

# DTQ6001

# 0.1 TO 6.0 GHz THRESHOLD DETECTOR

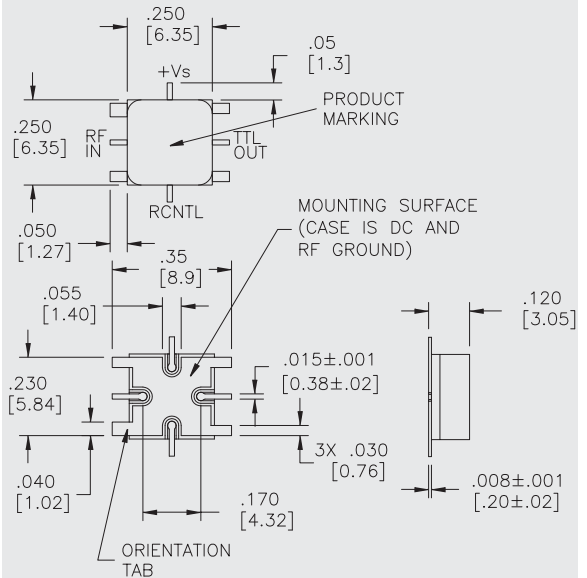
Typical Values @ +25 °C

<b>Wide Frequency Range</b> .....	<b>0.1 to 6.0 GHz</b>
<b>Wide Power Range</b> .....	<b>-30.0 to -5.0 dBm</b>
<b>Temperature Stability</b> .....	<b>± 0.50 dB</b>
<b>Power Flatness</b> .....	<b>± 0.50 dB</b>
<b>Cougar Q Package</b>	

## DTQ6001

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### SM-25 for Detectors



## SPECIFICATIONS\*

Parameter	Typical	Guaranteed	
		0 to 50 °C	-55 to +85 °C
Frequency (Min.)	0.1-7.0 GHz	0.1-6.0 GHz	0.1-6.0 GHz
Input Power Range (Min.)	-30 to -5 dBm*	-25 to -5 dBm*	-25 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	±0.2 dB	±0.5 dB	±0.5 dB
Pulse Response	15 µsec^‡	50 µsec^‡	50 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	0.5 Volts	0.5 Volts
Supply Current	6.0 mA	8.0 mA	8.0 mA

\* Measured in a 50 Ohm system at  $V_s=+5.0$  Vdc.  $R_{th} = 10$  to 100 KOhm. ^  $R_{th} = 100$  to 20 KOhm.  
† Pin  $\leq -15$  dBm. ‡ 50% RF to 10 or 90% Video Response time for input change  $\geq 3$  dB above Pth.

## MAXIMUM RATINGS

<b>DC Voltage</b> .....	<b>+5 V</b>
<b>Continuous RF Input Power</b> .....	<b>+14.0 dBm</b>
<b>Operating Case Temperature</b> .....	<b>-55 °C to +100 °C</b>
<b>Storage Temperature</b> .....	<b>-65 °C to +125 °C</b>
<b>Burn-In Temperature</b> .....	<b>+100 °C</b>
<b>Detector Thermal Resistance<sup>1</sup> (<math>\theta_{jc}</math>)</b> .....	<b>+3500 °C/Watt</b>
<b>Temperature Rise @ 0 dBm</b> .....	<b>+3.5 °C</b>

