Description

The DCSDxx 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 DCSDxx complies with the IEC 61000-4-2 (ESD) standard with ±30kV air and ±30kV contact discharge. It 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.

Features

- 350W peak pulse power (8/20μs)
- Protects one data or power line
- Ultra low leakage：nA level
- Operating voltage：3.3V,5V,8V,12V,15V,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

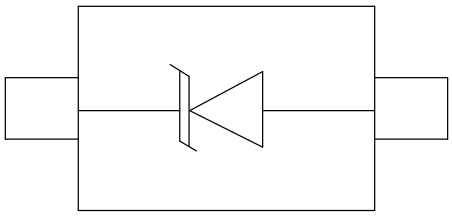
Mechanical Characteristics

- 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

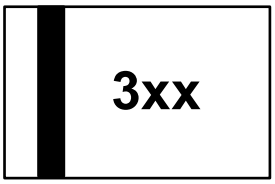
- Cellular Handsets and Accessories
- Personal Digital Assistants
- Notebooks and Handhelds
- Portable Instrumentation
- Peripherals
- Pagers Peripherals
- Desktop and Servers

Dimensions and Pin Configuration



Circuit and Pin Schematic

Marking Information



3xx = Device Marking Code
xx represents the voltage
Bar denotes Cathode

Ordering Information

Part Number	Marking	Packaging	Reel Size
DCSDxx	3xx	3000/Tape & Reel	7 inch

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

Parameter	Symbol	Value	Unit
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)

DCSD03 (Marking Code: 333)						
Parameter	**Symbol**	**Min**	**Typ**	**Max**	**Unit**	**Test Condition**
Reverse Working Voltage	V_{RWM}			3.3	V	
Breakdown Voltage	V_{BR}	4			V	I_T = 1mA
Reverse Leakage Current	I_R			0.5	μA	V_{RWM} = 3.3V
Forward Voltage	V_F		0.8	1.2	V	I_F=10mA
Clamping Voltage	V_C		5		V	I_{PP} = 1A (8 x 20μs pulse)
Clamping Voltage	V_C		10		V	I_{PP} = 32A (8 x 20μs pulse)
Peak Pulse Current	I_{PP}			32	A	tp=8/20μs
Junction Capacitance	C_J			160	pF	VR = 0V, f = 1MHz

DCSD05 (Marking Code: 305)						
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			0.5	μA	V_{RWM} = 5V
Forward Voltage	V_F		0.8	1.2	V	I_F=10mA
Clamping Voltage	V_C		7		V	I_{PP} = 1A (8 x 20μs pulse)
Clamping Voltage	V_C		11		V	I_{PP} = 26A (8 x 20μs pulse)
Peak Pulse Current	I_{PP}			26	A	tp=8/20μs
Junction Capacitance	C_J			150	pF	VR = 0V, f = 1MHz

DCSD08 (Marking Code: 308)						
Parameter	**Symbol**	**Min**	**Typ**	**Max**	**Unit**	**Test Condition**
Reverse Working Voltage	V_{RWM}			8	V	
Breakdown Voltage	V_{BR}	8.5			V	I_T = 1mA
Reverse Leakage Current	I_R			0.5	μA	V_{RWM} = 8V
Forward Voltage	V_F		0.8	1.2	V	I_F=10mA
Clamping Voltage	V_C		10		V	I_{PP} = 1A (8 x 20μs pulse)
Clamping Voltage	V_C		15		V	I_{PP} = 20A (8 x 20μs pulse)
Peak Pulse Current	I_{PP}			20	A	tp=8/20μs
Junction Capacitance	C_J			130	pF	VR = 0V, f = 1MHz

