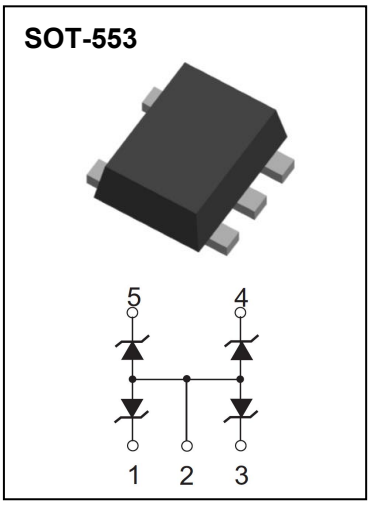
Low Capacitance Quad Array for ESD Protection

General Description

This integrated transient voltage suppressor device (TVS) is designed for applications requiring transient overvoltage protection. It is intended for use in sensitive equipment such as computers, printers, business machines, communication systems, medical equipment, and other applications. Its integrated design provides very effective and reliable protection for four separate lines using only one package. These devices are ideal for situations where board space is at a premium.



Features

- ESD Protection: IEC61000−4−2: Level 4
  MILSTD 883C − Method 3015−6: Class 3
- Four Separate Unidirectional Configurations for Protection
- Low Leakage Current < 1 μA
- Power Dissipation: 200 mW
- Small SOT-553 SMT Package
- Low Capacitance
- Pb−Free Package is Available
- S- Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable.

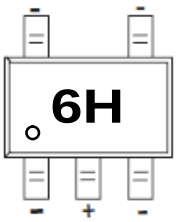
Benefits

- Provides Protection for ESD Industry Standards: IEC 61000, HBM
- Protects the Line Against Transient Voltage Conditions in Either Direction
- Minimize Power Consumption of the System
- Minimize PCB Board Space

Typical Applications

- Instrumentation Equipment
- Serial and Parallel Ports
- Microprocessor Based Equipment
- Notebooks, Desktops, Servers
- Cellular and Portable Equipment

Marking:



MAXIMUM RATINGS (T_A = 25°C unless otherwise noted)

Rating	Symbol	Value	Unit
Peak Power Dissipation 8 × 20 μsec Double Exponential Waveform (Note 1)	P_{PK}	20	W
Steady State Power − 1 Diode (Note 2)	P_D	200	mW
Thermal Resistance − Junction−to−Ambient Above 25°C, Derate	$R_{\theta JA}$	 327 3.05	 °C/W mW/°C
Operating Junction Temperature Range	T_J	−40 to +125	°C
Storage Temperature Range	T_{stg}	−55 to +150	°C
Lead Solder Temperature − Maximum 10 Seconds Duration	T_L	260	°C

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

1. Non−repetitive current pulse per Figure 1.
2. Only 1 diode under power. For all 4 diodes under power, P_D will be 25%. Mounted on FR4 board with min pad.

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Per Diode						
Reverse stand off voltage	V_{RWM} (1)				5	V
Breakdown voltage	$V_{(BR)}$	I_T=1mA	6.4	6.8	7.1	V
Reverse leakage current	I_R	V_{RWM}=5V			1.0	μA
Forward voltage	V_F	I_F=10mA			0.9	V
Clamping voltage	V_C (2)	I_{PP}=1.6A			13	V
Junction capacitance	C_J	V_R=0V,f=1MHz			80	pF

(1).Other voltages available upon request.

(2).Non-repetitive current pulse 8/20μs exponential decay waveform according to IEC61000-4-5

