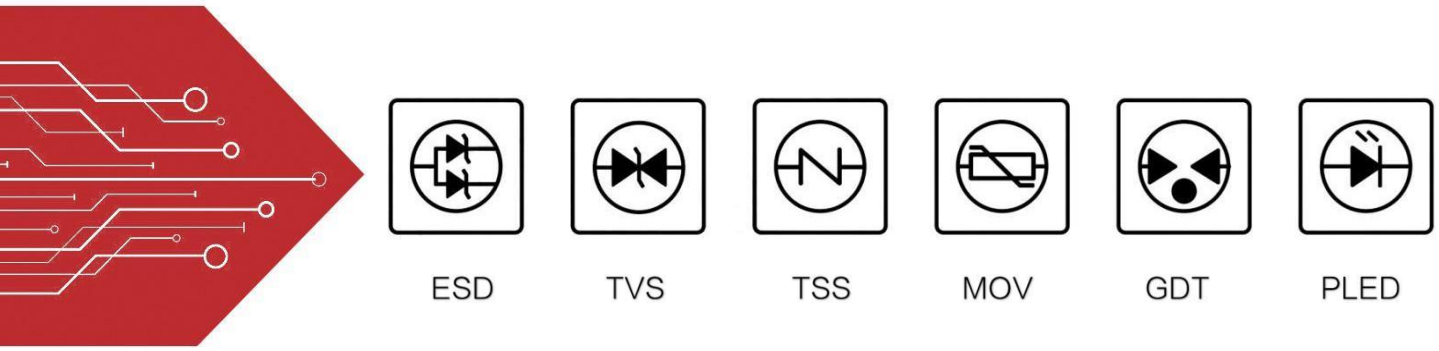
MSKSEMI
SEMICONDUCTOR



Product data sheet

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

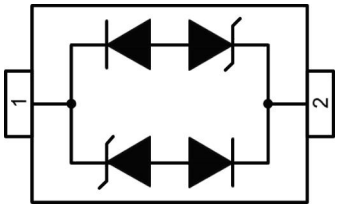
Applications

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

Features

- 350W peak pulse power (8/20μs)
- Ultra low capacitance ： 1.0pF typical
- Ultra low leakage：nA level
- Low Operating：3.3V,5V,8V,12V,15V,24V
- Low clamping voltage
- Protects one power line or data line
- 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

Dimensions and Pin Configuration



Circuit and Pin Schematic

SOD-323

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	−40 to +85	°C
Storage Temperature Range	Tstg	−55 to +150	°C

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

SPD9103W-MS						
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		1	100	nA	V_{RWM} = 3.3V
Clamping Voltage	V_C			7	V	I_{PP} = 1A (8 x 20μs pulse)
Clamping Voltage	V_C			16	V	I_{PP} = 20A (8 x 20μs pulse)
Peak Pulse Current	I_{PP}			20	A	tp=8/20μs
Junction Capacitance	C_J		1		pF	VR = 0V, f = 1MHz

SPD9105W-MS						
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	100	nA	V_{RWM} = 5V
Clamping Voltage	V_C			10	V	I_{PP} = 1A (8 x 20μs pulse)
Clamping Voltage	V_C			18	V	I_{PP} = 18A (8 x 20μs pulse)
Peak Pulse Current	I_{PP}			18	A	tp=8/20μs
Junction Capacitance	C_J		1		pF	VR = 0V, f = 1MHz

SPD9108W-MS						
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		1	100	nA	V_{RWM} = 8V
Clamping Voltage	V_C			14	V	I_{PP} = 1A (8 x 20μs pulse)
Clamping Voltage	V_C			19	V	I_{PP} = 13A (8 x 20μs pulse)
Peak Pulse Current	I_{PP}			13	A	tp=8/20μs
Junction Capacitance	C_J		1		pF	VR = 0V, f = 1MHz

