

# DTS8031

## 0.5 TO 8.0 GHz ULTRA HI-SPEED THRESHOLD DETECTOR

Typical Values @ +25 °C

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

### 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 <sup>Δ</sup> ns	12 <sup>Δ</sup> 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<sub>S</sub>=+5.0 Vdc. R<sub>TH</sub>=2 Ohm to 2 KOhm unless otherwise specified.  
<sup>Δ</sup> 50% RF to 10 or 90% Video Response time for input change 3 dB above Pth. ‡ Pin<<-15 dBm

### MAXIMUM RATINGS

<b>DC Voltage</b> .....	<b>+6 V</b>
<b>Continuous RF Input Power</b> .....	<b>+14.0 dBm</b>
<b>Operating Case Temperature</b> .....	<b>-40 °C to +125 °C</b>
<b>Storage Temperature</b> .....	<b>-65 °C to +150 °C</b>
<b>Burn-In Temperature</b> .....	<b>+125 °C</b>
<b>Detector Thermal Resistance<sup>1</sup> (θjc)</b> .....	<b>+3500 °C/Watt</b>
<b>Temperature Rise @ 0 dBm</b> .....	<b>+3.5 °C</b>

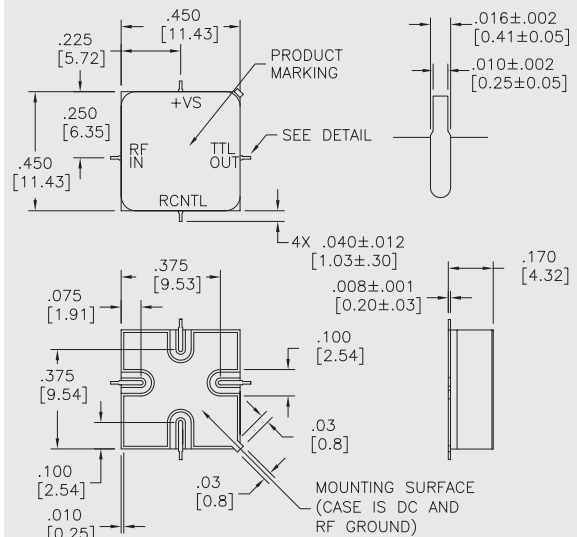
<sup>1</sup> Thermal resistance is based on RF input power. Ratings based on +25 °C.

### 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.

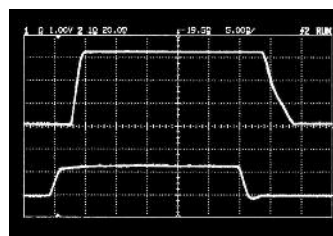
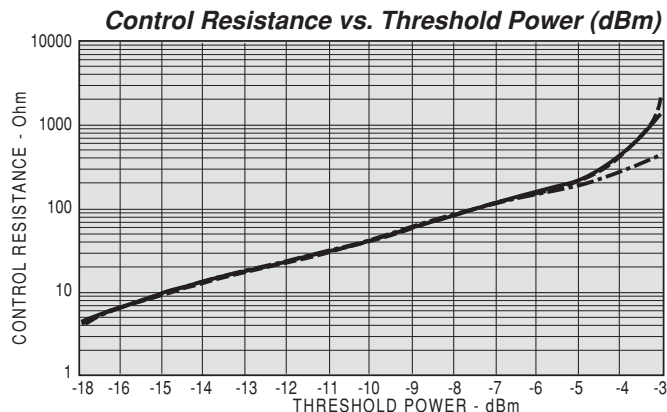
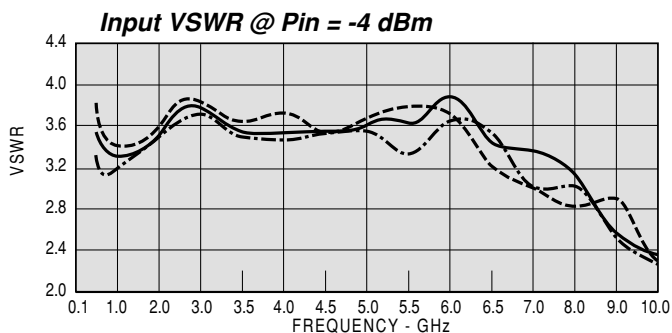
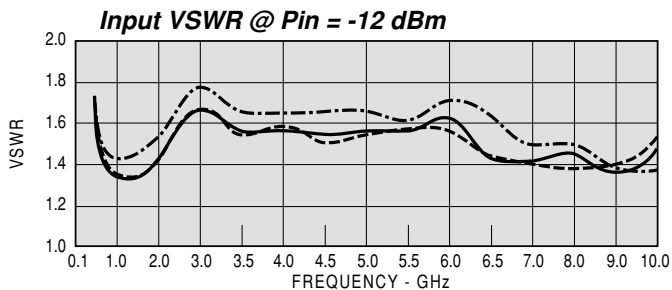
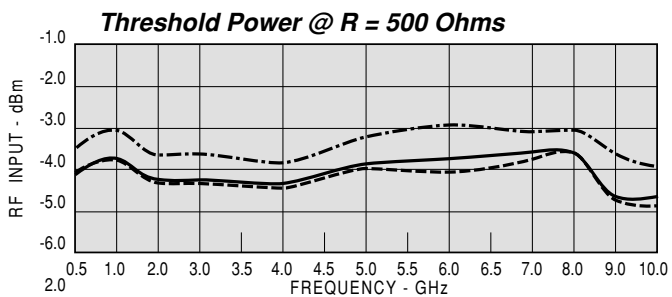
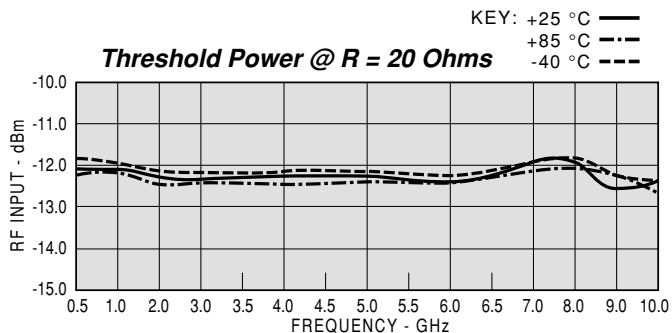
### DTS8031

#### SMTO-8 Package for Detectors



DIMENSIONS ARE IN INCHES [MILLIMETERS]

**TYPICAL PERFORMANCE**



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



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

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