TELEDYNE
MICROWAVE SOLUTIONS
Everywhereyoulook™

Threshold Detector
.1 to 6 GHz

Technical Data

PSD-6002-25

Features

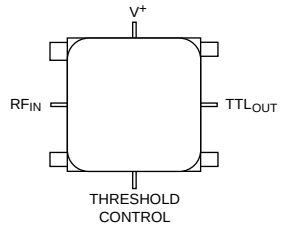
- **Frequency Range: 0.1 to 6 GHz usable to 8 GHz**
- **Threshold Externally Programmable with Resistor or Voltage**
- **Temperature Compensated**
- **TTL Output**
- **12 mA (typ) Power Consumption @ +15 VDC**
- **Surface Mount Package**

Description

The PSD-6002 is a microwave threshold detector which provides a TTL "1" output for RF input levels above a settable threshold. It contains a Schottky diode detector, a precision amp, comparator and a temperature compensated voltage reference. The unit is built with chip and wire construction on a thin-film substrate for small size and ruggedness.

Pin Configuration

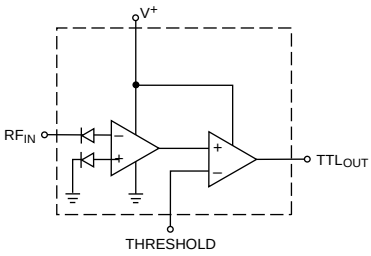
SM-25DD



Applications

- **Channel Activity Monitoring**
- **Excessive VSWR Indicator**
- **Gain Switch Control**

Schematic



Maximum Ratings

Parameter	Maximum
DC Voltage	±17 Volts
DC Voltage Reference	±2 Volts
Continuous RF Input Power	+15 dBm
Operating Case Temperature	–55 to +125°C
Storage Temperature	–62 to +150°C
"R" Series Burn-In Temperature	+125°C

Thermal Characteristics

θ_{JC}	35°C/W
Temperature Rise (No Load)	15°C
Temperature Rise (Output S.C.)	45°C

Weight: (typical) 0.5 grams

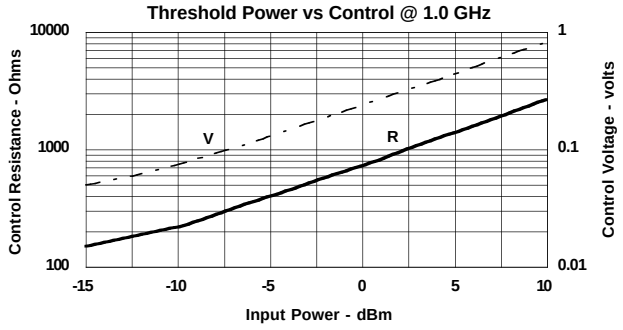
Electrical Specifications

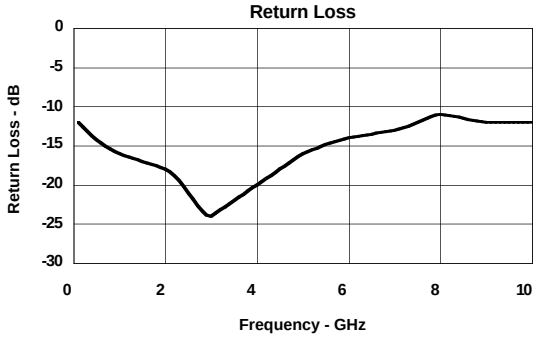
(Measured in 50 Ω system @ +15 VDC nominal unless otherwise noted)

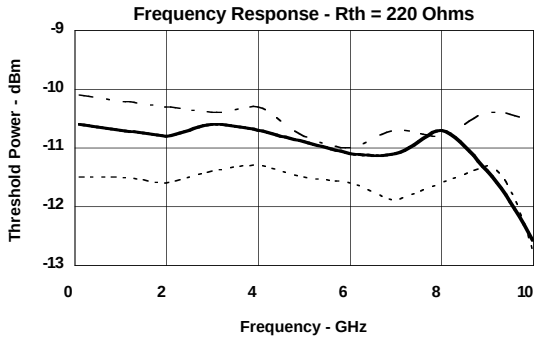
Symbol	Characteristic	Typical	Guaranteed Specifications		Unit
		T_C = 25°C	T_C = 0 to 50°C	T_C = –55 to +85°C	
—	Frequency (Min.)	.1–6	.1–6	.1–6	GHz
—	Input Flatness (Max.) Pin = -10 to +10 dBm	±0.7	±1.0	±1.0	dB
—	Input Operating Range	-10 to +10	-10 to +10	-10 to +10	dBm
—	Input VSWR (Max.), P_{IN} = -10 dBm	1.5:1	2.0:1	2.0:1	—
—	Threshold Temperature Stability (Max.)				
	@ -10 dBm Input Power	—	±1.0	±1.5	dB
	@ 0 dBm Input Power	—	±0.7	±1.0	dB
	@ +10 dBm Input Power	—	±0.5	±0.7	dB
—	Threshold Level Control				
	@ -10 dBm Input Power	75/220	—	—	mV/Ω
	@ 0 dBm Input Power	250/800	—	—	mV/Ω
	@ +10 dBm Input Power	900/3100	—	—	mV/Ω
—	Threshold Hysteresis				
	Resistance Control	0.5	—	—	dB
	Voltage Control	0.1	—	—	dB
—	Control Terminal Current	0.3	—	—	mA
—	Output Compatibility	TTL	TTL	TTL	—
—	Output Above P_{IN} Threshold (Min.)	2.7	2.7	2.7	V
—	Output Short Circuit Current (Min.)	3.0	2.0	2.0	mA
—	Output Sink Current (Min.), V_0 = 0.7V	2.0	2.0	2.0	mA
—	Output for Input Power Change > 3 dB above CW Threshold				
	Rise Time	30	—	—	ns
	Fall Time	80	—	—	ns
	Propagation Delay	1000	—	—	ns
—	Supply Voltage	+15			
	As Specified	+11 to +16	—	—	VDC
	Operational		—	—	VDC
—	Supply Current @ +15 Volts (Max.)	12	15	15	mA

