Features

- 500W peak pulse power (8/20μs)
- Protects one data or power line
- Ultra low leakage: nA level
- Operating voltage: 5V, 12V, 24V, 36V
- Ultra low clamping voltage
- Complies with following standards:
  - IEC 61000-4-2 (ESD) immunity test
    - Air discharge: ±30kV
    - Contact discharge: ±30kV
  - IEC61000-4-4 (EFT) 40A (5/50ns)
- RoHS Compliant

Description

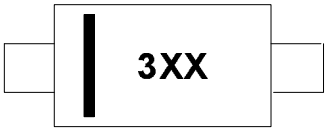
The SDXX is designed to replace multilayer varistors (MLVs) in portable applications such as cell phones, notebook computers and PDA's, using monolithic silicon technology to provide fast response time and ultra low ESD clamping voltage, making this device an ideal solution for protecting sensitive semiconductor components from damage. The SDXX complies with the IEC 61000-4-2 (ESD) standard with ±15kV air and ±8kV contact discharge. The SDXX is assembled into a lead-free SOD-323 package and will protect one unidirectional line. These devices will fit on the same PCB pad area as an 0805 MLV device.

Mechanical Characteristics

- Package: SOD-323
- Lead Finish: Matte Tin
- Case Material: "Green" Molding Compound.
- UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 3 per J-STD-020
- Terminal Connections: See Diagram Below

Marking Information

Bar denotes cathode

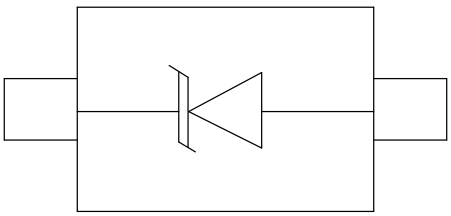


Part Number	Marking
SD05	305
SD12	312
SD24	324
SD36	336

Applications

- Cellular Handsets and Accessories
- Personal Digital Assistants
- Notebooks and Handhelds
- Portable Instrumentation
- Peripherals
- Pagers Peripherals
- Desktop and Servers

Dimensions and Pin Configuration



SOD-323

Absolute Maximum Ratings (T_A=25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20μs)	Ppk	500	W
ESD per IEC 61000−4−2 (Air) ESD per IEC 61000−4−2 (Contact)	V_{ESD}	±30 ±30	kV
Operating Temperature Range	T_J	−55 to +125	°C
Storage Temperature Range	Tstg	−55 to +150	°C

Electrical Characteristics (T_A=25°C unless otherwise specified)

SD05

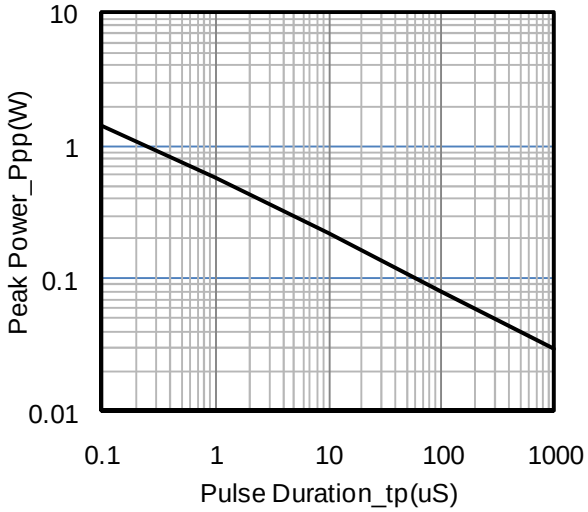
Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	V_{RWM}			5	V	
Breakdown Voltage	V_{BR}	6			V	I_T = 1mA
Reverse Leakage Current	I_R			1	μA	V_{RWM} = 5V
Forward Voltage	V_F		0.8	1.2	V	I_F = 10mA
Clamping Voltage	V_C			9.5	V	I_{PP} = 5A (8 x 20μs pulse)
Clamping Voltage	V_C			12.5	V	I_{PP} = 40A (8 x 20μs pulse)
Peak Pulse Current	Ipp			40	A	tp = 8/20μs
Junction Capacitance	C_J			350	pF	VR = 0V, f = 1MHz

SD12						
Parameter	**Symbol**	**Min**	**Typ**	**Max**	**Unit**	**Test Condition**
Reverse Working Voltage	V_{RWM}			12	V	
Breakdown Voltage	V_{BR}	13.3			V	I_T = 1mA
Reverse Leakage Current	I_R			0.5	μA	V_{RWM} = 12V
Forward Voltage	V_F		0.8	1.2	V	I_F = 10mA
Clamping Voltage	V_C			19	V	I_{PP} = 5A (8 x 20μs pulse)
Clamping Voltage	V_C			25	V	I_{PP} = 20A (8 x 20μs pulse)
Peak Pulse Current	Ipp			20	A	tp = 8/20μs
Junction Capacitance	C_J			150	pF	VR = 0V, f = 1MHz