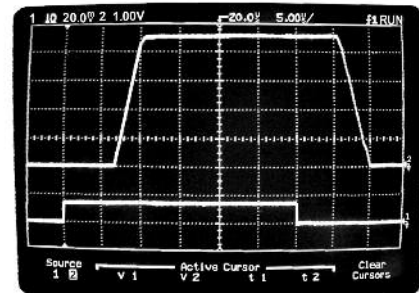
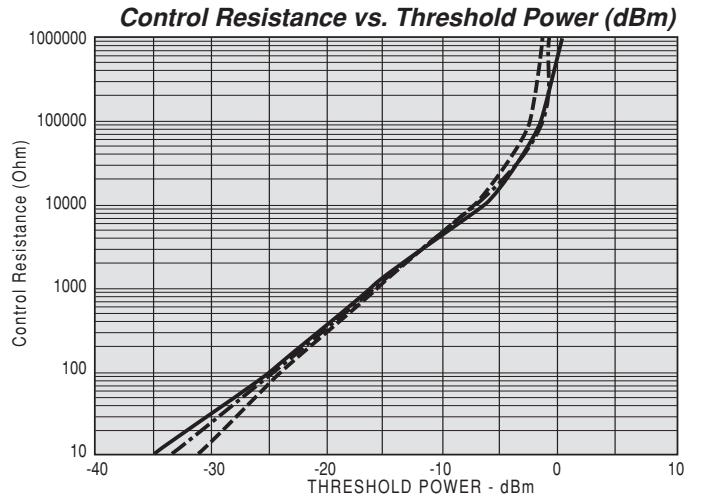
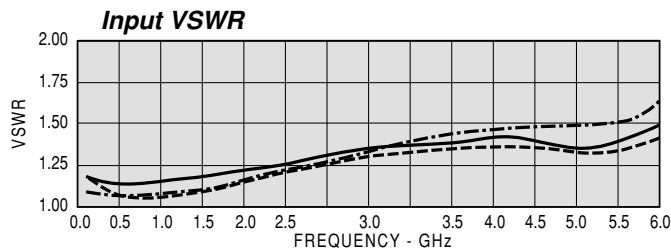
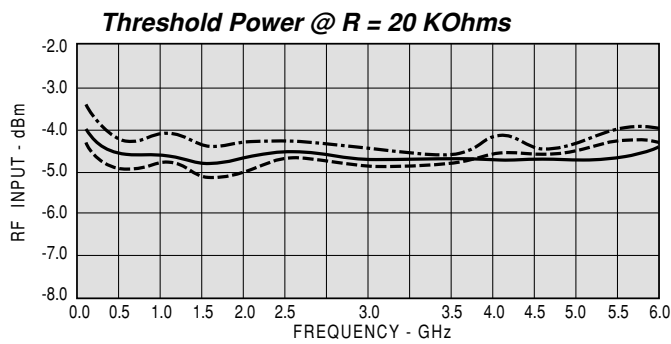
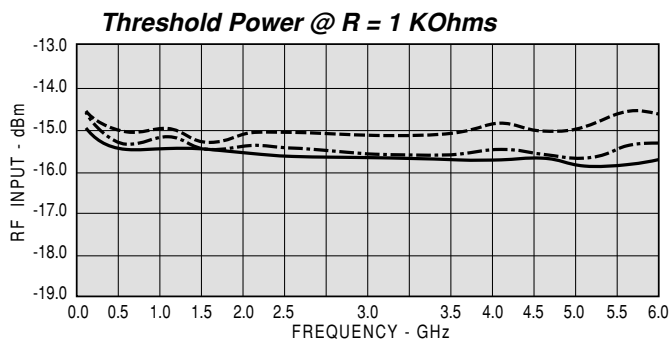
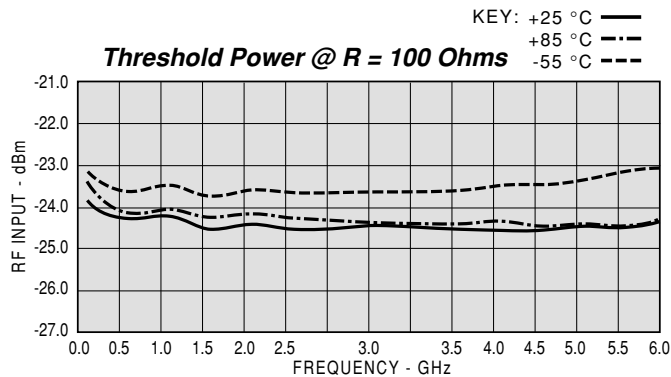
<sup>1</sup> Thermal resistance is based on RF input power. Ratings based on +25 °C.

## APPLICATION NOTES

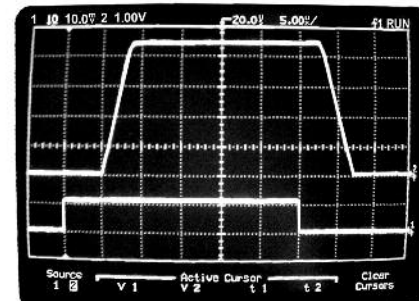
- ✦ This unit is DC coupled and employs a RF choke at the input (DC short).
- ✦ DO NOT bypass the Threshold Control pin. Capacitance greater than 50pF may cause instabilities. Keep the threshold programming resistor or circuit close to this pin.
- ✦ Average power detection is obtained at power levels below approximately -13 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.

DIMENSIONS ARE IN INCHES [MILLIMETERS]

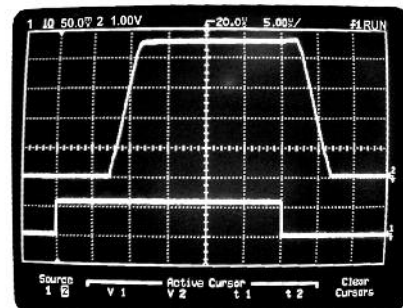
**TYPICAL PERFORMANCE**



**Pulse Response @ 100 Ohms**



**Pulse Response @ 1 KOhms**



**Pulse Response @ 20 KOhms**

Top Trace: TTL Logic Out  
 Bottom Trace: RF Input  
 Time Base: 5.0  $\mu$ s/div