



ESD3B5CM

Low Capacitance Bidirectional TVS/ESD Protection Diode

SOD-323 Plastic-Encapsulate ESD Protection Diodes

DESCRIPTION

The ESD3B5CM is designed to protect voltage sensitive components from ESD and transient voltage events. Excellent clamping capability, low leakage, and fast response time, make these parts ideal for ESD protection on designs where board space is at a premium. Because of its small size, it is suited for use in cellular phones, portable devices, digital cameras, power supplies and many other portable applications where board space comes at a premium. Also because of its low capacitance, it is suited for use in high frequency designs such as USB 2.0 high speed, VGA, DVI, SDI and other high speed line applications.

This device has been specifically designed to protect sensitive components which are connected to data and transmission lines from overvoltage caused by ESD(electrostatic discharge), and EFT (electrical fast transients).

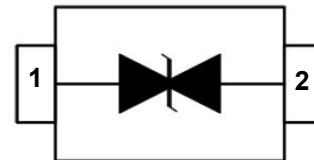
Features

- ◆ Peak power dissipation: 400W (8/20µs)
- ◆ IEC61000-4-2 (ESD) ±15kV (air), ±8kV (contact)
- ◆ IEC61000-4-4 (EFT) 40A (5/50ns)
- ◆ Protects one directional I/O line
- ◆ Low clamping voltage
- ◆ Low leakage current
- ◆ Low capacitance
- ◆ Working voltages : 5V
- ◆ Meets MSL 1 Requirements

Pin Configuration



Circuit Diagram



Applications

- ◆ High Speed Line :USB1.0/2.0, VGA, DVI, SDI
- ◆ Serial and Parallel Ports
- ◆ Notebooks, Desktops, Servers
- ◆ Projection TV
- ◆ Cellular handsets and accessories
- ◆ Portable instrumentation
- ◆ Peripherals

Mechanical Characteristics

- ◆ Package: SOD-323
- ◆ Flammability Rating: UL 94V-0
- ◆ Terminals: Gold plated, solderable per MIL-STD-750, method 2026
- ◆ Packaging: Tape and Reel
- ◆ Marking: **5/S**

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

Parameter	Symbol	Value	Unit
ESD per IEC 61000-4-2 (Air)	VESD	± 15	KV
ESD per IEC 61000-4-2 (Contact)		± 8	
Peak Pulse Power(8/20us)	PPP	400	W
Operating Temperature	T _{OPT}	-55 to +150	°C
Storage Temperature	T _{STG}	-55 to +150	°C

The above data are for reference only.



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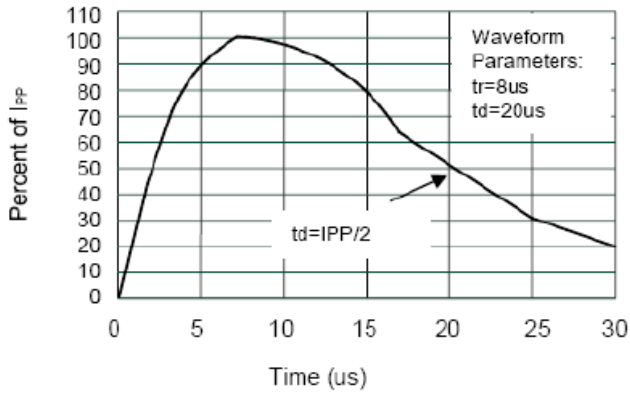
Electrical Characteristics (T_A=25°C unless otherwise specified)

Symbol	Parameter	Test Condition	Min	Typ	Max	Units
V _{RWM}	Reverse Working Voltage				5.0	V
V _{BR}	Reverse Breakdown Voltage	I _T = 1mA	5.8		7.8	V
I _R	Reverse Leakage Current	V _{RWM} = 5V			1.0	μA
V _C	Clamping Voltage	I _{PP} = 1A, t _p = 8/20μs			9.8	V
V _C	Clamping Voltage	I _{PP} = 25A, t _p = 8/20μs		15	20	V
C _J	Junction Capacitance	V _R = 0V, f = 1MHz		30	40	pF

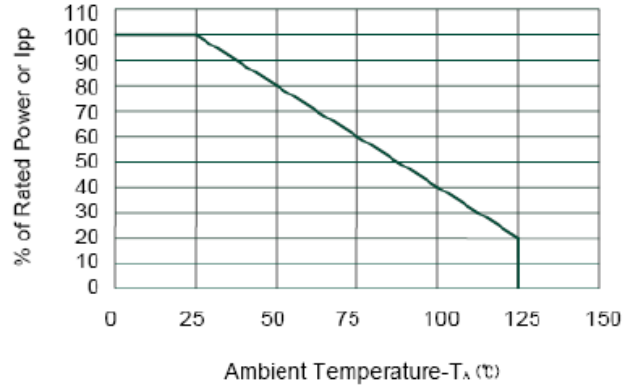
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ELECTRICAL CHARACTERISTICS CURVE



Pulse Waveform



Power Derating Curve

The curve above is for reference only.

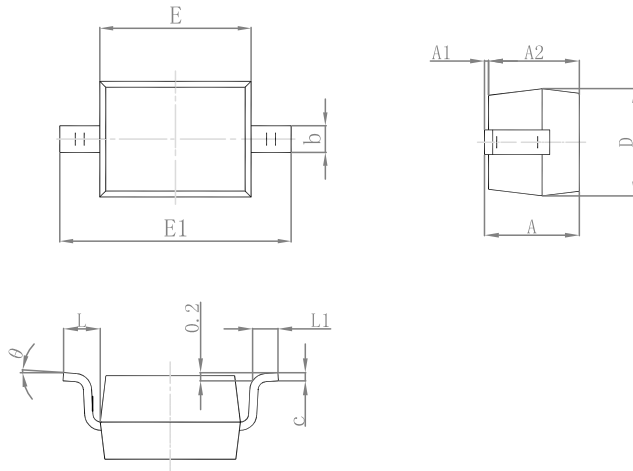


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TVS/ESD Protection Diode

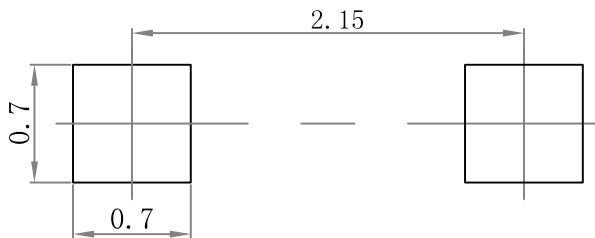
Outline Drawing

SOD-323 Package Outline Dimensions



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°	

Suggested Pad Layout



Note:

1. Controlling dimension: in/millimeters.
2. General tolerance: $\pm 0.05\text{mm}$.
3. The pad layout is for reference purposes only.

PACKAGE SPECIFICATIONS

Package	Reel Size	Reel DIA. (mm)	Q'TY/Reel (pcs)	Box Size (mm)	QTY/Box (pcs)	Carton Size (mm)	Q'TY/Carton (pcs)
SOD-323	7'	178	3000	183×188×80	45,000	386×265×215	180,000

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