



## AD-ESDBT4V5D3 Plastic-Encapsulated Diode

### AD-ESDBT4V5D3 Bi-direction Transient Voltage Suppressor

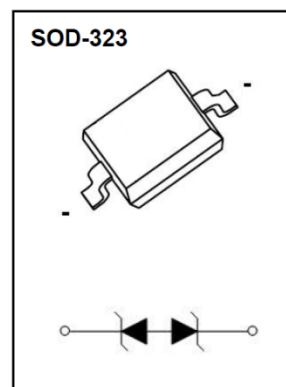
#### DESCRIPTION

To protect voltage sensitive electronic components from ESD and other transients. Excellent clamping capability, low leakage, fast response time provide best in class protection on designs which are exposed to ESD.

The combination of small size, low capacitance and high level of ESD protection makes the product a flexible solution for applications such as Digital cameras, cellular phones, and MP3 Players. It is designed to replace multiplayer varistors (MLV) in consumer equipments applications such as mobile phone, notebook, PAD, STB, LCD TV etc. .

#### FEATURES

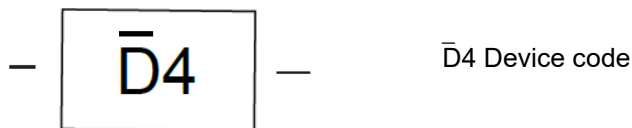
- Bi-directional ESD protection of one line
- Reverse stand-off voltage: 4.5V
- Low reverse clamping voltage
- Low leakage current
- Excellent package: 1.7mm X 1.3mm X 1.0mm
- Peak pulse power: 3300W (IEC61000-4-5 8/20 $\mu$ s)
- Fast response time
- JESD22-A114-B ESD rating of class 3B per human body model
- IEC 61000-4-2 level 4 ESD protection
- Surge protection according to IEC61000-4-5 8/20 $\mu$ s waveform: I<sub>PPM</sub> 140A
- AEC-Q101 qualified



#### APPLICATIONS

- Computers and peripherals
- Power lines
- Audio and video equipment
- Cellular handsets and accessories
- Tablets
- Portable electronics
- Other electronics equipment communication systems

### MARKING



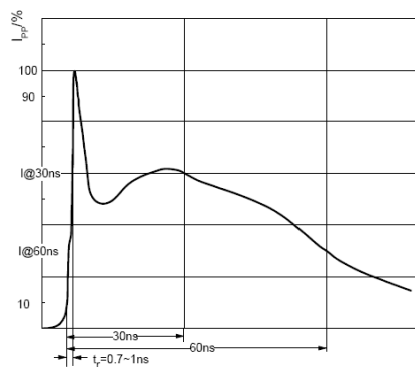
### MAXIMUM RATINGS (T<sub>j</sub> = 25°C unless otherwise specified)

Parameter		Symbol	Value	Unit
IEC 61000-4-2 ESD voltage	Air model	V <sub>ESD</sub> <sup>1)</sup>	±30	kV
	Contact model		±30	
JESD22-A114-B ESD voltage per human body model			±20	
ESD voltage per machine model			±0.4	
Peak pulse power		P <sub>PP</sub> <sup>2)</sup>	3300	W
Peak pulse current		I <sub>PP</sub> <sup>2)</sup>	140	A
Maximum lead solder temperature (10 second duration)		T <sub>L</sub>	260	°C
Operation junction and storage temperature range		T <sub>j</sub> , T <sub>stg</sub>	-55 ~ 150	°C

### ESD STANDARD COMPLIANCE

#### IEC61000-4-2 standard

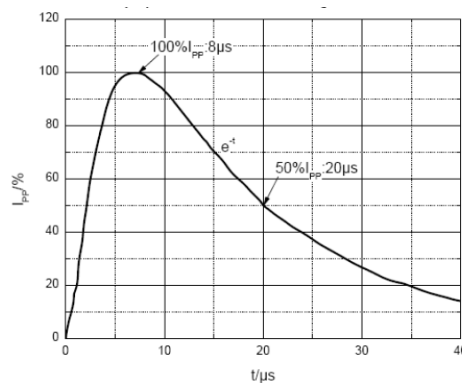
Contact discharge		Air discharge	
Level	Test voltage (kV)	Level	Test voltage (kV)
1	2	1	2
2	4	2	4
3	6	3	8
4	8	4	15



