

**Features**

- 500W peak pulse power (8/20µs)
- Protects one data or power line
- Ultra low leakage: nA level
- Operating voltage: 5V, 8V, 12V, 24V, 36V, 40V
- 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

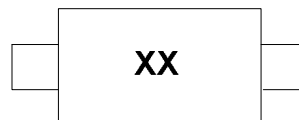
**Description**

The SDXXC 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 SDXXC complies with the IEC 61000 -4-2 (ESD) standard with ±15kV air and ±8kV contact discharge. The SDXXC 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**

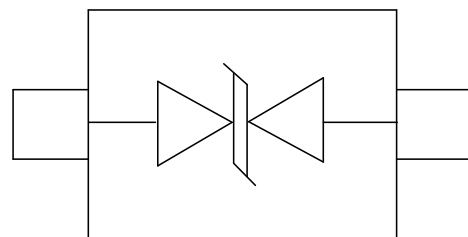


Part Number	Marking
SD05C	05
SD08C	08
SD12C	12
SD24C	24
SD36C	36
SD40C	40

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

Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20 $\mu\text{s}$ )	Ppk	500	W
ESD per IEC 61000-4-2 (Air)	VESD	$\pm 30$	kV
ESD per IEC 61000-4-2 (Contact)		$\pm 30$	
Operating Temperature Range	TJ	-55 to +125	$^\circ\text{C}$
Storage Temperature Range	Tstg	-55 to +150	$^\circ\text{C}$

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

SD05C						
Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	VRWM			5	V	
Breakdown Voltage	VBR	6			V	$I_T = 1\text{mA}$
Reverse Leakage Current	$I_R$			1	$\mu\text{A}$	$VRWM = 5\text{V}$
Clamping Voltage	VC			9.5	V	$I_{PP} = 5\text{A}$ (8 x 20 $\mu\text{s}$ pulse)
Clamping Voltage	VC			14	V	$I_{PP} = 36\text{A}$ (8 x 20 $\mu\text{s}$ pulse)
Peak Pulse Current	$I_{pp}$			36	A	$t_p = 8/20\mu\text{s}$
Junction Capacitance	CJ			200	pF	$VR = 0\text{V}$ , $f = 1\text{MHz}$

SD08C						
Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	VRWM			8	V	
Breakdown Voltage	VBR	8.5			V	$I_T = 1\text{mA}$
Reverse Leakage Current	$I_R$			1	$\mu\text{A}$	$VRWM = 8\text{V}$
Clamping Voltage	VC			11	V	$I_{PP} = 5\text{A}$ (8 x 20 $\mu\text{s}$ pulse)
Clamping Voltage	VC			15	V	$I_{PP} = 34\text{A}$ (8 x 20 $\mu\text{s}$ pulse)
Peak Pulse Current	$I_{pp}$			34	A	$t_p = 8/20\mu\text{s}$
Junction Capacitance	CJ			180	pF	$VR = 0\text{V}$ , $f = 1\text{MHz}$

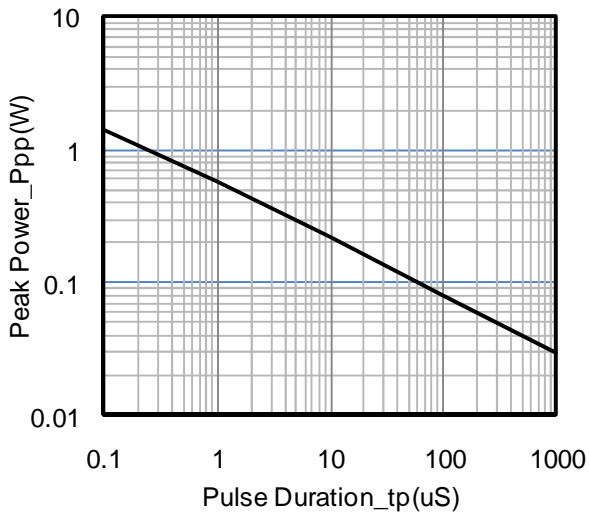
<b>SD12C</b>						
<b>Parameter</b>	<b>Symbol</b>	<b>Min</b>	<b>Typ</b>	<b>Max</b>	<b>Unit</b>	<b>Test Condition</b>
Reverse Working Voltage	VRWM			12	V	
Breakdown Voltage	VBR	13.3			V	IT = 1mA
Reverse Leakage Current	IR			0.5	μA	VRWM = 12V
Clamping Voltage	VC			19	V	I <sub>PP</sub> = 5A (8 x 20μs pulse)
Clamping Voltage	VC			28	V	I <sub>PP</sub> = 18A (8 x 20μs pulse)
Peak Pulse Current	I <sub>pp</sub>			18	A	tp = 8/20μs
Junction Capacitance	CJ			100	pF	VR = 0V, f = 1MHz

<b>SD24C</b>						
<b>Parameter</b>	<b>Symbol</b>	<b>Min</b>	<b>Typ</b>	<b>Max</b>	<b>Unit</b>	<b>Test Condition</b>
Reverse Working Voltage	VRWM			24	V	
Breakdown Voltage	VBR	27			V	IT = 1mA
Reverse Leakage Current	IR			0.2	μA	VRWM = 24V
Clamping Voltage	VC			40	V	I <sub>PP</sub> = 1A (8 x 20μs pulse)
Clamping Voltage	VC			62	V	I <sub>PP</sub> = 8A (8 x 20μs pulse)
Peak Pulse Current	I <sub>pp</sub>			8	A	tp = 8/20μs
Junction Capacitance	CJ			50	pF	VR = 0V, f = 1MHz

