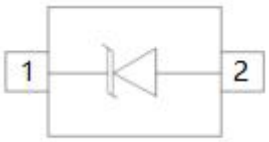
Technical Data
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SD05 THRU SD36 TVS ARRAY



SOD-323

Schematic & Pin Configuration



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.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 (±15kV air, ±8Kv contact discharge).

Application

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

Features

- 350 Watts peak pulse power (tp = 8/20 μ s)
- Transient protection for data lines to
  IEC 61000-4-2 (ESD) ±25kV (air), ±10kV (contact)
  IEC 61000-4-4 (EFT) 40A (5/50ns)
  IEC 61000-4-5 (Lightning) 24A (8/20 μ s)
- 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 36V
- Low leakage current
- Solid-state silicon-avalanche technology
- Terminals finish: 100% Pure Tin
- "-A" is an AEC-Q101 qualified device

Mechanical Characteristics

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

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RoHS

Maximum Ratings@T_A=25° C unless otherwise specified

Parameter	Symbol	Value	Units
Peak Pulse Power (tp =8/20 μ s)	P_{PK}	350	W
Peak Pulse Current (tp =8/20 μ s)	I_{PP}	24	A
ESD Voltage (HBM Waveform per IEC 61000-4-2)	V_{ESD}	30	KV
Lead Soldering Temperature	T_L	260(10 sec.)	℃
Operating Temperature	T_J	-55 to + 125	℃
Storage Temperature	T_{STG}	-55 to + 150	℃

Electrical Characteristics@T_A=25°C unless otherwise specified

SD05	Marking code	5U				
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 ℃	-	-	10	μA
Clamping Voltage	V_C	@I_{PP} = 5A, tp=8/20μs	-	-	9.8	V
Clamping Voltage	V_C	@I_{PP} = 24A, tp=8/20μs	-	-	14.5	V
Junction Capacitance	C_j	@V_R = 0V, f_{SIG} = 1MHz	-	-	350	pF

SD12	Marking code	12U				
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 ℃	-	-	1	μA
Clamping Voltage	V_C	@I_{PP} = 5A, tp=8/20μs	-	-	19	V
Clamping Voltage	V_C	@I_{PP} = 15A, tp=8/20μs	-	-	24	V
Junction Capacitance	C_j	@V_R = 0V, f_{SIG} = 1MHz	-	-	150	pF

SD15	Marking code	15U				
Characteristics	**Symbol**	**Condition**	**Min.**	**Typ.**	**Max.**	**Units**
Reverse Stand-Off Voltage	V_{RWM}	-	-	-	15	V
Reverse Breakdown Voltage	V_{BR}	@ I_t=1mA	16.7	-	-	V
Reverse Leakage Current	I_R	@V_{RWM} = 15V, T = 25 ℃	-	-	1	μA
Clamping Voltage	V_C	@I_{PP} = 5A, tp=8/20μs	-	-	24	V
Clamping Voltage	V_C	@I_{PP} = 12A, tp=8/20μs	-	-	29	V
Junction Capacitance	C_j	@V_R = 0V, f_{SIG} = 1MHz	-	-	130	pF

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SD18	Marking code	18U				
Characteristics	**Symbol**	**Condition**	**Min.**	**Typ.**	**Max.**	**Units**
Reverse Stand-Off Voltage	V_{RWM}	-	-	-	18	V
Reverse Breakdown Voltage	V_{BR}	@ I_t=1mA	20	-	-	V
Reverse Leakage Current	I_R	@V_{RWM} = 18V, T = 25 ℃	-	-	1	μA
Clamping Voltage	V_C	@I_{PP} = 1A, tp=8/20μs	-	-	29	V
Clamping Voltage	V_C	@I_{PP} = 9A, tp=8/20μs	-	-	40	V
Junction Capacitance	C_j	@V_R = 0V, f_{SIG} = 1MHz	-	-	120	pF

