

## RSAF3T5P Low Capacitance TVS Diode Array

Revision:A

### Description

The RSAF3T5P has been specifically 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.

The unique design of the series devices 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.

### Applications

- USB 2.0 Power and Data Line Protection
- Video Graphics Cards
- Monitors and Flat Panel Displays
- Digital Video Interface (DVI)
- 10/100/1000 Ethernet
- Notebook Computers, SIM Ports
- ATM Interfaces
- IEEE 1394 Firewire Ports

### Features

- Array of surge rated diodes with internal TVS Diode
- Small package saves board space
- Protects four I/O lines
- Low capacitance: 3.0pF typical
- Low clamping voltage
- Low operating voltage: 5.0V
- Solid-state silicon-avalanche technology

### Complies with the following standards

**61000-4-2 (ESD): Air – 15kV, Contact – 8kV**

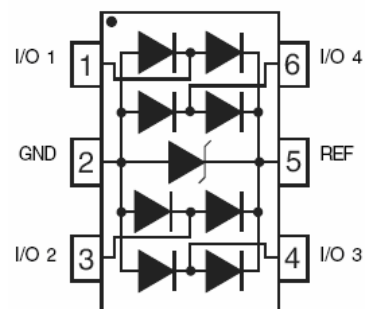
**61000-4-4 (EFT): 40A – 5/50ns**

**61000-4-5 (Lighting): 12A, 8/20µs**

### Functional diagram



SOT-23-6L

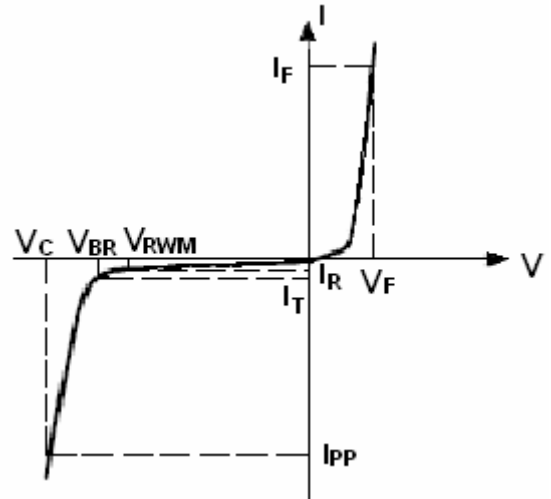


### Device Characteristics

Maximum Ratings @ 25°C Unless Otherwise Specified			
Parameter	Symbol	Value	Units
Peak Pulse Power (tp=8/20µs) See Figure 1	P <sub>PP</sub>	500	Watts
Operating Temperature	T <sub>J</sub>	-55°C to 150°C	°C
Storage Temperature	T <sub>STG</sub>	-55°C to 150°C	°C
Forward Surge Rating (1/20 seconds @ 25°C, I <sub>F</sub> =10mA)	V <sub>F</sub>	1.5	Volts
Peak Pulse Current (tp= 8/20µs)	I <sub>PP</sub>	43	Amps

**Electrical Parameter**

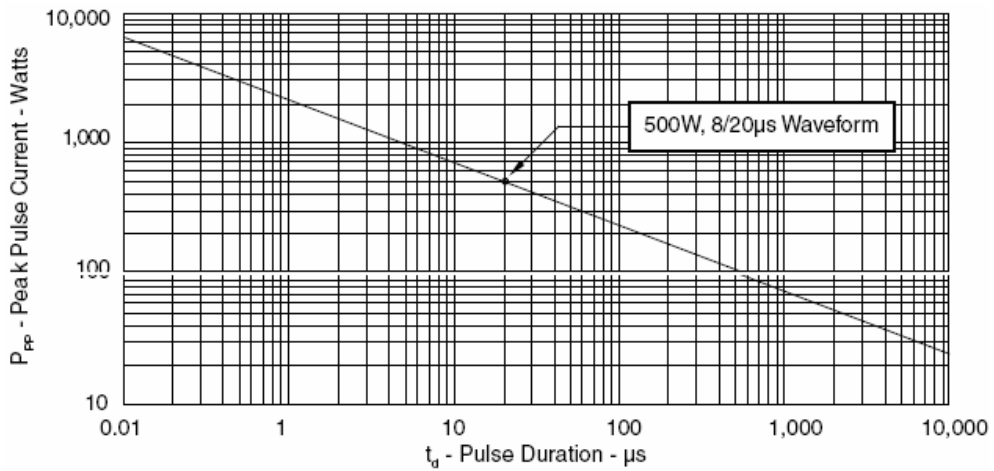
Symbol	Parameter
$I_{PP}$	Maximum Reverse Peak Pulse Current
$V_C$	Clamping Voltage @ $I_{PP}$
$V_{RWM}$	Working Peak Reverse Voltage
$I_R$	Maximum Reverse Leakage Current @ $V_{RWM}$
$I_T$	Test Current
$V_{BR}$	Breakdown Voltage @ $I_T$
$I_F$	Forward Current
$V_F$	Forward Voltage @ $I_F$



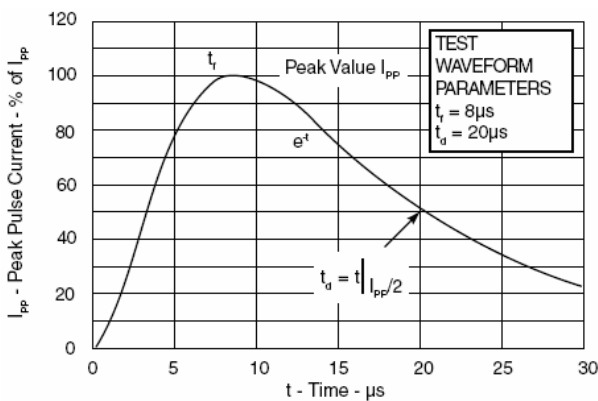
Part Numbers	$V_{BR}$			$I_T$	$V_{RWM}$	$I_R$	<b>C</b>
	Min.	Typ.	Max.				Typ. 0v bias
	V	V	V				pF
RSAF3T5P	6.0	6.7	-	1	5.0	5	3.0

Note 1: From I/O Pin to Ground.

