

Description

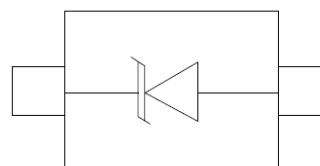
The SDxx TVS diodes are designed to replace multilayer varistors (MLVs) in portable applications such as cell phones, notebook computers, and PDA's. They offer superior electrical characteristics such as lower clamping voltage and no device degradation when compared to MLVs. The SDxx series TVS diodes are designed to protect sensitive semiconductor components from damage or upset due to electrostatic discharge (ESD) and other voltage induced transient events.

The SDxx is in a SOD-323 package and will protect one unidirectional line. They are available with working voltages of 5 volts (SD05) and 12 volts (SD12). These devices will fit on the same PCB pad area as an 0805 MLV device. They give the designer the flexibility to protect one line in applications where arrays are not practical. Additionally, it may be "sprinkled" around the board in applications where board space is at a premium. They may be used to meet the ESD immunity requirements of IEC 61000-4-2, Level 4 ($\pm 15\text{kV}$ air, $\pm 8\text{kV}$ contact discharge).

Features

- 350 Watts peak pulse power ($t_p = 8/20\mu\text{s}$)
- Transient protection for data lines to
IEC 61000-4-2 (ESD) $\pm 25\text{kV}$ (air), $\pm 10\text{kV}$ (contact)
IEC 61000-4-4 (EFT) 40A (5/50ns)
IEC 61000-4-5 (Lightning) 24A (8/20 μs)
- Small package for use in portable electronics
- Suitable replacement for MLV's in ESD protection applications
- Protects one I/O or power line
- Low clamping voltage
- Working voltages: 5V and 12V
- Low leakage current
- Solid-state silicon-avalanche technology

Schematic & PIN Configuration



Mechanical Characteristics

- EIAJ SOD-323 package
- Molding compound flammability rating: UL 94V-0
- Marking : Marking code, cathode band
- Packaging : Tape and Reel per EIA 481

Applications

- Cell Phone Handsets and Accessories
- Microprocessor based equipment
- Personal Digital Assistants (PDA's)
- Notebooks, Desktops, and Servers
- Portable Instrumentation
- Pagers Peripherals

Ordering Information:

Device	Package	Shipping
SD05 SD12	SOD-323 (Pb-Free)	3000pcs / reel

For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification.

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

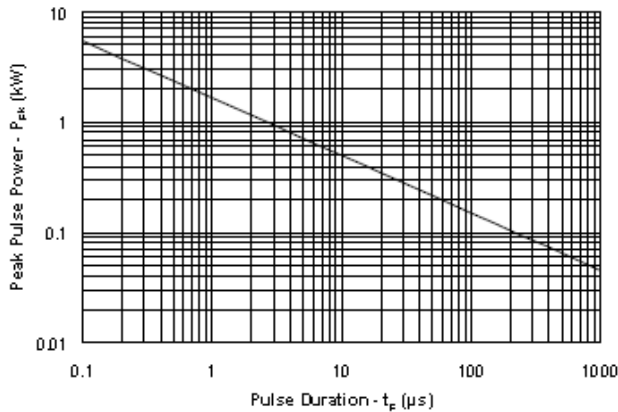
Parameter	Symbol	Value	Unit
Peak Pulse Power (tp =8/20 μs)	PPK	350	W
ESD Voltage (HBM Waveform per IEC 61000-4-2)	V _{ESD}	30	KV
Lead Soldering Temperature	T _L	260(10 sec.)	$^\circ\text{C}$
Operating Junction Temperature Range	T _J	-55 to + 125	$^\circ\text{C}$
Storage Temperature Range	T _{STG}	-55 to + 150	$^\circ\text{C}$

Electrical Characteristics:

