

SOD-323 Plastic-Encapsulate ESD Protection Diodes**DESCRIPTION**

The SD12T TVS diode is designed to replace multilayer varistors (MLVs) in portable applications such as cell phones, notebooks, and PDA's. It offers superior electrical characteristics such as low clamping voltage, low leakage current and high surge capability. It is designed to protect sensitive electronic components which are connected to power lines, from over-stress caused by ESD (Electrostatic Discharge), EFT (Electrical Fast Transients) and Lighting.

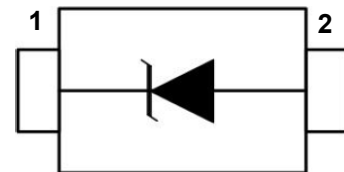
The SD12T is in a SOD-323 package and will protect one unidirectional line. It may be used to provide ESD protection up to $\pm 30\text{kV}$ (Contact and air discharge) according to IEC61000-4-2, and used to protect USB voltage bus pin (8/20 us) according to IEC61000-4-5.

Features

- ◆ Peak power dissipation: 1540W (8/20 μs)
- ◆ Transient protection for high-speed data lines
- ◆ IEC61000-4-2 (ESD) $\pm 30\text{kV}$ (air), $\pm 30\text{kV}$ (contact)
- ◆ Low clamping voltage
- ◆ Low leakage current
- ◆ Working voltages : 12V
- ◆ Solid-state silicon-avalanche technology

Pin Configuration**Applications**

- ◆ Power lines
- ◆ Personal digital assistants (PDA's)
- ◆ Microprocessors based equipment
- ◆ Notebooks, Desktops, and Servers
- ◆ Cell phone Handsets and Accessories
- ◆ Portable Electronics
- ◆ Peripherals

Circuit Diagram

260°C/ 10s

- ◆ Packaging: Tape and Reel
- ◆ Reel size: 7 inch
- ◆ Quantity per reel: 3,000pcs

Absolute Maximum Ratings ($T_A=25^{\circ}\text{C}$ unless otherwise specified)

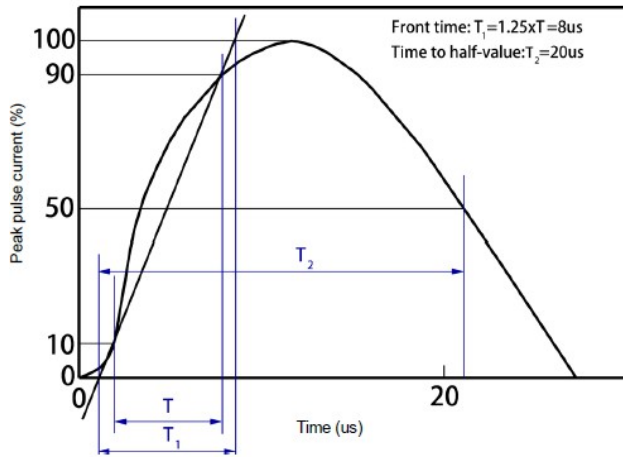
Parameter	Symbol	Value	Unit
ESD per IEC 61000-4-2 (Air)	VESD	± 30	KV
ESD per IEC 61000-4-2 (Contact)		± 30	
Peak Pulse Power($t_p=8/20\mu\text{s}$ waveform)	P _{PP}	1540	W
Operating Temperature	T _{OPT}	-55 to +125	°C
Storage Temperature	T _{STG}	-55 to +150	°C
Lead Solder Temperature – Maximum (10 Second Duration)	T _L	260(10 sec.)	°C

Electrical Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise specified)

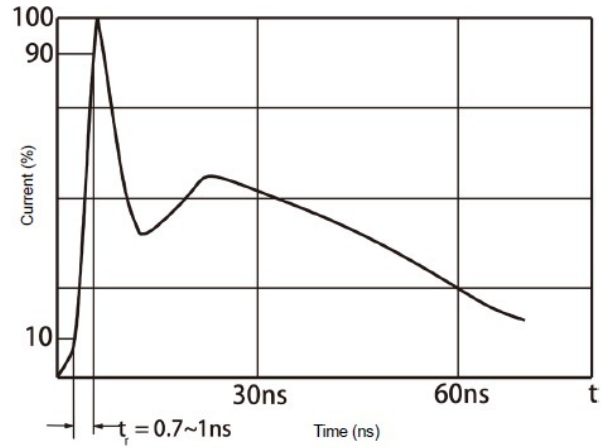
Symbol	Param	Test Condition	Min	Typ	Max	Units
V _{RWM}	Reverse Working Voltage				12	V
V _{BR}	Reverse Breakdown Voltage	I _T = 1mA	13.5	14.8	15.5	V
I _R	Reverse Leakage Current	V _{RWM} = 12V			1	uA
I _{PP}	Peak Pulse Current	t _p = 8/20μs			55	A
V _C	Clamping Voltage	I _{PP} = 30A, t _p = 8/20μs			19	V
		I _{PP} = 40A, t _p = 8/20μs			24	V
		I _{PP} = 55A, t _p = 8/20μs			28	V
C _J	Junction Capacitance	V _R = 0V, f = 1MHz	250	350	450	pF

The above data are for reference only.