SD24	Marking code	24U				
Characteristics	**Symbol**	**Condition**	**Min.**	**Typ.**	**Max.**	**Units**
Reverse Stand-Off Voltage	V_{RWM}	-	-	-	24	V
Reverse Breakdown Voltage	V_{BR}	@ I_t=1mA	26.7	-	-	V
Reverse Leakage Current	I_R	@V_{RWM} = 24V, T = 25 ℃	-	-	1	μA
Clamping Voltage	V_C	@I_{PP} = 5A, tp=8/20μs	-	-	40	V
Clamping Voltage	V_C	@I_{PP} = 8A, tp=8/20μs	-	-	44	V
Junction Capacitance	C_j	@V_R = 0V, f_{SIG} = 1MHz	-	-	100	pF

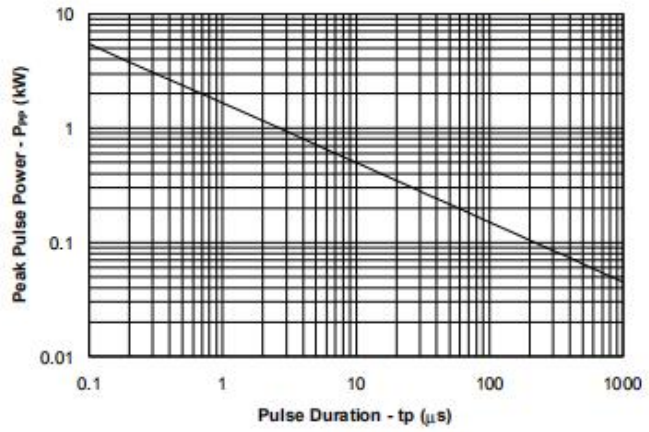
SD36	Marking code	36U				
Characteristics	**Symbol**	**Condition**	**Min.**	**Typ.**	**Max.**	**Units**
Reverse Stand-Off Voltage	V_{RWM}	-	-	-	36	V
Reverse Breakdown Voltage	V_{BR}	@ I_t=1mA	40	-	-	V
Reverse Leakage Current	I_R	@V_{RWM} = 36V, T = 25 ℃	-	-	1	μA
Clamping Voltage	V_C	@I_{PP} = 1A, tp=8/20μs	-	-	52	V
Clamping Voltage	V_C	@I_{PP} = 4A, tp=8/20μs	-	-	62	V
Junction Capacitance	C_j	@V_R = 0V, f_{SIG} = 1MHz	-	-	50	pF

Technical Data
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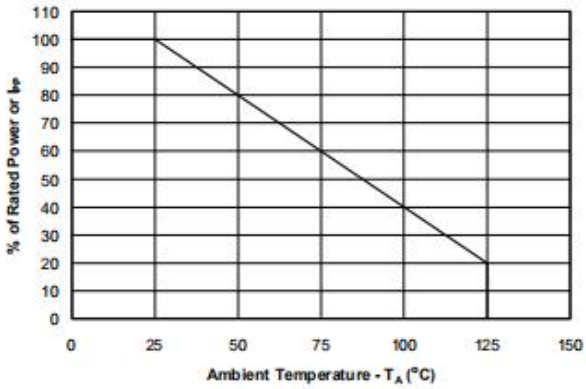
RoHS

Ratings and Characteristics Curves

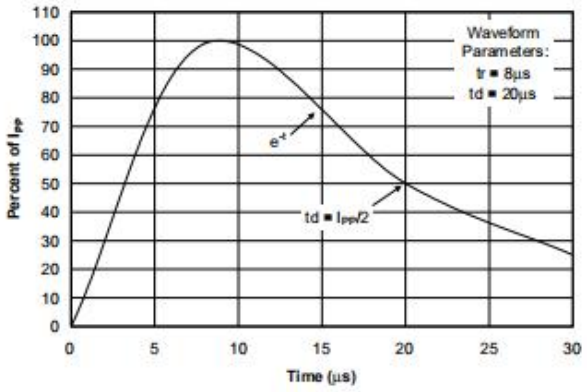
Non-Repetitive Peak Pulse Power vs. Pulse Time



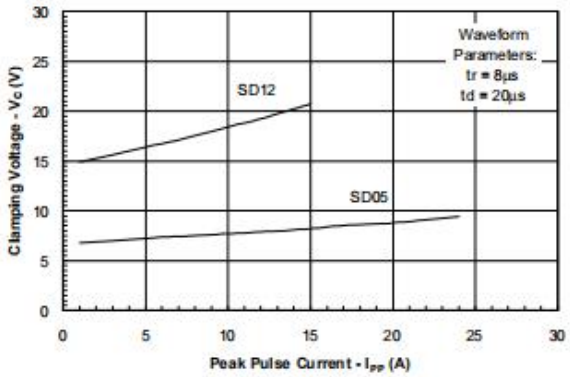
Power Derating Curve



Pulse Waveform



Clamping Voltage vs. Peak Pulse Current



Ordering Information

Device	Package	Shipping
SD05 THRU SD36	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.