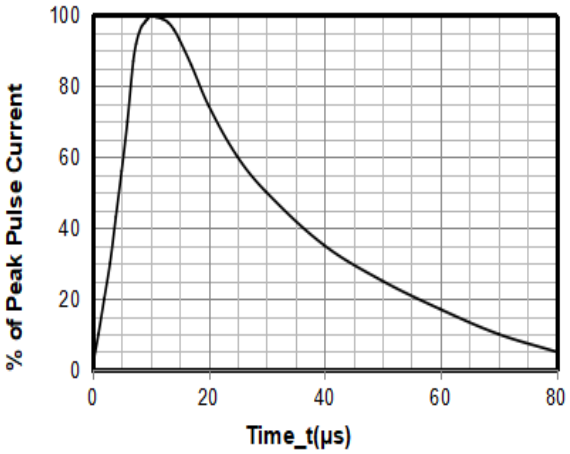
DCSD12 (Marking Code: 312)						
Parameter	**Symbol**	**Min**	**Typ**	**Max**	**Unit**	**Test Condition**
Reverse Working Voltage	V_{RWM}			12	V	
Breakdown Voltage	V_{BR}	13.3			V	I_T = 1mA
Reverse Leakage Current	I_R			0.5	μA	V_{RWM} = 12V
Forward Voltage	V_F		0.8	1.2	V	I_F=10mA
Clamping Voltage	V_C		15		V	I_{PP} = 1A (8 x 20μs pulse)
Clamping Voltage	V_C		24		V	I_{PP} = 15A (8 x 20μs pulse)
Peak Pulse Current	I_{PP}			15	A	tp=8/20μs
Junction Capacitance	C_J			70	pF	VR = 0V, f = 1MHz

DCSD15 (Marking Code: 315)						
Parameter	**Symbol**	**Min**	**Typ**	**Max**	**Unit**	**Test Condition**
Reverse Working Voltage	V_{RWM}			15	V	
Breakdown Voltage	V_{BR}	16.7			V	I_T = 1mA
Reverse Leakage Current	I_R			0.5	μA	V_{RWM} = 15V
Forward Voltage	V_F		0.8	1.2	V	I_F=10mA
Clamping Voltage	V_C		20		V	I_{PP} = 1A (8 x 20μs pulse)
Clamping Voltage	V_C		30		V	I_{PP} = 12A (8 x 20μs pulse)
Peak Pulse Current	I_{PP}			12	A	tp=8/20μs
Junction Capacitance	C_J			60	pF	VR = 0V, f = 1MHz

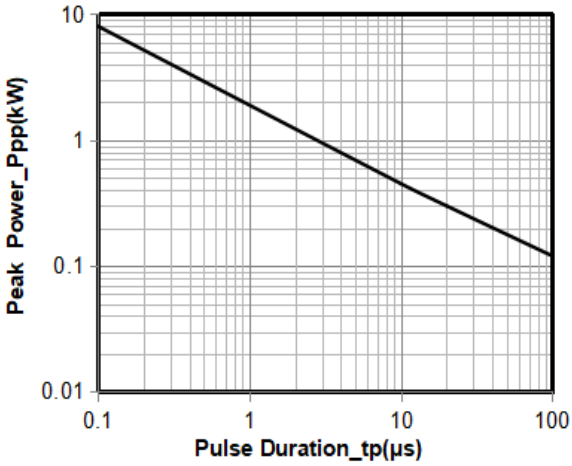
DCSD24 (Marking Code: 324)						
Parameter	**Symbol**	**Min**	**Typ**	**Max**	**Unit**	**Test Condition**
Reverse Working Voltage	V_{RWM}			24	V	
Breakdown Voltage	V_{BR}	26.7			V	I_T = 1mA
Reverse Leakage Current	I_R			0.5	μA	V_{RWM} = 24V
Forward Voltage	V_F		0.8	1.2	V	I_F=10mA
Clamping Voltage	V_C		33		V	I_{PP} = 1A (8 x 20μs pulse)
Clamping Voltage	V_C		45		V	I_{PP} = 6A (8 x 20μs pulse)
Peak Pulse Current	I_{PP}			6	A	tp=8/20μs
Junction Capacitance	C_J			35	pF	VR = 0V, f = 1MHz