ESD pulse waveform according to IEC61000-4-2

#### JESD22-A114-B standard

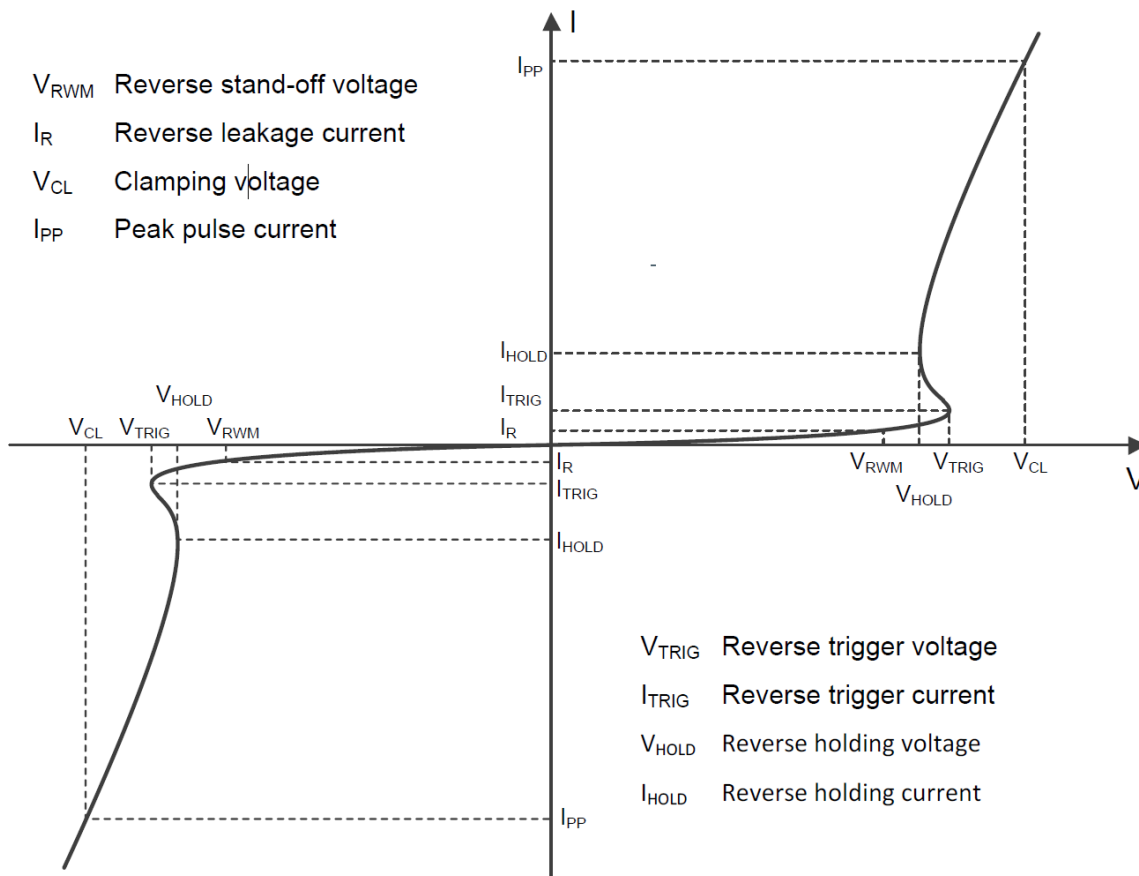
ESD class	Human body discharge (V)
0	0 ~ 249
1A	250 ~ 499
1B	500 ~ 999
1C	1000 ~ 1999
2	2000 ~ 3999
3A	4000 ~ 7999
3B	8000 ~ 15999