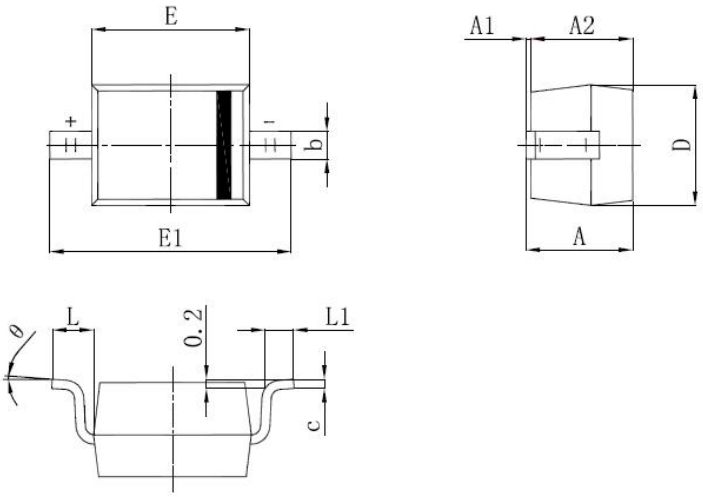
Marking Diagram



Marking code = 5U

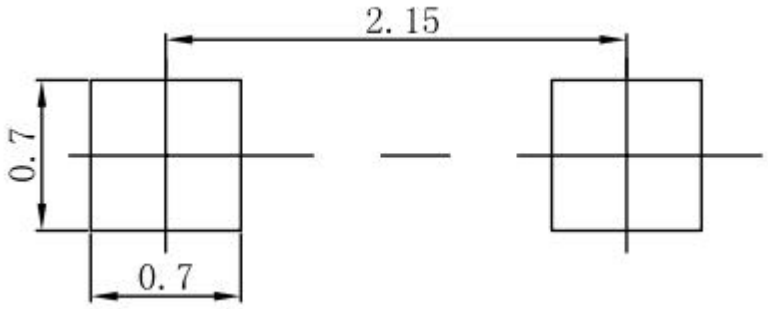
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Mechanical Dimensions SOD-323

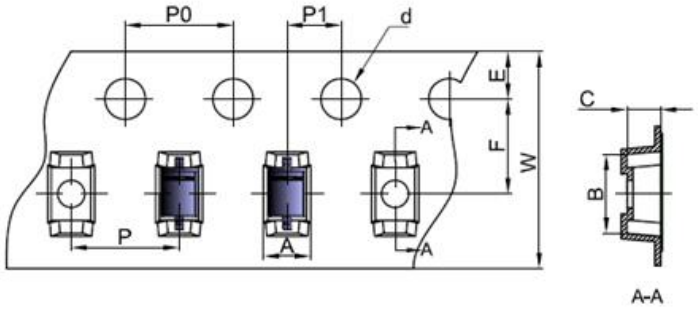


SYMBOL	Millimeters		Inches	
	MIN.	MAX.	MIN.	MAX.
A	-	1.000	-	0.039
A1	0.000	0.100	0.000	0.004
A2	0.800	0.900	0.031	0.035
b	0.250	0.350	0.010	0.014
c	0.080	0.150	0.003	0.006
D	1.200	1.400	0.047	0.055
E	1.600	1.800	0.063	0.071
E1	2.500	2.700	0.098	0.106
L	0.475 REF.		0.019 REF.	
L1	0.250	0.400	0.010	0.016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

Soldering Pad Layout (Millimeters)



Carrier Tape Specification SOD-323



SYMBOL	Millimeters	
	Min.	Max.
B	2.85	2.95
C	1.20	1.30
d	1.40	1.60
E	1.65	1.85
F	3.40	3.60
P	3.90	4.10
P0	3.90	4.10
P1	1.90	2.10
W	7.90	8.30

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