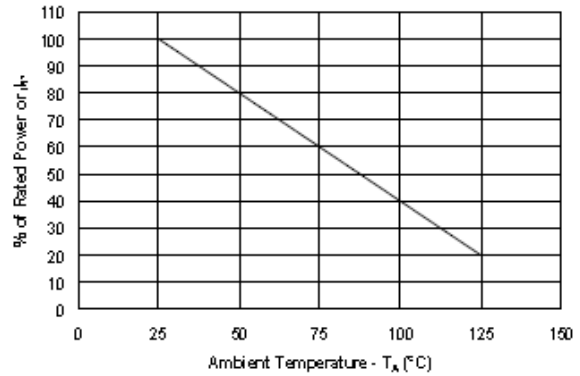
SD05						
Characteristics	Symbol	Condition	Min.	Typ.	Max.	Units
Reverse Stand-Off Voltage	V _{RWM}	-	-	-	5	V
Reverse Breakdown Voltage	V _{BR}	@ I _T =1mA	6	-	-	V
Reverse Leakage Current	I _R	@V _{RWM} = 5V, T = 25 $^\circ\text{C}$	-	-	10	μA
Clamping Voltage	V _C	@I _{PP} = 5A, tp=8/20 μs	-	-	9.8	V
Clamping Voltage	V _C	@I _{PP} = 24A, tp=8/20 μs	-	-	14.5	V
Peak Pulse Current	I _{PP}	@ tp=8/20 μs	-	-	24	A
Junction Capacitance	C _J	@V _R = 0V, f _{SIG} = 1MHz	-	-	350	pF

SD12						
Characteristics	Symbol	Condition	Min.	Typ.	Max.	Units
Reverse Stand-Off Voltage	V _{RWM}	-	-	-	12	V
Reverse Breakdown Voltage	V _{BR}	@ I _T =1mA	13.3	-	-	V
Reverse Leakage Current	I _R	@V _{RWM} = 12V, T = 25 $^\circ\text{C}$	-	-	1	μA
Clamping Voltage	V _C	@I _{PP} = 5A, tp=8/20 μs	-	-	19	V
Clamping Voltage	V _C	@I _{PP} = 15A, tp=8/20 μs	-	-	25	V
Peak Pulse Current	I _{PP}	@ tp=8/20 μs	-	-	15	A
Junction Capacitance	C _J	@V _R = 0V, f _{SIG} = 1MHz	-	-	150	pF

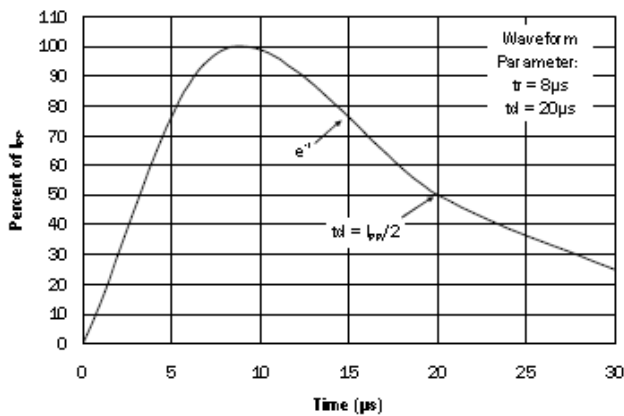
Non-Repetitive Peak Pulse Power vs. Pulse Time