8/20μs pulse waveform according to IEC 61000-4-5

**ELECTRICAL PARAMETER**

- $V_{RWM}$  Reverse stand-off voltage
- $I_R$  Reverse leakage current
- $V_{CL}$  Clamping voltage
- $I_{PP}$  Peak pulse current



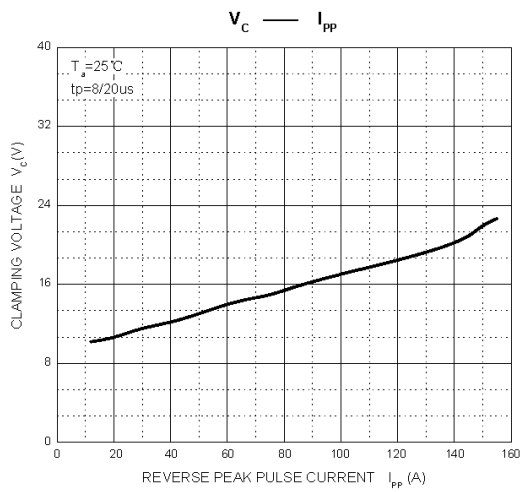
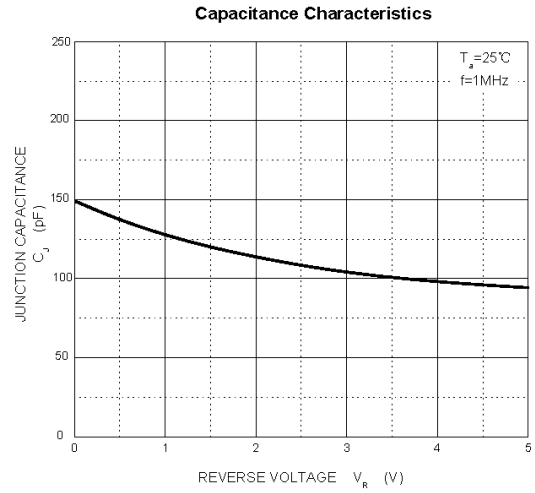
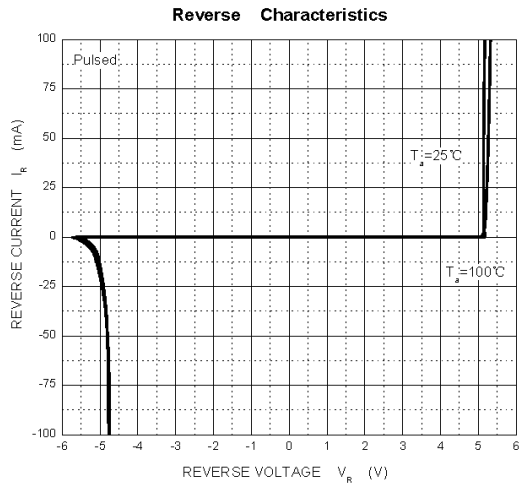
- $V_{TRIG}$  Reverse trigger voltage
- $I_{TRIG}$  Reverse trigger current
- $V_{HOLD}$  Reverse holding voltage
- $I_{HOLD}$  Reverse holding current