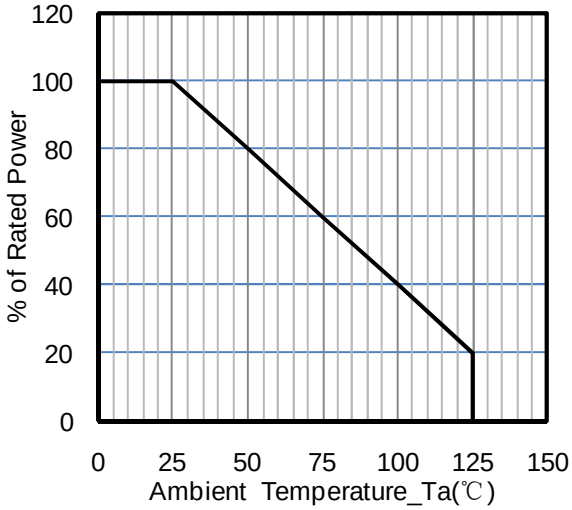
SD24						
Parameter	**Symbol**	**Min**	**Typ**	**Max**	**Unit**	**Test Condition**
Reverse Working Voltage	V_{RWM}			24	V	
Breakdown Voltage	V_{BR}	27			V	I_T = 1mA
Reverse Leakage Current	I_R			0.2	μA	V_{RWM} = 24V
Forward Voltage	V_F		0.8	1.2	V	I_F = 10mA
Clamping Voltage	V_C			40	V	I_{PP} = 1A (8 x 20μs pulse)
Clamping Voltage	V_C			50	V	I_{PP} = 10A (8 x 20μs pulse)
Peak Pulse Current	Ipp			10	A	tp = 8/20μs
Junction Capacitance	C_J			100	pF	VR = 0V, f = 1MHz

SD36						
Parameter	**Symbol**	**Min**	**Typ**	**Max**	**Unit**	**Test Condition**
Reverse Working Voltage	V_{RWM}			36	V	
Breakdown Voltage	V_{BR}	38			V	I_T = 1mA
Reverse Leakage Current	I_R			0.2	μA	V_{RWM} = 36V
Forward Voltage	V_F		0.8	1.2	V	I_F = 10mA
Clamping Voltage	V_C			45	V	I_{PP} = 1A (8 x 20μs pulse)
Peak Pulse Current	Ipp			8	A	tp = 8/20μs
Junction Capacitance	C_J			70	pF	VR = 0V, f = 1MHz

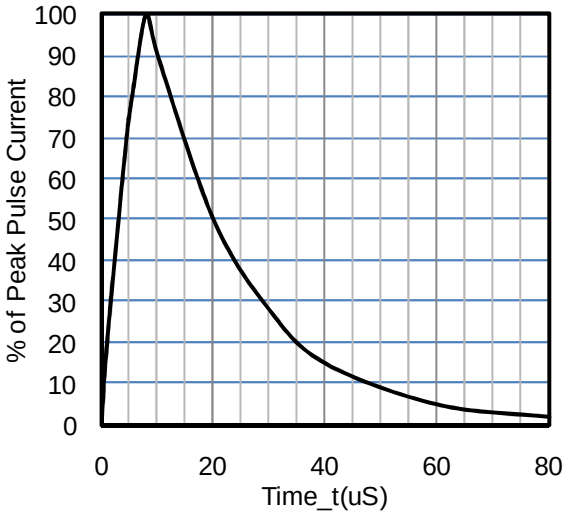
Typical Performance Characteristics (TA=25°C unless otherwise Specified)



Peak Pulse Power vs. Pulse Time

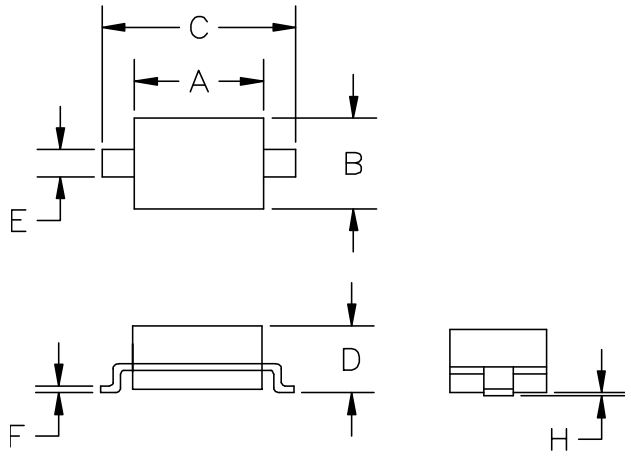


Power Derating Curve



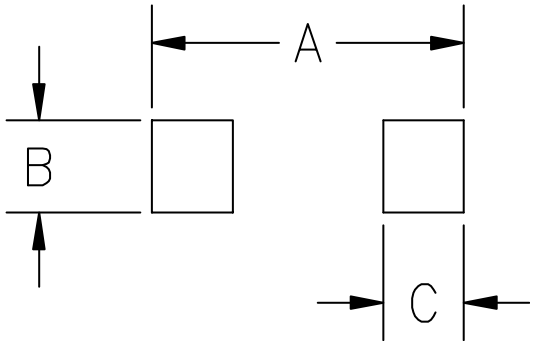
8 X 20uS Pulse Waveform

SOD-323 Package Outline Drawing



SYM	DIMENSIONS			
	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	1.50	1.80	0.060	0.071
B	1.20	1.40	0.045	0.054
C	2.30	2.70	0.090	0.107
D	-	1.10	-	0.043
E	0.30	0.40	0.012	0.016
F	0.10	0.25	0.004	0.010
H	-	0.10	-	0.004

Suggested Land Pattern



SYM	DIMENSIONS	
	MILLIMETERS	INCHES
A	3.15	0.120
B	0.80	0.031
C	0.80	0.031

Ordering Information

Part Number	Packaging	Reel Size
SD05	3000/Tape & Reel	7 inch
SD12	3000/Tape & Reel	7 inch
SD24	3000/Tape & Reel	7 inch
SD36	3000/Tape & Reel	7 inch