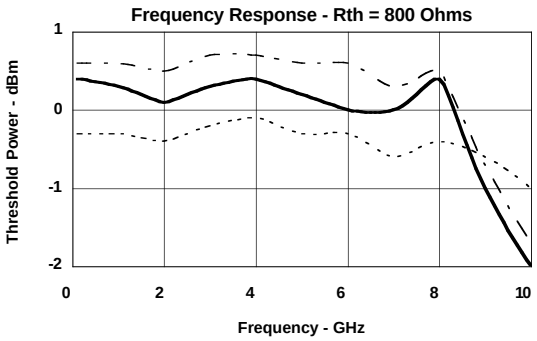
Typical Performance Over Temperature (@ +15 VDC unless otherwise noted)

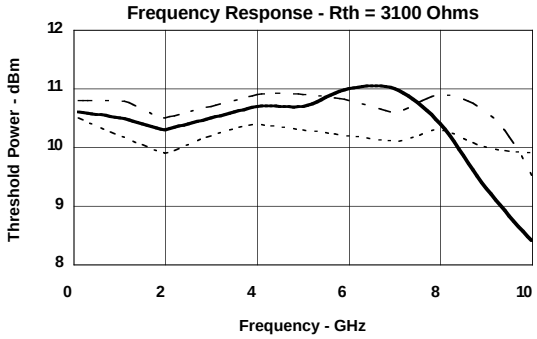
Key: +25°C ———
+85°C — · —
–55°C – – –

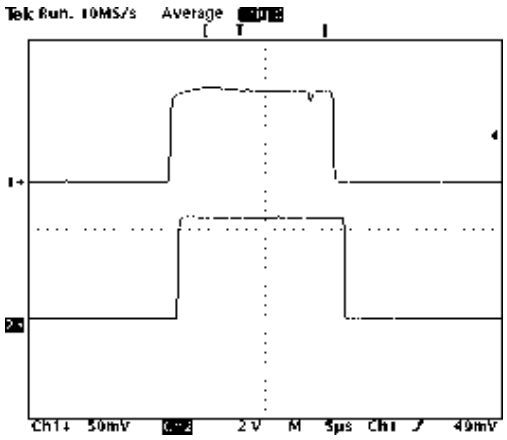




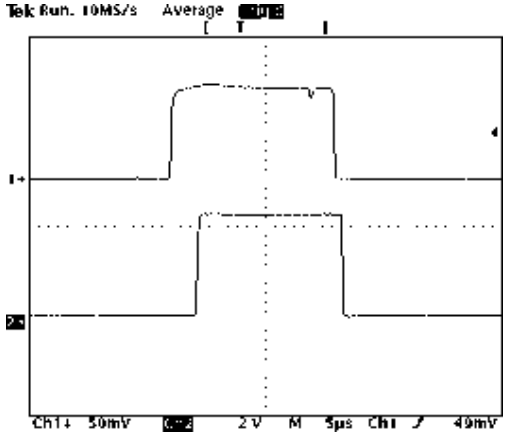






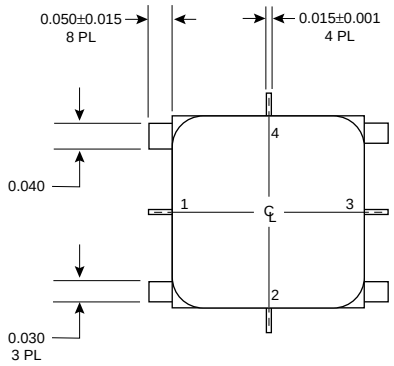


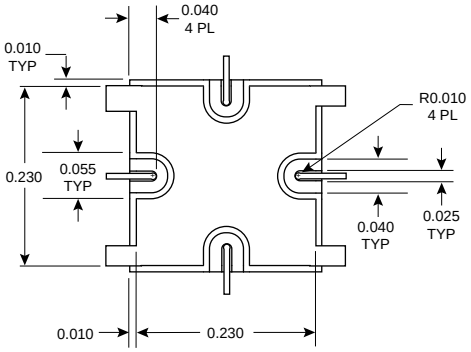
Response Delay
Top Trace: Input pulse @ 0 dBm
Bottom Trace: Detector Response @ R_T = 400 Ω

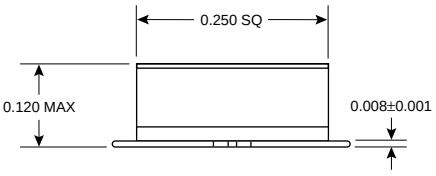


Response Delay
Top Trace: Input pulse @ 0 dBm
Bottom Trace: Detector Response @ R_T = 600 Ω

Case Drawings







PKG #	PIN DESIGNATION			
	1	2	3	4
SM-25	RF IN	GND	RF OUT	+V
SM-25F	RF IN	V-CONT	RF OUT	+V
SM-25DA	RF IN	–V	VID OUT	+V
SM-25DD	RF IN	CTL	TTL OUT	+V

NOTES:

1. **MAXIMUM TEMPERATURE EXPOSURE IS 260°C FOR 10 SECONDS.**
2. **DIMENSIONS IN INCHES.**
3. **TOLERANCES: xx ± .01**
   xxx ± .005

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