**ELECTRICAL CHARACTERISTICS (T<sub>j</sub> = 25°C unless otherwise specified)**

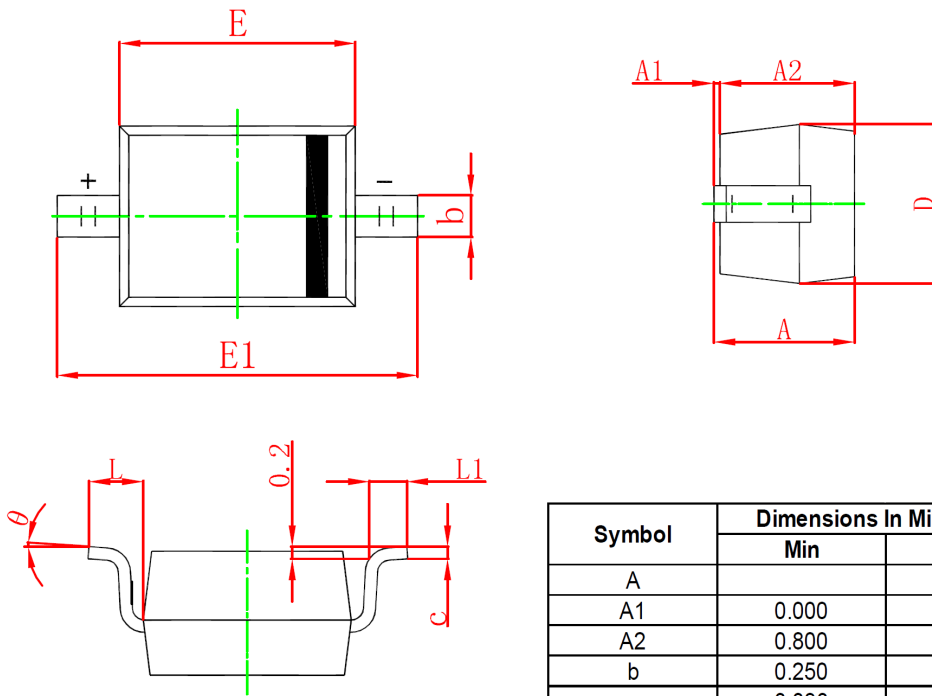
Parameter	Symbol	Test condition	Min	Typ	Max	Unit
Reverse standoff voltage	$V_{RWM}$ <sup>3)</sup>	-	-	-	4.5	V
Reverse leakage current	$I_R$	$V_{RWM} = 4.5V$	-	-	1	μA
Reverse trigger voltage	$V_{TRIG}$	$I_T = 1mA$	5	-	-	V
Reverse holding voltage	$V_{HOLD}$	$I_T = 100mA$	4.6	-	-	
Clamping voltage	$V_C$ <sup>2)</sup>	$I_{PP} = 100A$	-	-	27.5	V
Junction capacitance	$C_J$	$V_R = 0V, f = 1MHz$	-	-	150	pF

1) Device stressed with ten non-repetitive ESD pulses.  
 2) Non-repetitive current pulse 8/20μs exponential decay waveform according to IEC61000-4-5.  
 3) Other voltages available upon request.

# TYPICAL CHARACTERISTICS

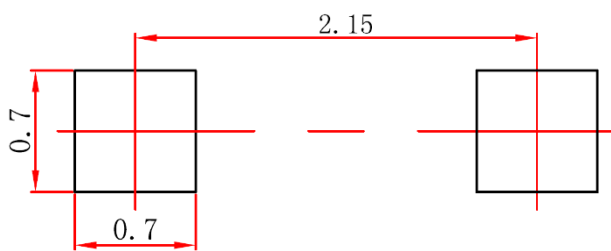


### SOD-323 PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A		1.100		0.043
A1	0.000	0.100	0.000	0.004
A2	0.800	1.000	0.031	0.039
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	2.500	2.750	0.098	0.108
L	0.475 REF		0.019 REF	
L1	0.250	0.400	0.010	0.016
θ	0°	8°	0°	8°

