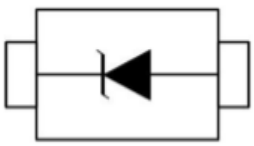
Description

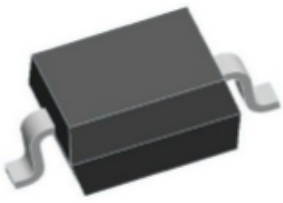
The SDXX series is designed for applications requiring transient overvoltage protection capability. They are intended for use in voltage and ESD sensitive equipment such as computers, printers, medical equipment and other applications. These devices are ideal for situations where board space is at a premium. This series has been specifically designed to protect sensitive components which are connected to power, data and transmission lines form overvoltage caused by ESD,CDE(Cable discharge Events),and EFT(electrical fast transients)

Features

- 350W peak pulse power (8/20us)
- Protects one data or power line
- Ultra low leakage: nA level
- Stand−off Voltage: 3.3 V ~ 36 V
- Ultra low clamping voltage
- Complies with following standards:
  - – IEC 61000-4-2 (ESD) immunity test
    - Air discharge: ±15kV
    - Contact discharge: ±8kV
  - – IEC61000-4-4 (EFT) 40A (5/50ns)
- RoHS Compliant

Dimensions & Symbol（Unit: mm Max）





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: See Below

Applications

- USB Ports
- Smart Phones
- Wireless Systems
- Ethernet 10/100/1000 Base T

Marking information

Bar denotes cathode
Details marking code reference customer approval list

Ordering Information

Part Number	Packaging	Reel Size
SD03	3000/Tape & Reel	7 inch
SD05	3000/Tape & Reel	7 inch
SD12	3000/Tape & Reel	7 inch
SD15	3000/Tape & Reel	7 inch
SD24	3000/Tape & Reel	7 inch
SD36	3000/Tape & Reel	7 inch

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

SD03			
Parameter	**Symbol**	**Value**	**Unit**
Peak Pulse Power (8/20μs)	Ppk	350	W
Peak Pulse Current (8/20μs)	Ipp	20	A
ESD per IEC 61000−4−2 (Air) ESD per IEC 61000−4−2 (Contact)	VESD	±15 ±8	kV
Operating Temperature Range	TJ	−55 to +150	°C
Storage Temperature Range	Tstg	−55 to +150	°C
SD05			
Parameter	**Symbol**	**Value**	**Unit**
Peak Pulse Power (8/20μs)	Ppk	350	W
Peak Pulse Current (8/20μs)	Ipp	17	A
ESD per IEC 61000−4−2 (Air) ESD per IEC 61000−4−2 (Contact)	VESD	±15 ±8	kV
Operating Temperature Range	TJ	−55 to +150	°C
Storage Temperature Range	Tstg	−55 to +150	°C
SD12			
Parameter	**Symbol**	**Value**	**Unit**
Peak Pulse Power (8/20μs)	Ppk	350	W
Peak Pulse Current (8/20μs)	Ipp	11	A
ESD per IEC 61000−4−2 (Air) ESD per IEC 61000−4−2 (Contact)	VESD	±15 ±8	kV
Operating Temperature Range	TJ	−55 to +150	°C
Storage Temperature Range	Tstg	−55 to +150	°C

SD15			
Parameter	**Symbol**	**Value**	**Unit**
Peak Pulse Power (8/20μs)	Ppk	350	W
Peak Pulse Current (8/20μs)	Ipp	10	A
ESD per IEC 61000−4−2 (Air) ESD per IEC 61000−4−2 (Contact)	V_{ESD}	±15 ±8	kV
Operating Temperature Range	T_J	−55 to +150	°C
Storage Temperature Range	Tstg	−55 to +150	°C
SD24			
Parameter	**Symbol**	**Value**	**Unit**
Peak Pulse Power (8/20μs)	Ppk	350	W
Peak Pulse Current (8/20μs)	Ipp	7	A
ESD per IEC 61000−4−2 (Air) ESD per IEC 61000−4−2 (Contact)	V_{ESD}	±15 ±8	kV
Operating Temperature Range	T_J	−55 to +150	°C
Storage Temperature Range	Tstg	−55 to +150	°C
SD36			
Parameter	**Symbol**	**Value**	**Unit**
Peak Pulse Power (8/20μs)	Ppk	350	W
Peak Pulse Current (8/20μs)	Ipp	5	A
ESD per IEC 61000−4−2 (Air) ESD per IEC 61000−4−2 (Contact)	V_{ESD}	±15 ±8	kV
Operating Temperature Range	T_J	−55 to +150	°C
Storage Temperature Range	Tstg	−55 to +150	°C

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

SD03						
Parameter	**Symbol**	**Min**	**Typ**	**Max**	**Unit**	**Test Condition**
Reverse Working Voltage	V_{RWM}			3.3	V	
Breakdown Voltage	V_{BR}	4.0			V	IT = 1mA
Reverse Leakage Current	I_R			40	uA	VRWM = 3.3V
Clamping Voltage	VC		6.5		V	IPP = 1A (8 x 20uS pulse)
Clamping Voltage	VC			10.5	V	IPP = 20A (8 x 20uS pulse)
Junction Capacitance	CJ		450		pF	VR = 0V, f = 1MHz