Typical Characteristics

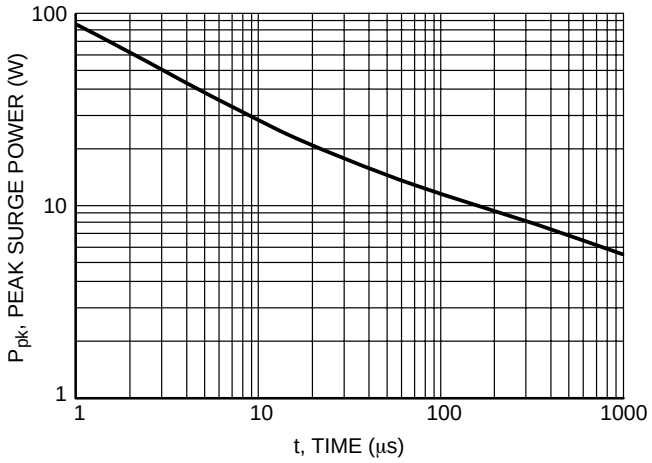


Figure 1. Pulse Width

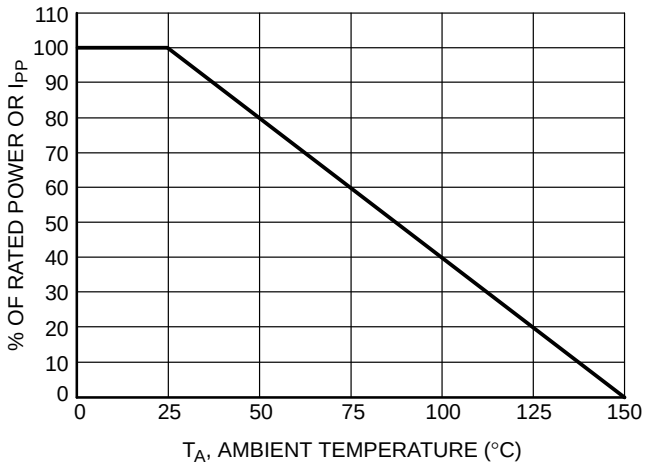


Figure 2. Power Derating Curve

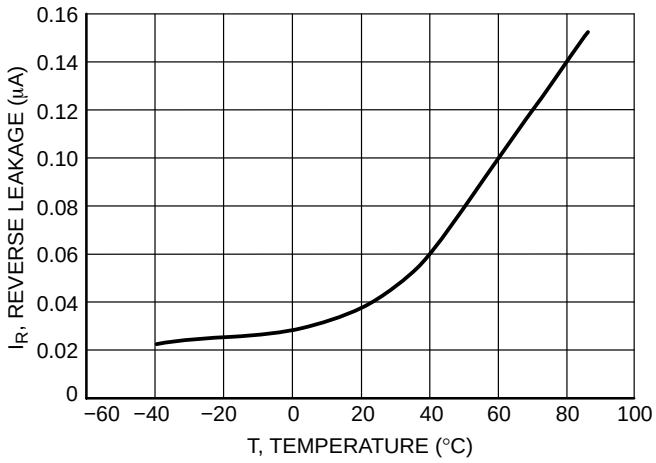


Figure 3. Reverse Leakage versus Temperature

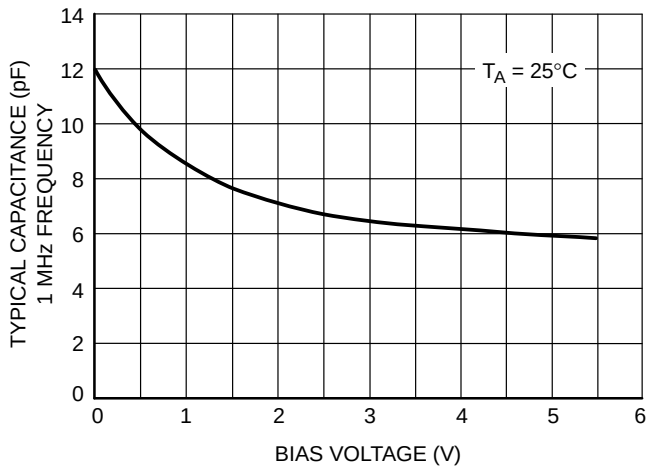


Figure 4. Capacitance

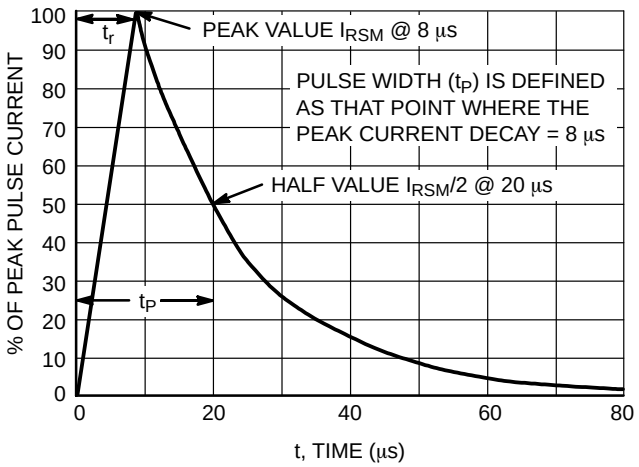


Figure 5. 8 × 20 µs Pulse Waveform

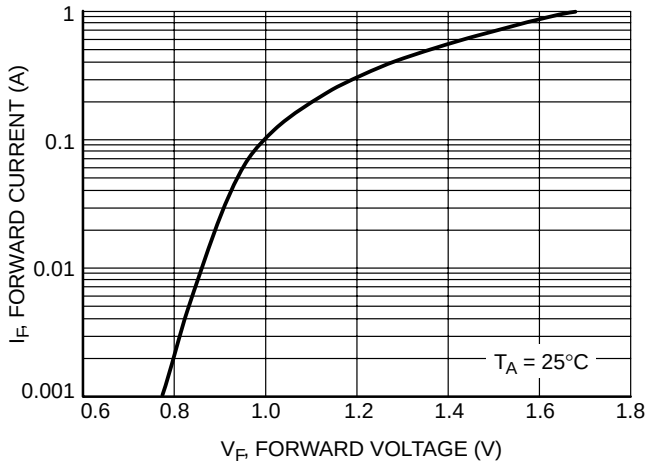


Figure 6. Forward Voltage