### SOD-323 SUGGESTED PAD LAYOUT

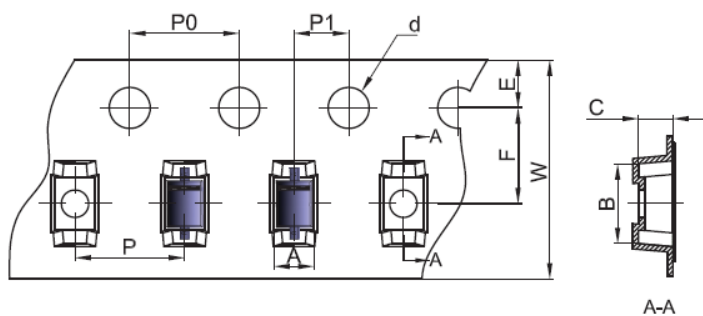


**Note:**

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

# SOD-323 TAPE AND REEL

## SOD-323 Embossed Carrier Tape

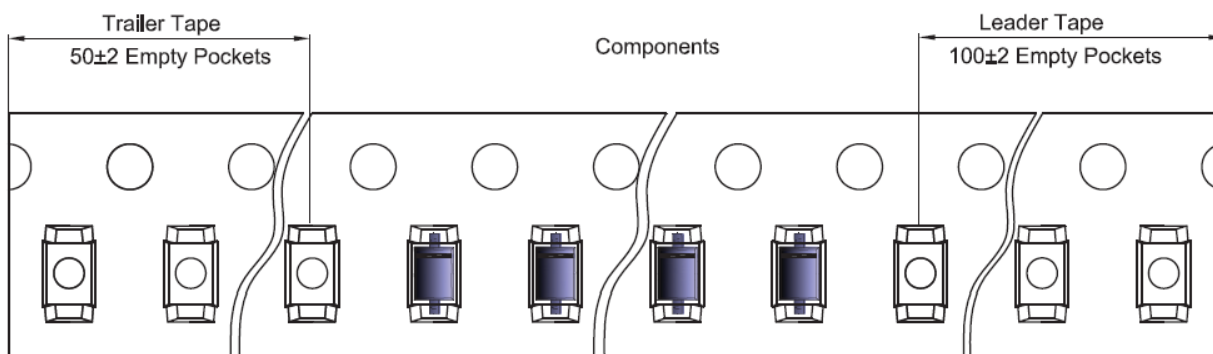


**Packaging Description:**  
 SOD-323 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 3,000 units per 7" or 17,8cm diameter reel. The reels are clear in color and is made of polystyrene plastic (anti-static coated).

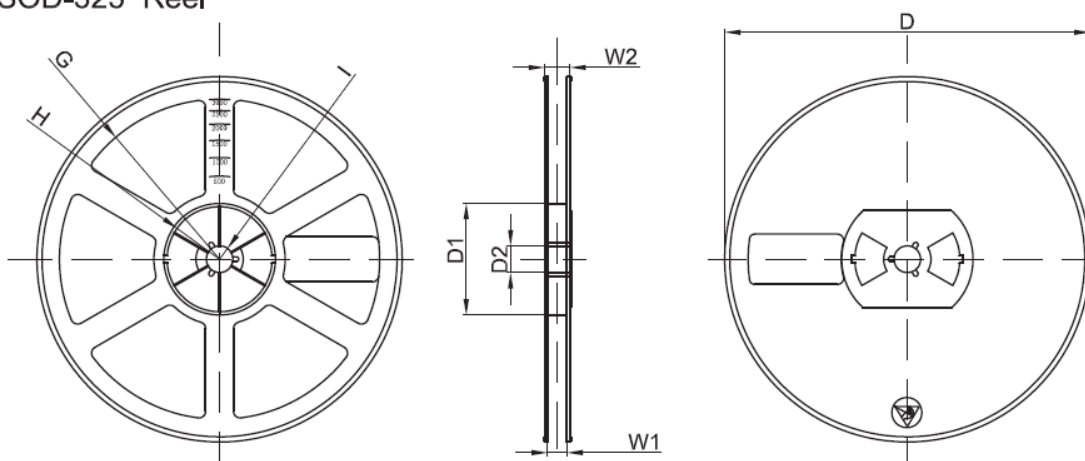
Dimensions are in millimeter

Pkg type	A	B	C	d	E	F	P0	P	P1	W
SOD-323	1.48	3.3	1.25	Ø1.50	1.75	3.50	4.00	4.00	2.00	8.00

## SOD-323 Tape Leader and Trailer



## SOD-323 Reel



Dimensions are in millimeter

Reel Option	D	D1	D2	G	H	I	W1	W2
7" Dia	Ø178.00	54.40	13.00	R78.00	R25.60	R6.50	9.50	12.30

REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)	G.W.(kg)
3000 pcs	7 inch	45,000 pcs	203×203×195	180,000 pcs	438×438×220	

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