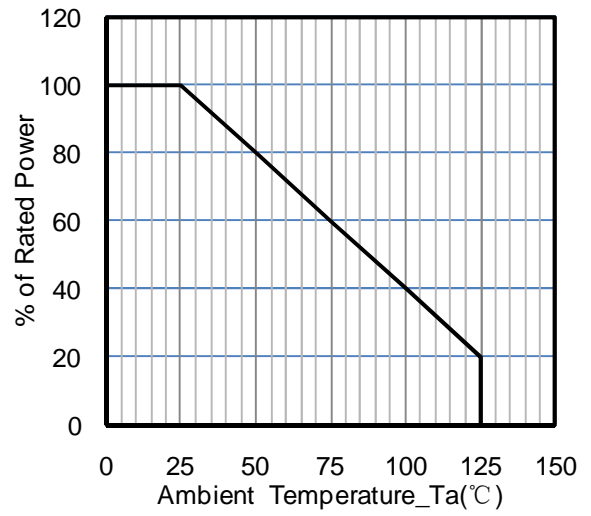
<b>SD36C</b>						
<b>Parameter</b>	<b>Symbol</b>	<b>Min</b>	<b>Typ</b>	<b>Max</b>	<b>Unit</b>	<b>Test Condition</b>
Reverse Working Voltage	VRWM			36	V	
Breakdown Voltage	VBR	38			V	IT = 1mA
Reverse Leakage Current	IR			0.2	μA	VRWM = 36V
Clamping Voltage	VC			40	V	I <sub>PP</sub> = 1A (8 x 20μs pulse)
Clamping Voltage	VC			80	V	I <sub>PP</sub> = 6A (8 x 20μs pulse)
Peak Pulse Current	I <sub>pp</sub>			6	A	tp = 8/20μs
Junction Capacitance	CJ			30	pF	VR = 0V, f = 1MHz

<b>SD40C</b>						
<b>Parameter</b>	<b>Symbol</b>	<b>Min</b>	<b>Typ</b>	<b>Max</b>	<b>Unit</b>	<b>Test Condition</b>
Reverse Working Voltage	VRWM			40	V	
Breakdown Voltage	VBR	44			V	IT = 1mA
Reverse Leakage Current	IR			0.1	μA	VRWM = 40V
Clamping Voltage	VC			50	V	I <sub>PP</sub> = 1A (8 x 20μs pulse)
Clamping Voltage	VC			90	V	I <sub>PP</sub> = 5A (8 x 20μs pulse)
Peak Pulse Current	I <sub>pp</sub>			5	A	tp = 8/20μs
Junction Capacitance	CJ			20	pF	VR = 0V, f = 1MHz

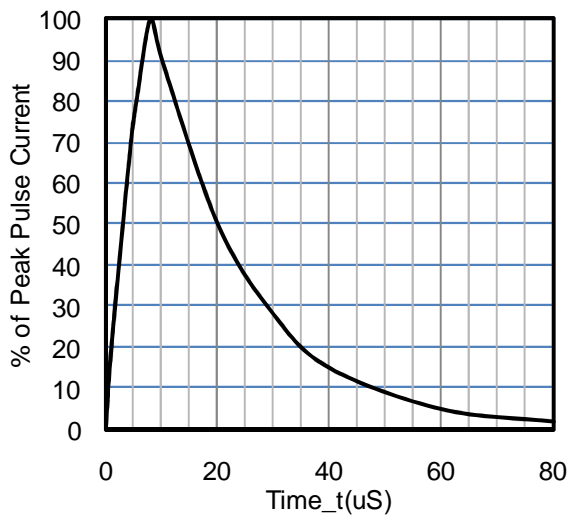
Typical Performance Characteristics (TA=25°C unless otherwise Specified)



Peak Pulse Power vs. Pulse Time

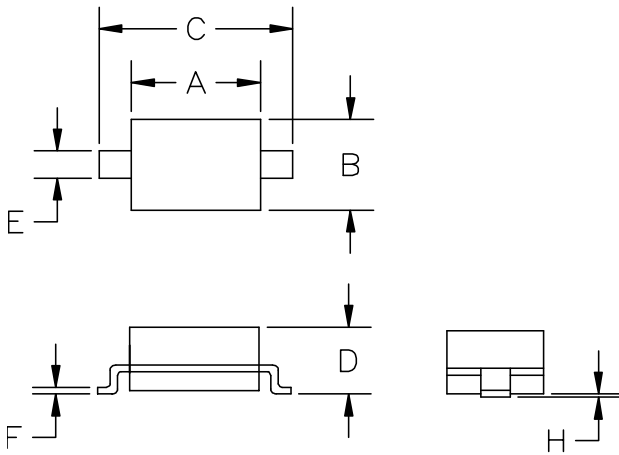


Power Derating Curve



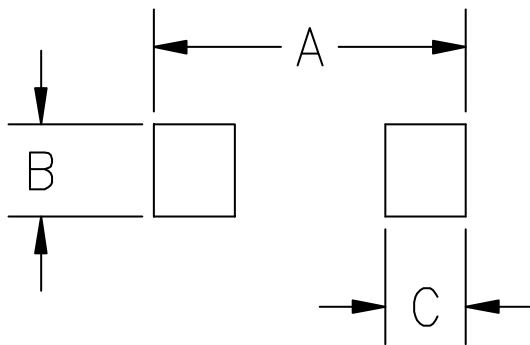
8 X 20uS Pulse Waveform

**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
SD05C	3000/Tape & Reel	7 inch
SD08C	3000/Tape & Reel	7 inch
SD12C	3000/Tape & Reel	7 inch
SD24C	3000/Tape & Reel	7 inch
SD36C	3000/Tape & Reel	7 inch
SD40C	3000/Tape & Reel	7 inch