SD05						
Parameter	**Symbol**	**Min**	**Typ**	**Max**	**Unit**	**Test Condition**
Reverse Working Voltage	V_{RWM}			5	V	
Breakdown Voltage	V_{BR}	6.0			V	IT = 1mA
Reverse Leakage Current	I_R			10	uA	VRWM = 5V
Clamping Voltage	VC		9.8		V	IPP = 1A (8 x 20uS pulse)
Clamping Voltage	VC			18.0	V	IPP = 17A (8 x 20uS pulse)
Junction Capacitance	CJ		300		pF	VR = 0V, f = 1MHz

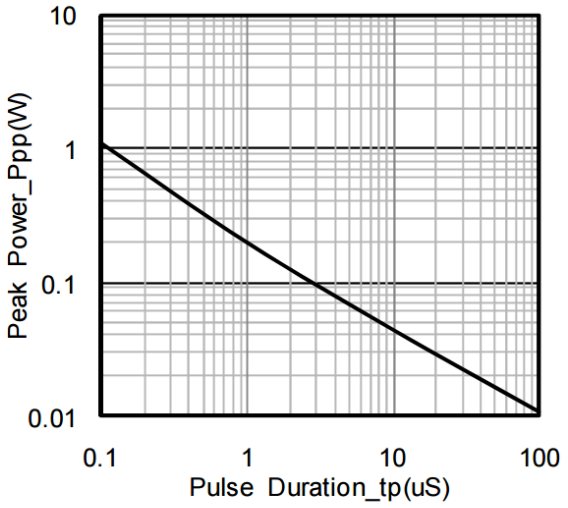
SD12						
Parameter	**Symbol**	**Min**	**Typ**	**Max**	**Unit**	**Test Condition**
Reverse Working Voltage	V_{RWM}			12	V	
Breakdown Voltage	V_{BR}	13.3			V	IT = 1mA
Reverse Leakage Current	I_R			1	uA	VRWM = 12V
Clamping Voltage	VC		19		V	IPP = 1A (8 x 20uS pulse)
Clamping Voltage	VC			32	V	IPP =11A (8 x 20uS pulse)
Junction Capacitance	CJ		130		pF	VR = 0V, f = 1MHz

SD15						
Parameter	**Symbol**	**Min**	**Typ**	**Max**	**Unit**	**Test Condition**
Reverse Working Voltage	V_{RWM}			15	V	
Breakdown Voltage	V_{BR}	16.7			V	IT = 1mA
Reverse Leakage Current	I_R			1	uA	VRWM =15V
Clamping Voltage	VC		24		V	IPP = 1A (8 x 20uS pulse)
Clamping Voltage	VC			38	V	IPP = 10A (8 x 20uS pulse)
Junction Capacitance	CJ		120		pF	VR = 0V, f = 1MHz

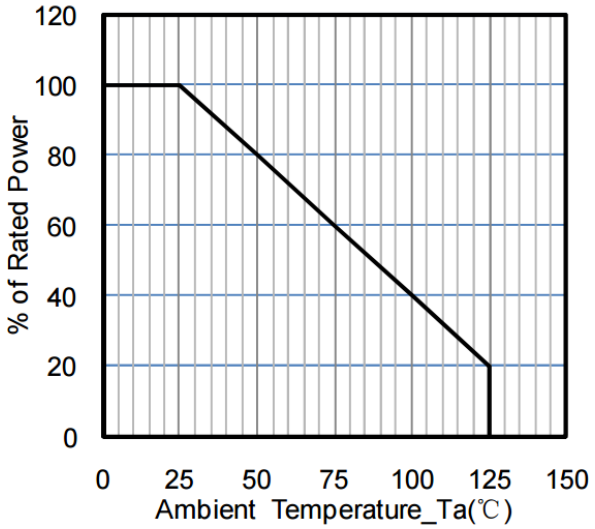
SD24						
Parameter	**Symbol**	**Min**	**Typ**	**Max**	**Unit**	**Test Condition**
Reverse Working Voltage	V_{RWM}			24	V	
Breakdown Voltage	V_{BR}	26.7			V	IT = 1mA
Reverse Leakage Current	I_R			1	uA	VRWM = 24V
Clamping Voltage	VC		43		V	IPP = 1A (8 x 20uS pulse)
Clamping Voltage	VC			52	V	IPP =7A (8 x 20uS pulse)
Junction Capacitance	CJ		80		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}	40			V	IT = 1mA
Reverse Leakage Current	I_R			1	uA	VRWM =40V
Clamping Voltage	VC		60		V	IPP = 1A (8 x 20uS pulse)
Clamping Voltage	VC			75	V	IPP = 5A (8 x 20uS pulse)
Junction Capacitance	CJ		60		pF	VR = 0V, f = 1MHz

