

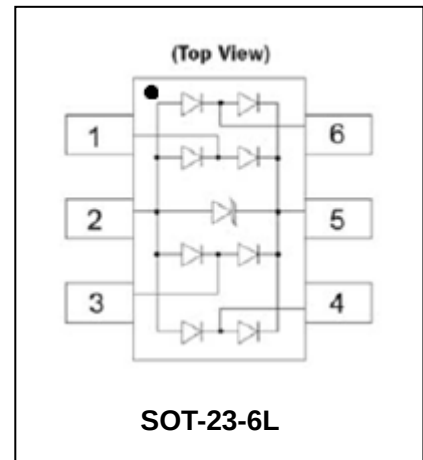
Low Capacitance ESD Protector Array

SRV06

Description

- SRV06 are surge rated diode arrays designed to protect high speed data interfaces. This device has been specifically designed to protect sensitive components which are connected to data and transmission lines from overvoltage caused by ESD (electrostatic discharge Events), and EFT (electrical fast transients).

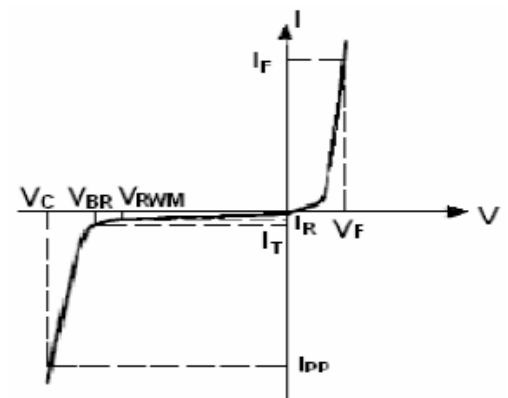
HF



- The unique design incorporates surge rated, low capacitance steering diodes and a TVS diodes 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 diodes prevents over-voltage on the power line, protecting any downstream components.
- The low capacitance array configuration allows the user to protect four high-speed data or transmission lines. The low inductance construction minimizes voltage overshoot during high current surges. This device is optimized for ESD protection of portable electronics. They may be used to meet the ESD immunity requirements of IEC 61000-4-2, Level 4 ($\pm 20\text{kV}$ air, $\pm 15\text{kV}$ contact discharge).

Feature

- Array of surge rated diodes with internal TVS Diode.
- Protects up to four I/O lines & power line
- Low capacitance ($<1.0\text{pF}$) for high-speed interfaces
- No insertion loss to 2.0GHz
- Low leakage current and clamping voltage
- Low operating voltage: 6V
- MSL 1
- Solid-state silicon-avalanche technology
- Transient protection for data lines to IEC 61000-4-2 (ESD) $\pm 20\text{kV}$ (air), $\pm 15\text{kV}$ (contact); IEC 61000-4-4 (EFT) 40A ($5/50\text{ns}$),



Applications

- USB 2.0/USB OTG
- Monitors and Flat Panel Displays
- Displays Digital Visual Interface (DVI)
- High-Definition Multimedia Interface (HDMI)
- Gigabit Ethernet
- SIM Ports

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- IEEE 1394 Firewire Ports

ORDERING INFORMATION

Type No.	Marking	Package Code
SRV06	V06	SOT-23-6L

MAXIMUM RATING @ Ta=25°C unless otherwise specified

Symbol	Parameter	Value	Unit
P _{PP}	Peak Pulse Power(t _p =8/20us)	75	W
I _{PP}	Peak Pulse Current(t _p =8/20us)	5	A
T _J , T _{STG}	Junction and Storage Temperature	-55 to+150	°C

ELECTRICAL CHARACTERISTICS PER LINE @ Ta=25°C unless otherwise specified

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Reverse stand-off voltage	V _{RWM}				6	V
Reverse Breakdown voltage	V _(BR)	I _R =1mA	6.2			V
Reverse Leakage Current	I _R	V _{RWM} =6V, T=25°C			1	μA
Clamping Voltage	V _C	I _{PP} =1A, t _p =8/20us, Any pin to 2			10	V
		I _{PP} =5A, t _p =8/20us, Any pin to 2			15	V
Junction Capacitance	C _j	V _R =0V, f=1MHz, Any I/O pin to pin 2			1.0	pF
		V _R =0V, f=1MHz, Between I/O pins			0.5	pF

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TYPICAL CHARACTERISTICS @ $T_A=25^{\circ}\text{C}$ unless otherwise specified

