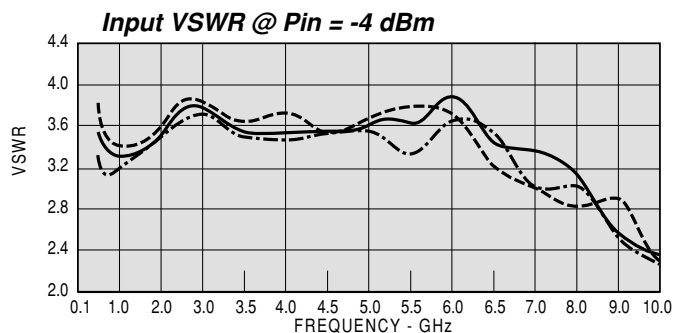
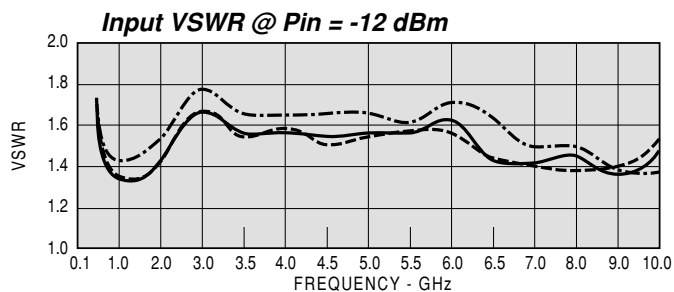
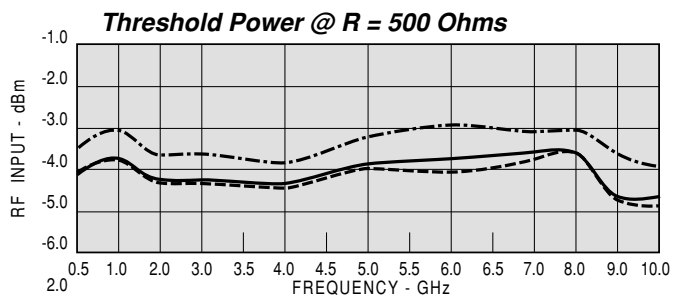
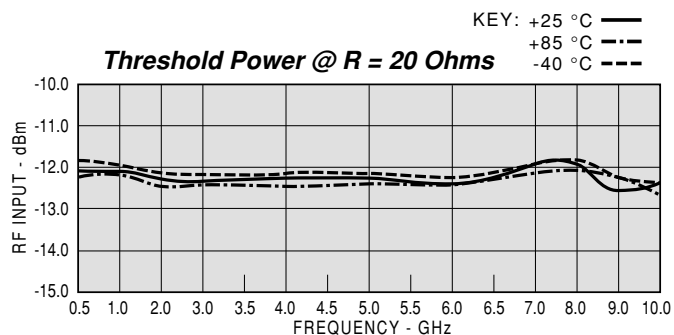
DTS8031

SMTO-8 Package for Detectors

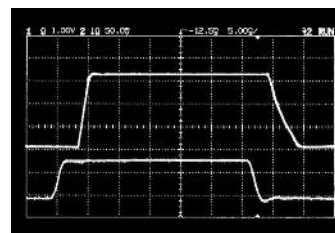


DIMENSIONS ARE IN INCHES [MILLIMETERS]

TYPICAL PERFORMANCE



Pulse Response @ $R_{TH} = 20\text{ Ohms}$ / Load = 50 Ohms



Pulse Response @ $R_{TH} = 500\text{ Ohms}$ / Load = 50 Ohms

Top Trace: TTL Logic Out Bottom Trace: RF Input
Time Base: 5.0 ns/div