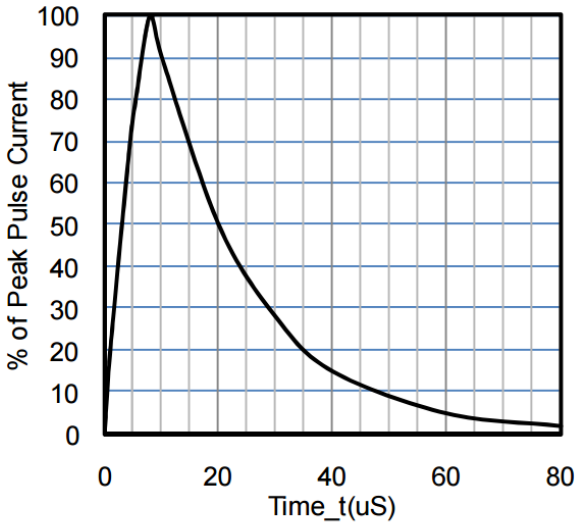
Typical Performance Characteristics (T_A=25°C unless otherwise Specified)



Peak Pulse Power vs. Pulse Time



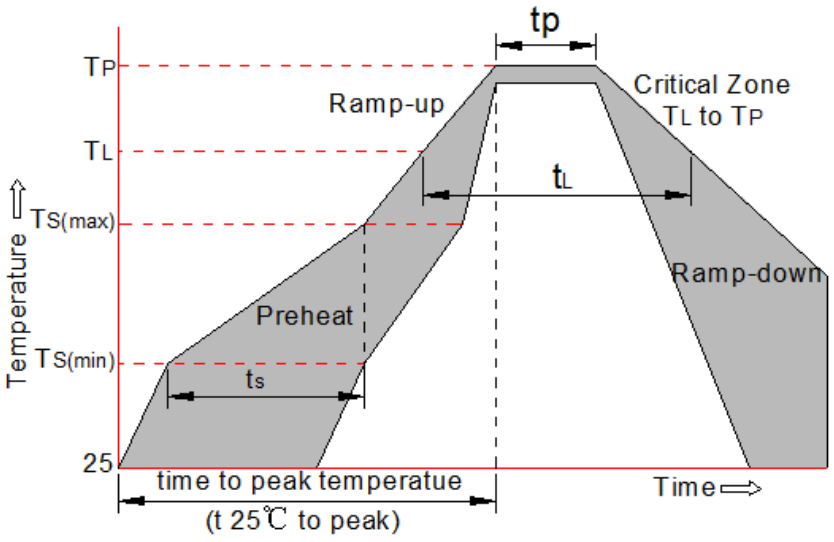
Power Derating Curve



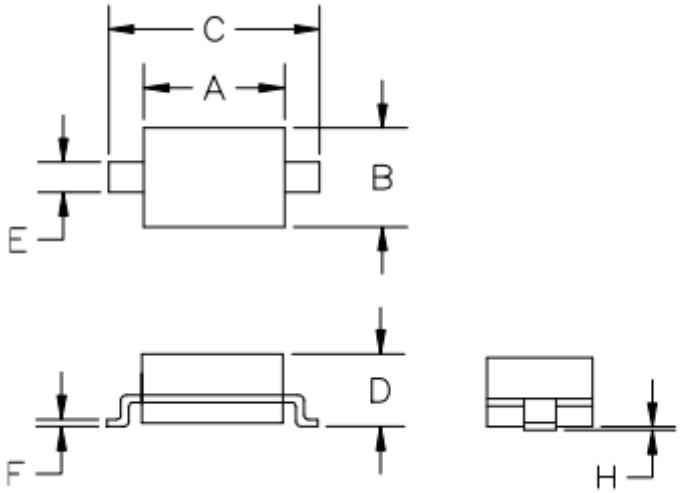
8 X 20uS Pulse Waveform

Soldering parameters

Reflow Condition		Pb-Free assembly (see FIG.2)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150℃
	-Temperature Max($T_{s(max)}$)	+200℃
	-Time (Min to Max) (ts)	60-180 secs.
Average ramp up rate (Liquid us Temp (T_L) to peak)		3℃/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3℃/sec. Max
Reflow	-Temperature(T_L) (Liquid us)	+217℃
	-Temperature(t_L)	60-150 secs.
Peak Temp (T_p)		+260(+0/-5)℃
Time within 5℃ of actual Peak Temp (t_p)		30 secs. Max
Ramp-down Rate		6℃/sec. Max
Time 25℃ to Peak Temp (T_P)		8 min. Max
Do not exceed		+260℃

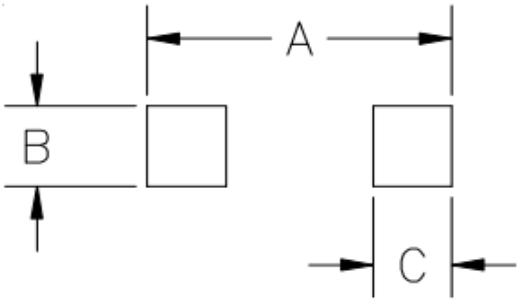


Package Mechanical Data (SOD-323)



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

Contact Information

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