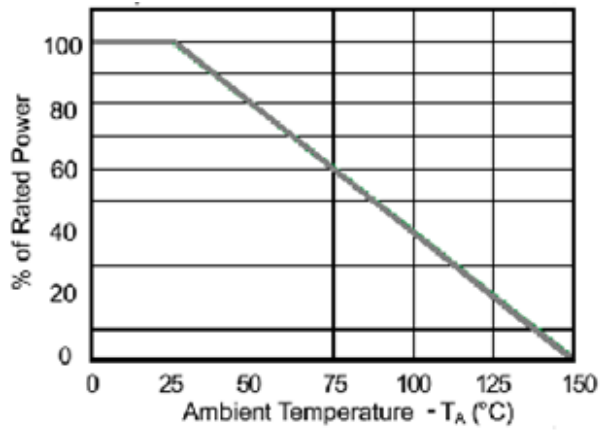


Fig1. Power Derating Curve

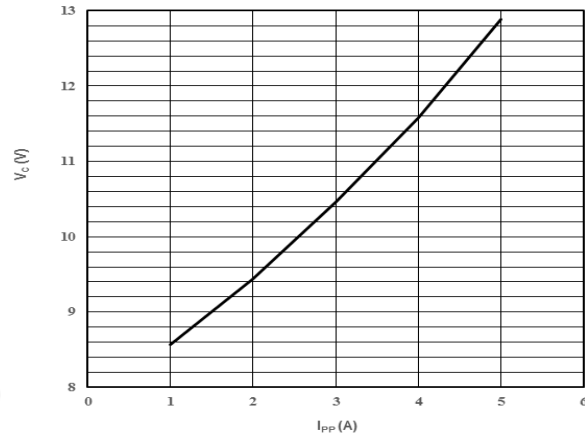


Fig2. Clamping Voltage vs. Peak Pulse Current

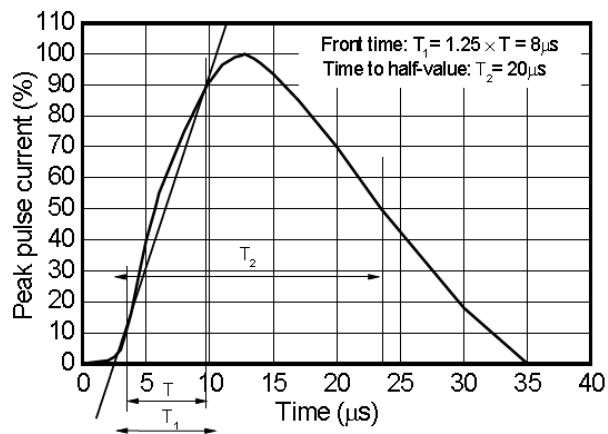


Fig3. 8/20 μs waveform per IEC61000-4-5

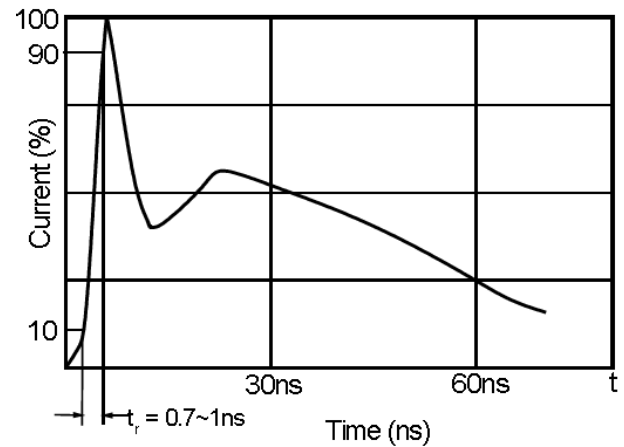


Fig4. ESD pulse waveform according to IEC61000-4-2

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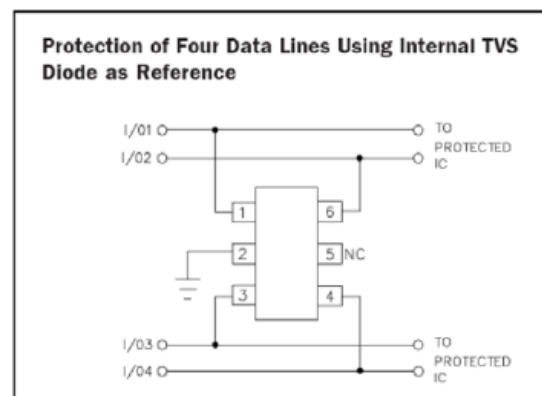
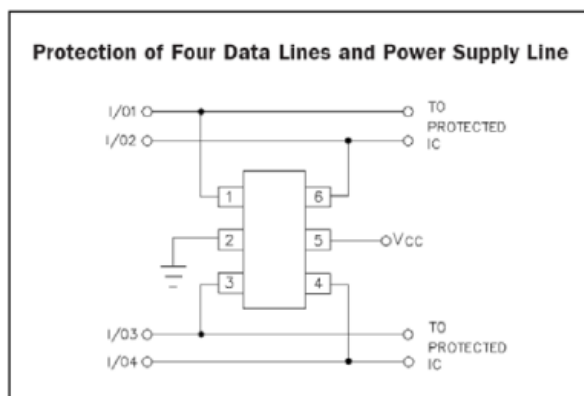
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Application Information