SPD9112W-MS						
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		1	100	nA	V_{RWM} = 12V
Clamping Voltage	V_C			19	V	I_{PP} = 1A (8 x 20μs pulse)
Clamping Voltage	V_C			25	V	I_{PP} = 10A (8 x 20μs pulse)
Peak Pulse Current	I_{PP}			10	A	tp=8/20μs
Junction Capacitance	C_J		1		pF	VR = 0V, f = 1MHz

SPD9115W-MS						
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		1	100	nA	V_{RWM} = 15V
Clamping Voltage	V_C			20	V	I_{PP} = 1A (8 x 20μs pulse)
Clamping Voltage	V_C			31	V	I_{PP} = 8A (8 x 20μs pulse)
Peak Pulse Current	I_{PP}			8	A	tp=8/20μs
Junction Capacitance	C_J		1		pF	VR = 0V, f = 1MHz

SPD9124W-MS						
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		1	100	nA	V_{RWM} = 24V
Clamping Voltage	V_C			40	V	I_{PP} = 1A (8 x 20μs pulse)
Clamping Voltage	V_C			71	V	I_{PP} = 3.5A (8 x 20μs pulse)
Peak Pulse Current	I_{PP}			3.5	A	tp=8/20μs
Junction Capacitance	C_J		1		pF	VR = 0V, f = 1MHz

Electrical Parameter

Symbol	Parameter
I_{PP}	Maximum Reverse Peak Pulse Current
V_C	Clamping Voltage @ I_{PP}
V_{RWM}	Working Peak Reverse Voltage
I_R	Maximum Reverse Leakage Current @ V_{RWM}
I_T	Test Current
V_{BR}	Breakdown Voltage @ I_T