DCSD36 (Marking Code: 336)						
Parameter	**Symbol**	**Min**	**Typ**	**Max**	**Unit**	**Test Condition**
Reverse Working Voltage	V_{RWM}			36	V	
Breakdown Voltage	V_{BR}	40			V	I_T = 1mA
Reverse Leakage Current	I_R			0.5	μA	V_{RWM} = 36V
Forward Voltage	V_F		0.8	1.2	V	I_F=10mA
Clamping Voltage	V_C		41		V	I_{PP} = 1A (8 x 20μs pulse)
Clamping Voltage	V_C		60		V	I_{PP} = 4A (8 x 20μs pulse)
Peak Pulse Current	I_{PP}			4	A	tp=8/20μs
Junction Capacitance	C_J			20	pF	VR = 0V, f = 1MHz

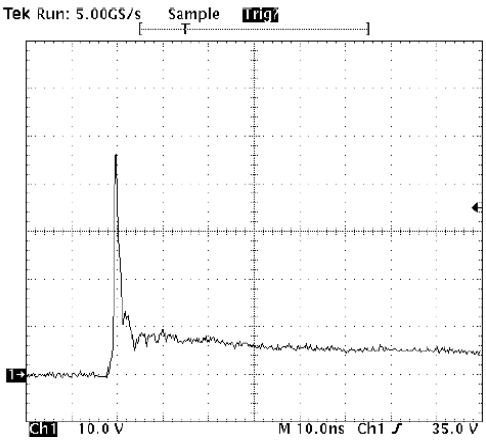
Typical Performance Characteristics (T_A=25℃ unless otherwise Specified)



8 X 20μs Pulse Waveform



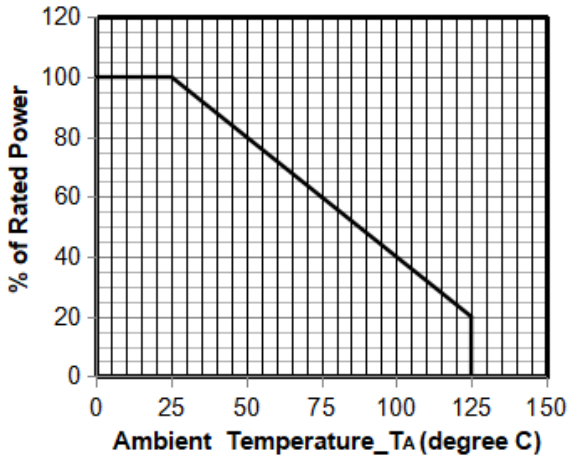
Peak Pulse Power vs. Pulse Time



Note：Data is taken with a 10x attenuator

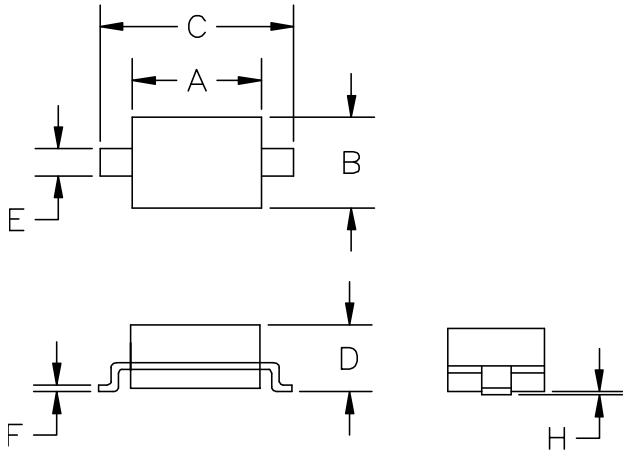
ESD Clamping Voltage

8 kV Contact per IEC61000−4−2



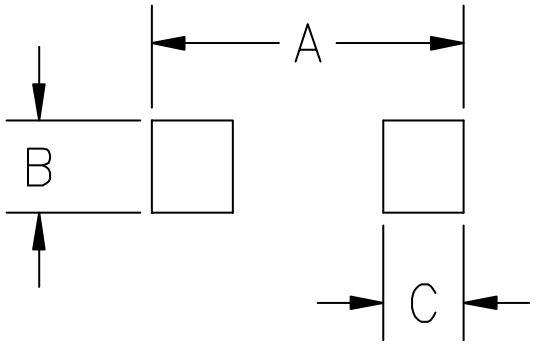
Power Derating Curve

SOD-323 Package Outline Drawing



SYM	DIMENSI			
	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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