

Small Signal Product

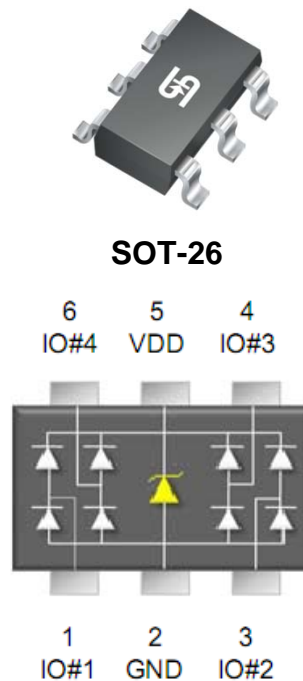
## Steering Diode Structure ESD Protection Array

### FEATURES

- Meet IEC61000-4-2 (ESD)  $\pm 15\text{kV}$  (air),  $\pm 8\text{kV}$  (contact)
- Meet IEC61000-4-4 (EFT) rating. 40A (5/50ns)
- Meet IEC61000-4-5 (Lightning) rating. 2A (8/20 $\mu\text{s}$ )
- Protects four directional I/O lines
- Working voltage: 5V
- Pb free version and RoHS compliant
- Packing code with suffix "G" means green compound (halogen-free)

### MECHANICAL DATA

- Case: SOT-26 small outline plastic package
- Terminal: Matte tin plated, lead free., solderable per MIL-STD-202, Method 208 guaranteed
- Moisture sensitivity: level 1, per J-STD-020
- High temperature soldering guaranteed : 260°C/10s
- Weight: 16  $\pm$  0.5 mg
- Marking code: V05



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS (T <sub>A</sub> =25°C unless otherwise noted)			
PARAMETER	SYMBOL	VALUE	UNIT
Peak Pulse Power (tp=8/20 $\mu\text{s}$ waveform)	P <sub>PP</sub>	300	W
Peak Pulse Current (tp=8/20 $\mu\text{s}$ )	I <sub>PP</sub>	2	A
ESD per IEC 61000-4-2 (Air)	V <sub>ESD</sub>	$\pm 15$	KV
ESD per IEC 61000-4-2 (Contact)		$\pm 8$	
Junction and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

PARAMETER	SYMBOL	MIN	MAX	UNIT
Reverse Stand-Off Voltage	V <sub>RWM</sub>	-	5	V
Reverse Breakdown Voltage	V <sub>(BR)</sub>	6	-	V
Reverse Leakage Current				
Clamping Voltage	V <sub>C</sub>	-	12.5	V
			25	
Junction Capacitance	C <sub>J</sub>	1.2		pF

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RATINGS AND CHARACTERISTICS CURVES

( $T_A=25^\circ\text{C}$  unless otherwise noted)