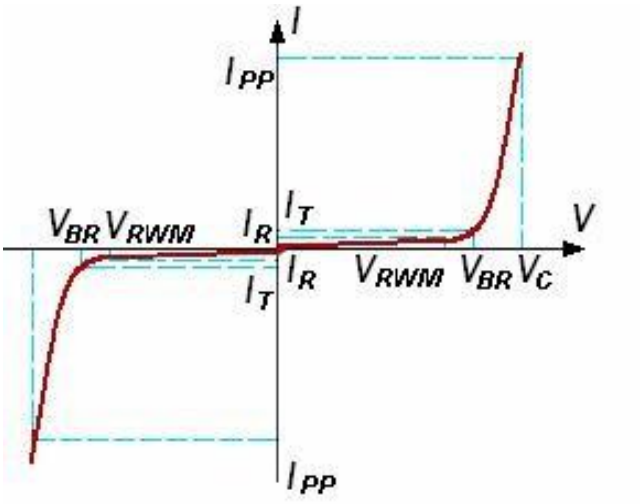


FIG1: Pulse Waveform

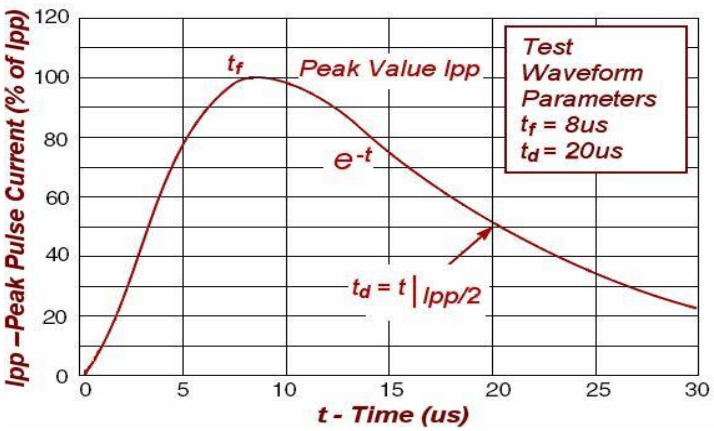
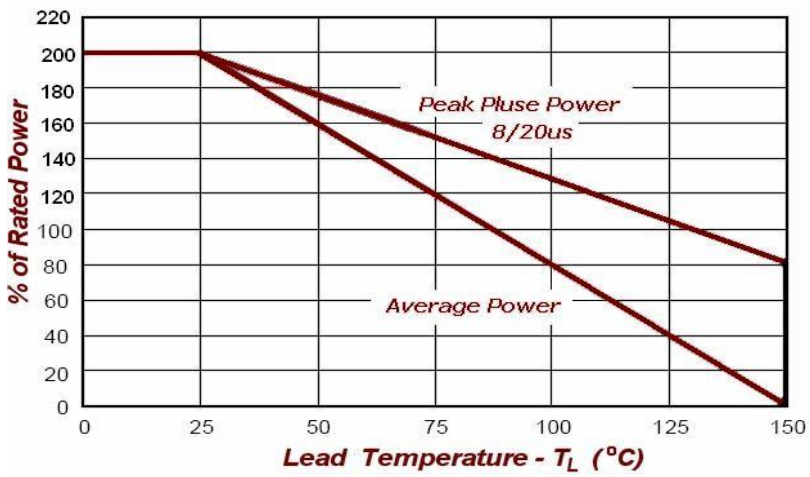
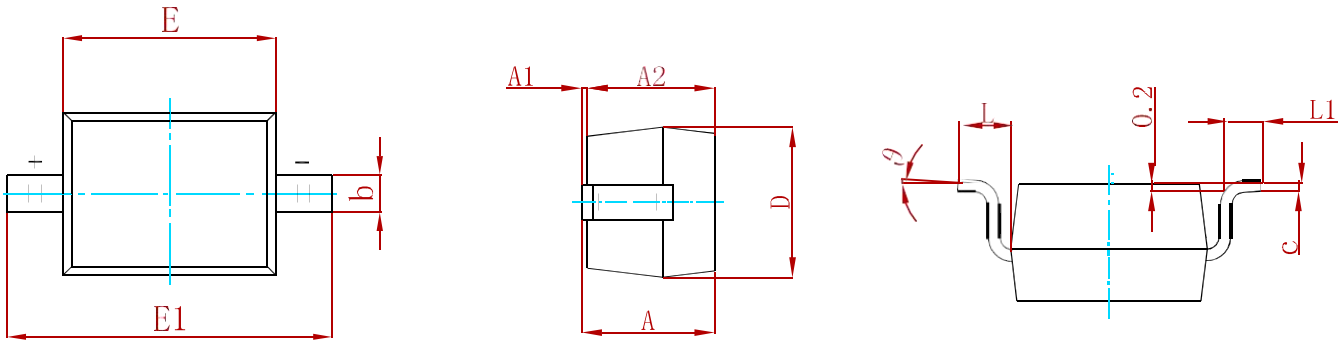


FIG2:Power Derating

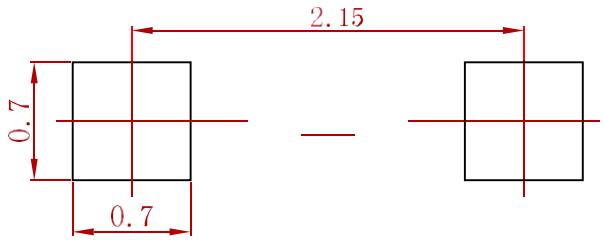


PACKAGE MECHANICAL DATA



Symbol	Dimensions In Millimeters		Dimensions In 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	2.550	2.750	0.100	0.108
L	0.475 REF.		0.019 REF.	
L1	0.250	0.400	0.010	0.016
θ	0°	8°	0°	8°

Suggested Pad Layout



Note:
1.Controlling dimension:in millimeters.
2.General tolerance:± 0.05mm.
3.The pad layout is for reference purposes only.

REEL SPECIFICATION

P/N	PKG	QTY
SPD91XXW-MS	SOD-323	3000

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