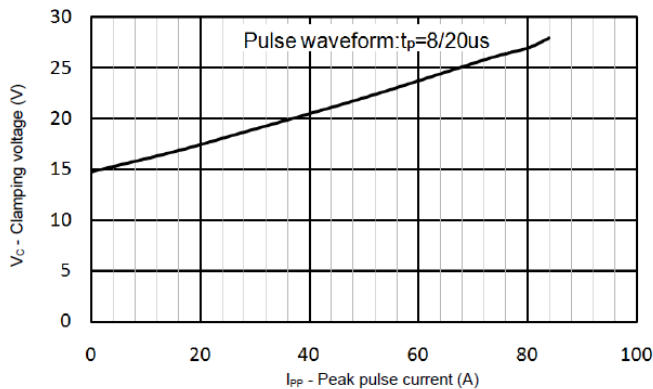
ELECTRICAL CHARACTERISTICS CURVE



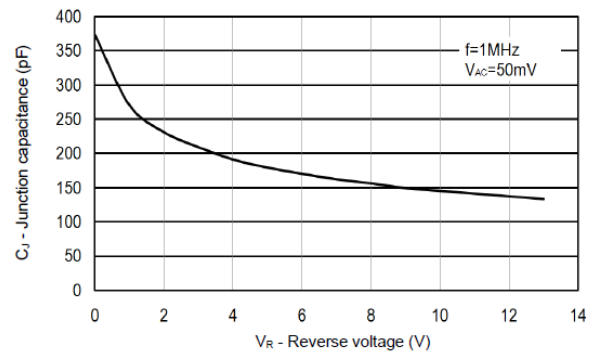
8/20 us waveform per IEC61000-4-5



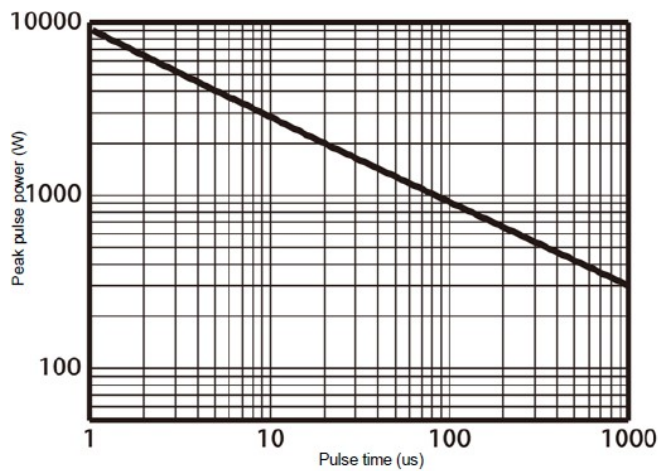
Contact discharge current waveform per IEC61000-4-2



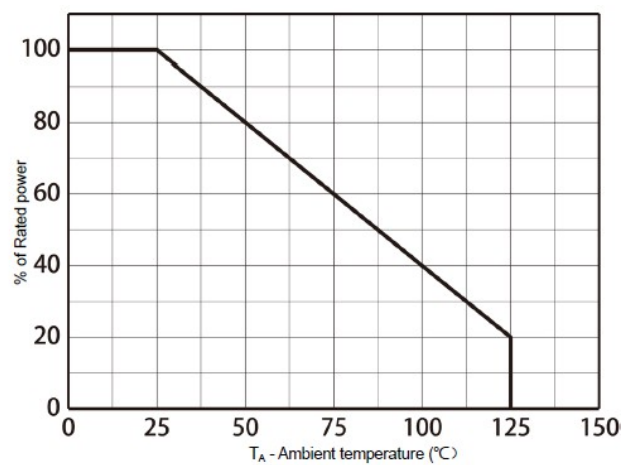
Clamping voltage vs. Peak pulse current



Capacitance vs. Reverse voltage



Non-repetitive peak pulse power vs. Pulse time



Power derating vs. Ambient temperature

The curve above is for reference only.