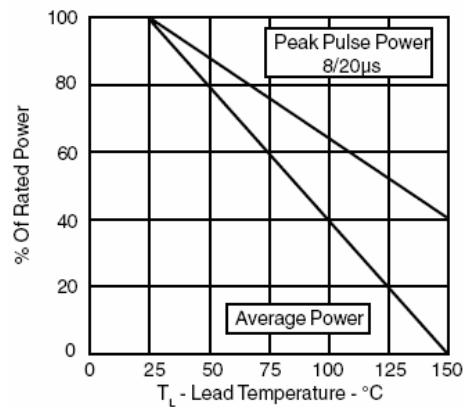
**Typical Characteristics**



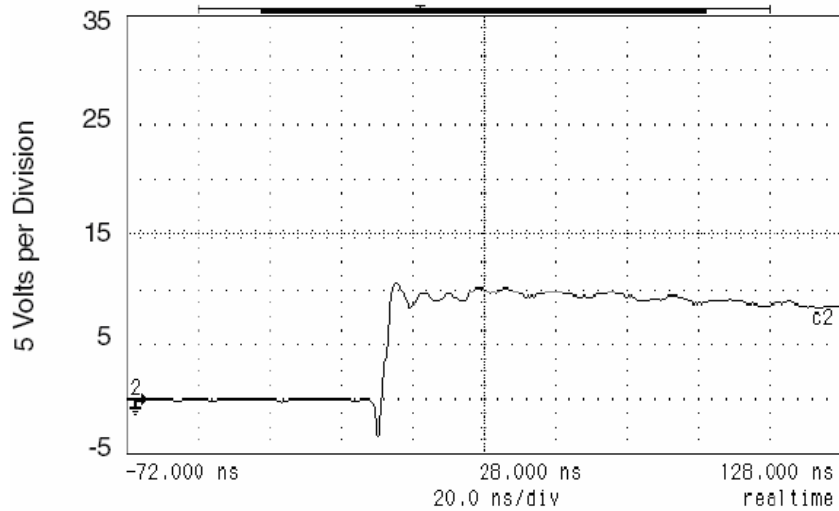
**Fig 1 Peak Pulse Power VS Pulse Time**



**Fig 2 Pulse Wave Form**



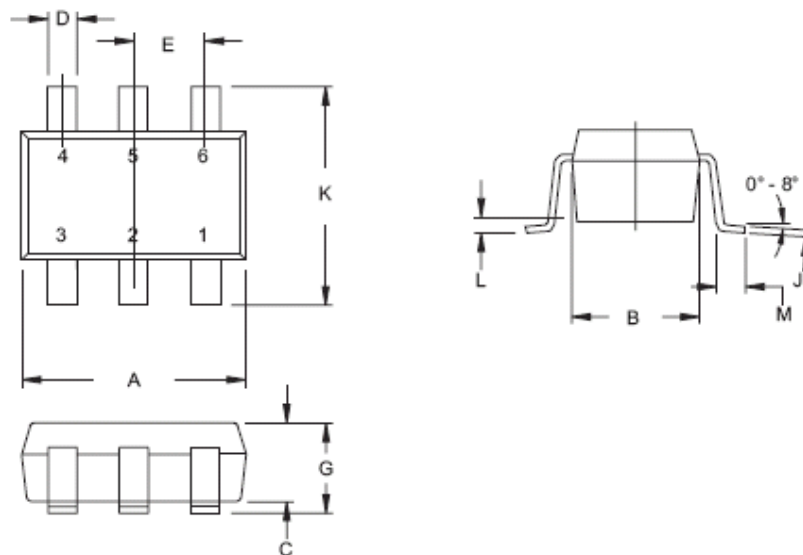
**Fig 3 Power Derating Curve**



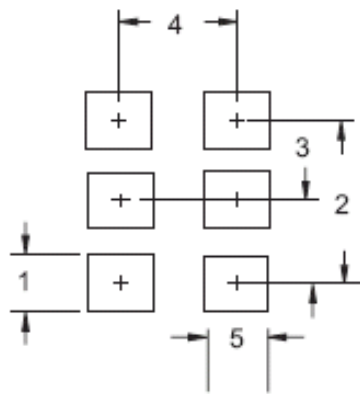
ESD Test Pulse: 25 kilovolt, 1/30ns (waveshape)

**Fig 4 Overshoot & Clamping Voltage For RSAF3T5P**

**SOT-23-6L Mechanical Dimensions**



PACKAGE DIMENSIONS				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	2.80	3.05	0.110	0.120
B	1.50	1.75	0.059	0.070
C	0.90	1.30	0.036	0.051
D	0.30	0.40	0.012	0.016
E	0.85	1.05	0.033	0.040
G	0.90	1.45	0.036	0.057
J	0.09	0.20	0.0035	0.008
K	2.60	3.00	0.102	0.118
L	0.0	0.15	0.0	0.006
M	0.30	0.60	0.012	0.024



TYPICAL		
DIM	Millimeters	Inches
1	0.70	0.028
2	1.90	0.074
3	0.95	0.037
4	2.40	0.094
5	1.00	0.039

**NOTES**

1. Dimensioning and tolerances per ANSİY14.5M, 1985.
2. Controlling Dimension : Inches
3. Dimensions are exclusive of mold flash and metal burrs.