Device Connection Options for Protection of Four High-Speed Data Lines

This device is designed to protect data lines by clamping them to a fixed reference. When the voltage on the protected line exceeds the reference voltage the steering diodes are forward biased, conducting the transient current away from the sensitive circuitry. Data lines are connected at pins 1, 3, 4 and 6. Pin 2 should be connected directly to a ground plane. The path length is kept as short as possible to minimize parasitic inductance. The positive reference is connected at pin 5. The options for connecting the positive reference are as follows:

1. To protect data lines and the power line, connect pin 5 directly to the positive supply rail (VCC). In this configuration the data lines are referenced to the supply voltage. The internal TVS diode prevents over-voltage on the supply rail.
2. In applications where the supply rail does not exit the system, 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).
3. In applications where complete supply isolation is desired, the internal TVS is again used as the reference and VCC is connected to one of the I/O inputs. An example of this configuration is the protection of a SIM port. The Clock, Reset, I/O, and VCC lines are connected at pins 1, 3, 4, and 6. Pin 2 is connected to ground and pin 5 is not connected.



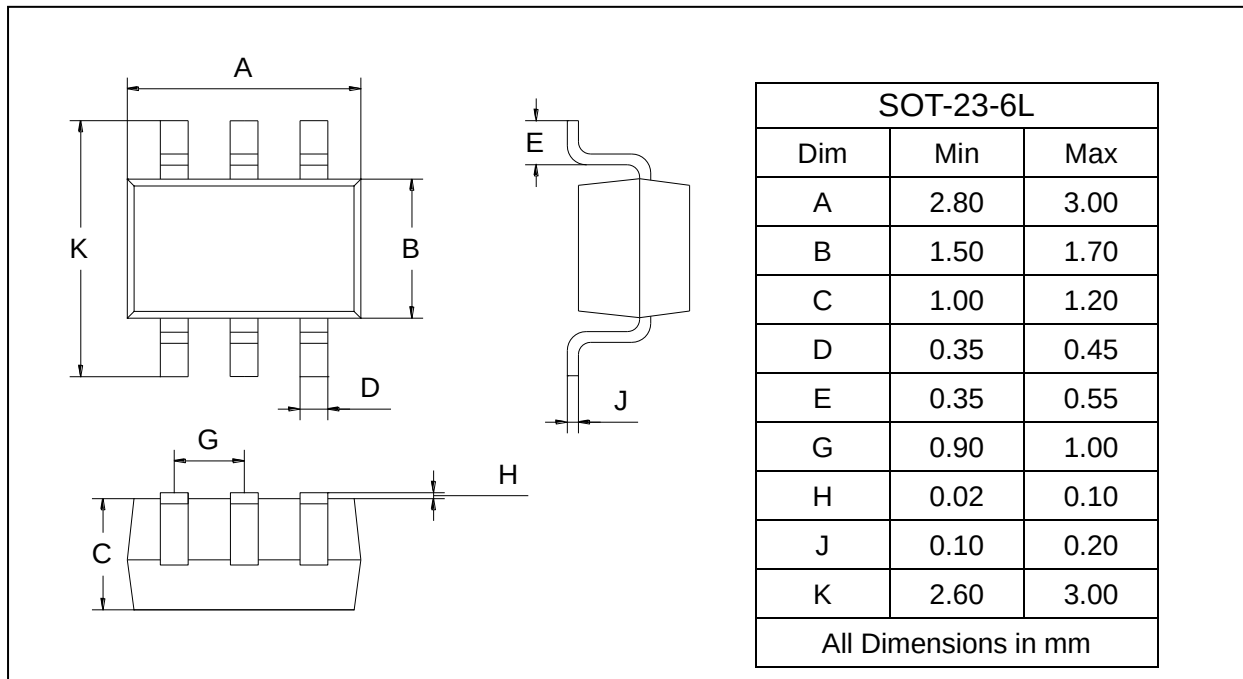
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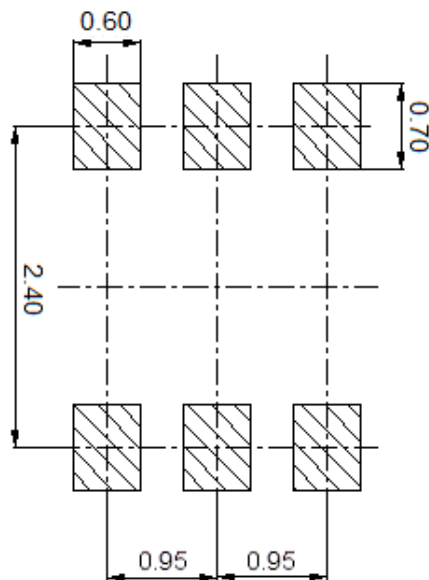
PACKAGE OUTLINE

Plastic surface mounted package

SOT-23-6L



SOLDERING FOOTPRINT



Unit: mm

PACKAGE INFORMATION

Device	Package	Shipping
SRV06	SOT-23-6L	3000 pcs / Tape & Reel