Fig. 1 Non-Repetitive Peak Pulse Power VS. Pulse Time

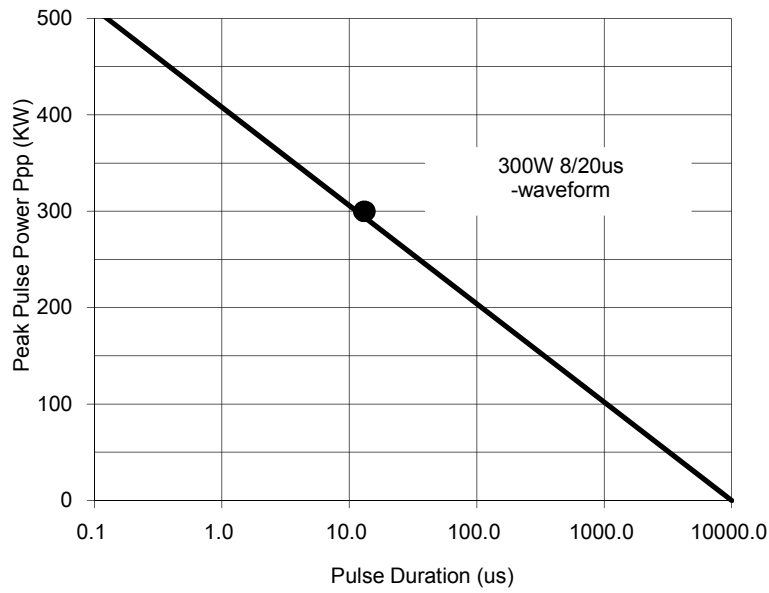


Fig. 2 Pulse Waveform

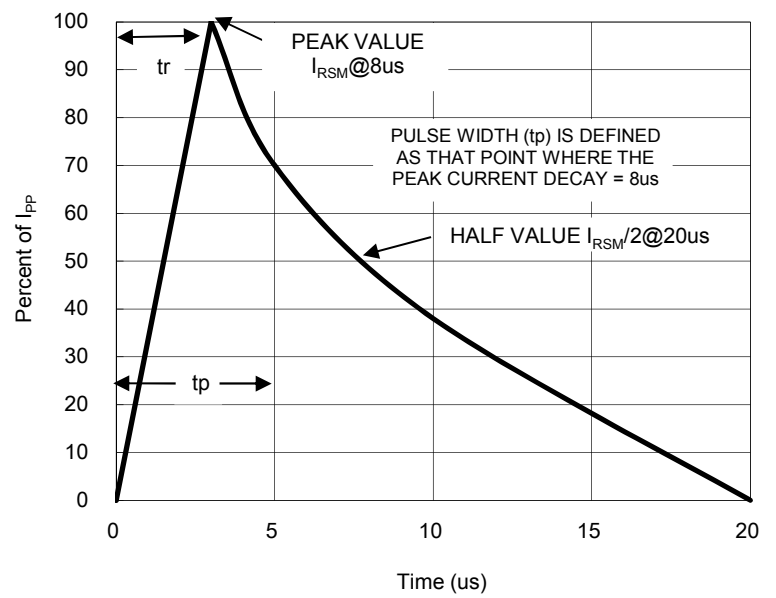


Fig.3 Admissible Power Dissipation Curve

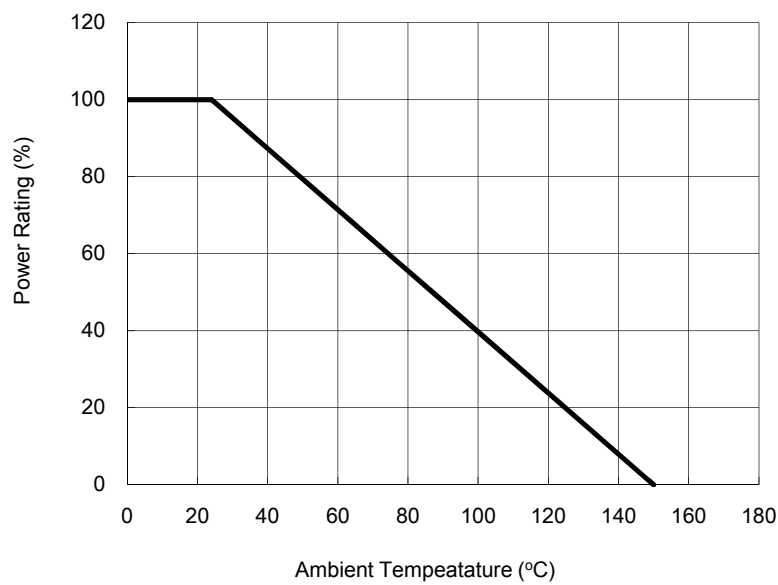


Fig. 4 Typical Junction Capacitance

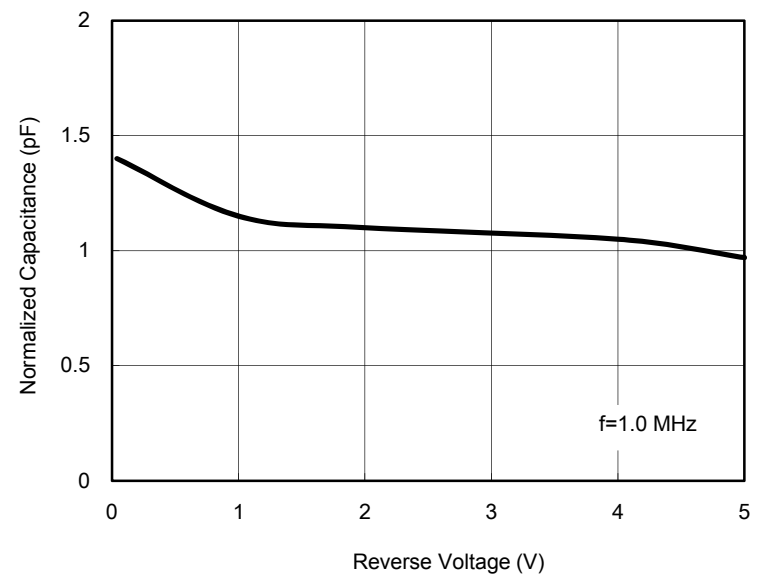
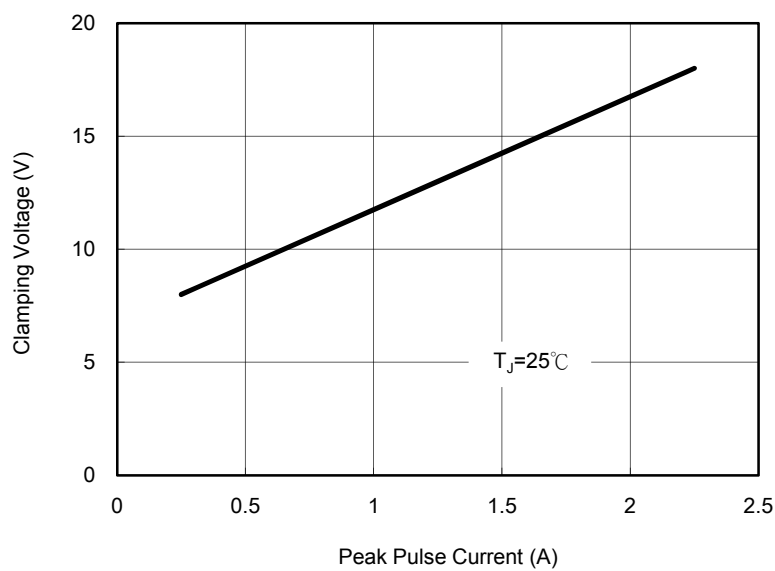