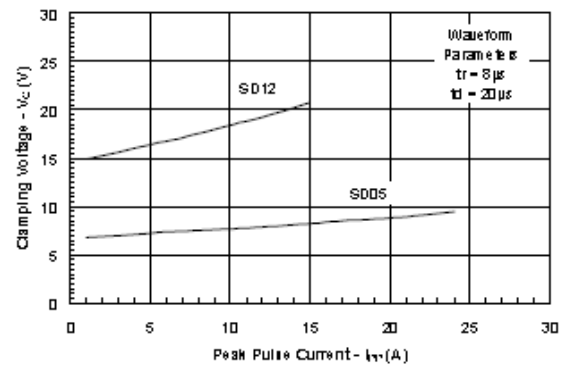
Power Derating Curve



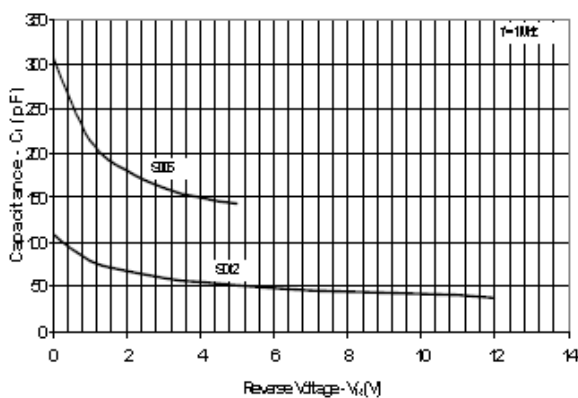
Pulse Waveform



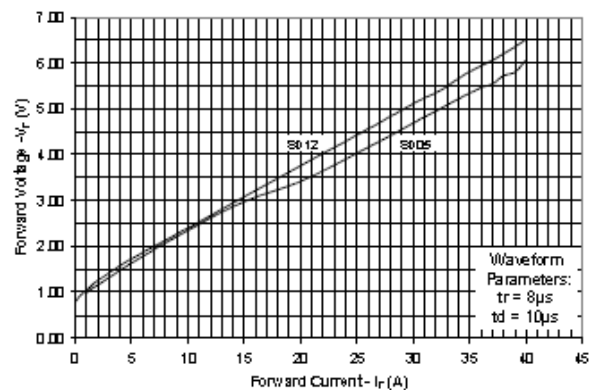
Clamping Voltage vs. Peak Pulse Current



Capacitance vs. Reverse Voltage



Forward Voltage vs. Forward Current



Marking Diagram:



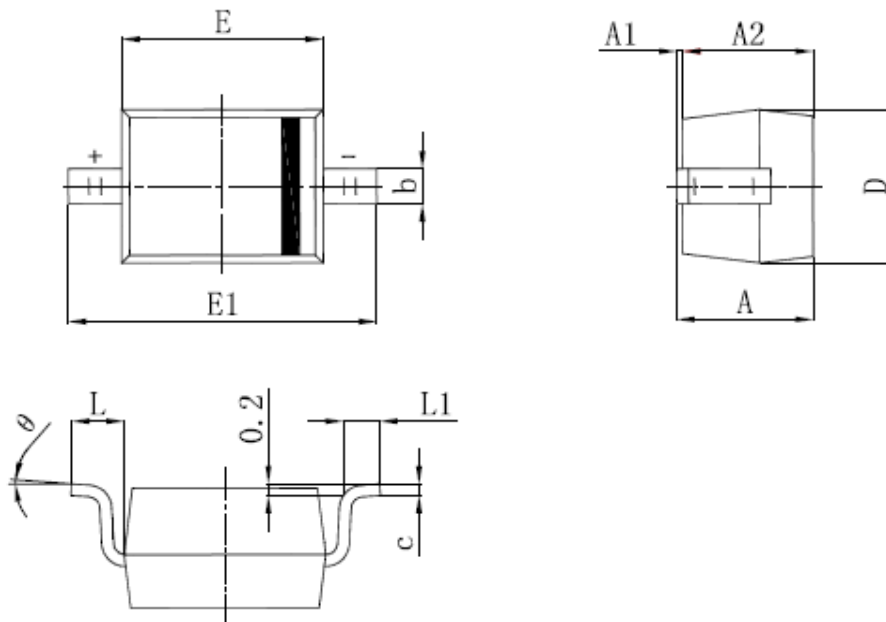
SD05



SD12

Cautions: Molding resin
Epoxy resin UL:94V-0

Mechanical Dimensions (In mm/Inches):



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A		1.000		0.039
A1	0.000	0.100	0.000	0.004
A2	0.800	0.900	0.031	0.035
b	0.250	0.350	0.010	0.014
c	0.080	0.150	0.003	0.006
D	1.200	1.400	0.047	0.055
E	1.600	1.800	0.063	0.071
E1	2.500	2.700	0.098	0.106
L	0.475 REF.		0.019 REF.	
L1	0.250	0.400	0.010	0.016
θ	0°	8°	0°	8°

SOD-323

- China - Germany - Korea - Singapore - United States •
- <http://www.smc-diodes.com> - sales@smc-diodes.com •



SD05
SD12

Technical Data
Data Sheet N1787 REV.-

Green Products

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