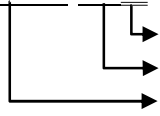
Fig. 5 Clamping Voltage VS. Peak Pulse Current



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ORDER INFORMATION (EXAMPLE)

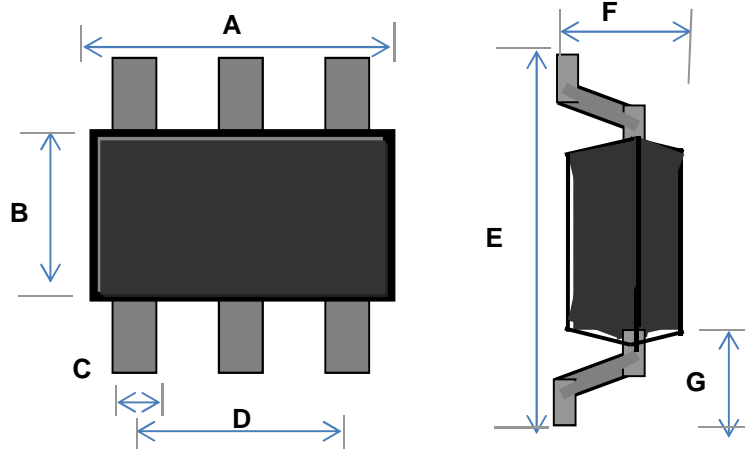
TESDS5V0A RFG



Green compound code  
Packing code  
Part no.

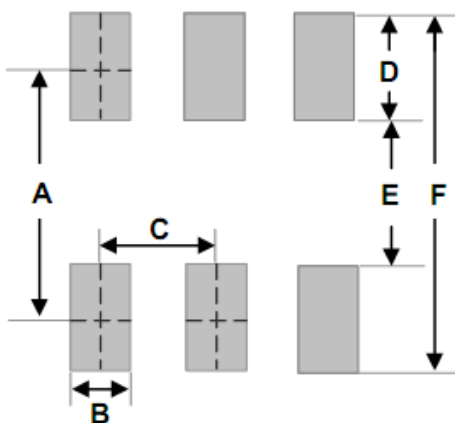
PACKAGE OUTLINE DIMENSIONS

**SOT-26**



DIM.	Unit (mm)		Unit (inch)	
	Min	Max	Min	Max
A	2.800	3.100	0.110	0.122
B	1.500	1.750	0.059	0.069
C	0.250	0.500	0.010	0.020
D	1.800	2.000	0.071	0.079
E	2.650	2.950	0.104	0.116
F	0.900	1.450	0.035	0.057
G	0.475	0.725	0.019	0.029

SUGGEST PAD LAYOUT



DIM.	Unit (mm)	Unit (inch)
	Typ.	Typ.
A	2.50	0.098
B	0.60	0.024
C	0.95	0.037
D	1.10	0.043
E	1.40	0.055
F	3.60	0.142

Note: 1. The suggested land pattern dimensions have been provided for reference only, as actual pad layouts may vary depending on application.

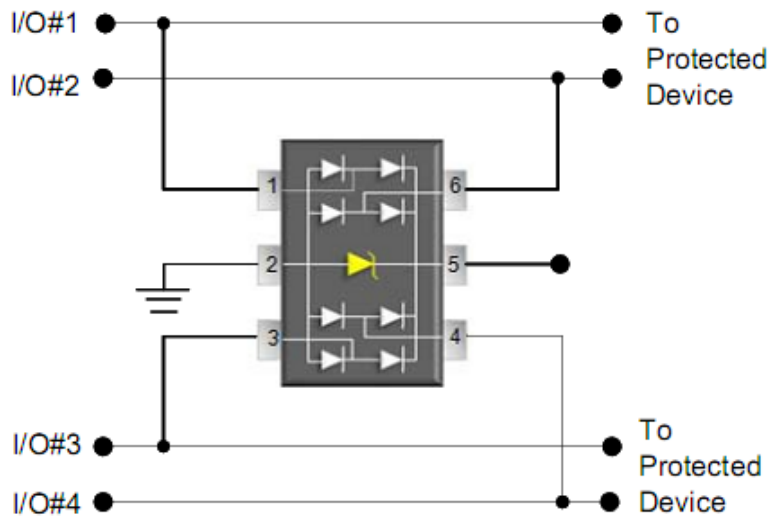
APPLICATIONS INFORMATION

- ◇ Designed to protect high speed data interfaces
- ◇ Designed to protect four data lines from transient over-voltages by clamping them to a fixed reference
- ◇ Designed to protect sensitive components which are connected to data and transmission lines from overvoltage caused by electrostatic discharge (ESD), electrical fast transients (EFT), and lightning.
- ◇ TESDS5V0A incorporates eight surge rated, low capacitance steering diodes and a TVS diode in a single package
- ◇ During transient conditions, the steering diodes direct the transient to either the positive side of the power supply line or to ground
- ◇ The internal TVS diode prevents over-voltage on the power line, protecting any downstream components

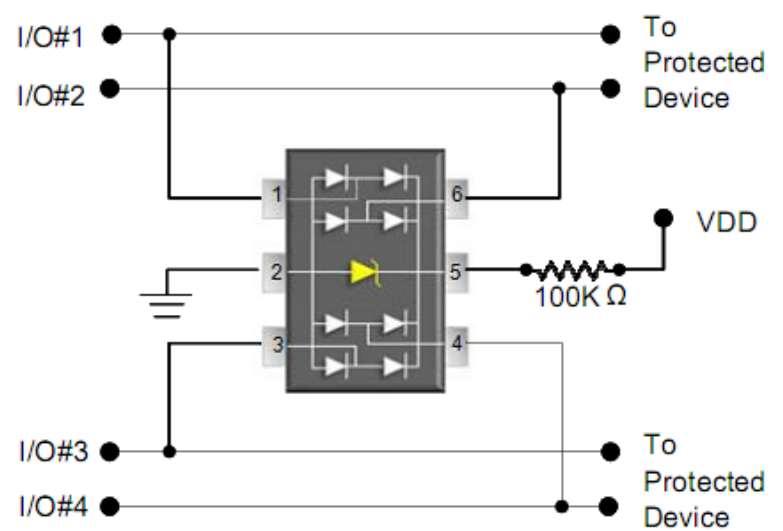
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CIRCUIT BOARD LAYOUT RECOMMENDATIONS

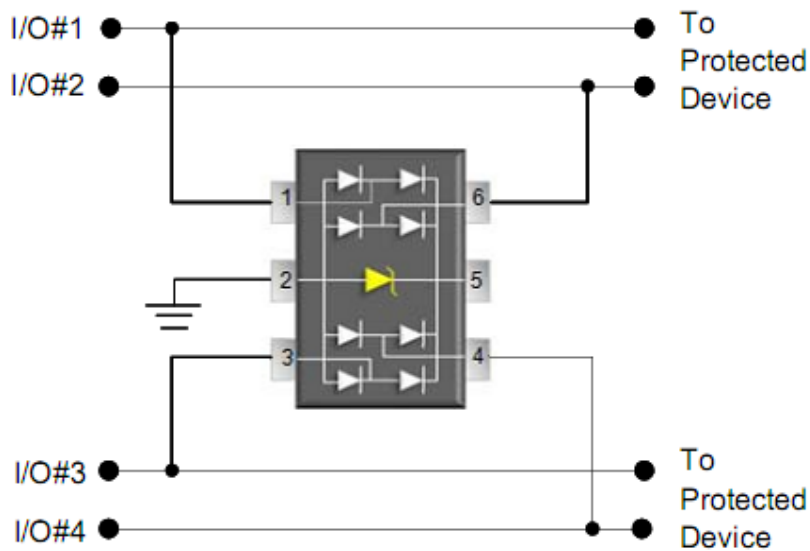
- ◇ To protect data lines and the power line, connect pin 5 directly to the VDD. In this configuration the data lines are referenced to the supply voltage. The internal TVS diode prevents over-voltage on the supply rail.
- ◇ The TESDS5V0A can be isolated from the power supply by adding a series resistor between pin 5 and VDD. A value of 100kΩ is recommended. The internal TVS and steering diodes remain biased, providing the advantage of lower capacitance.
- ◇ In applications where no positive supply reference is available, or complete supply isolation is desired, the internal TVS may be used as the reference. In this case, pin 5 is not connected. The steering diodes will begin to conduct when the voltage on the protected line exceeds the working voltage of the TVS (plus one diode drop).



Data Line and Power Supply Protection Using Vcc as reference



Data Line Protection with Bias and Power Supply Isolation



Data Line Protection Using Internal TVS Diode as Reference

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