



## AD-ESD24VC2 Plastic-Encapsulated Diode

### AD-ESD24VC2 Uni-direction ESD protection diode

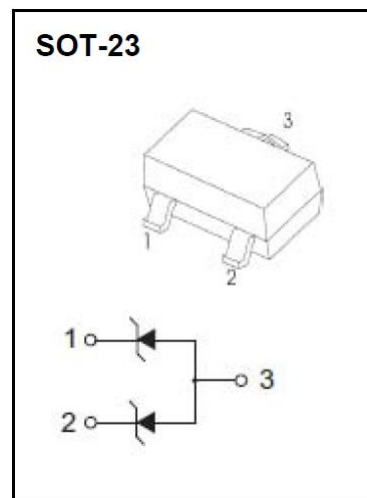
#### DESCRIPTION

To protect voltage sensitive electronic components from ESD and other transients. Excellent clamping capability, low leakage, low capacitance and 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 HDMI, Display Port TM and MDDI interfaces. It is designed to replace multiplayer varistors (MLV).

#### FEATURES

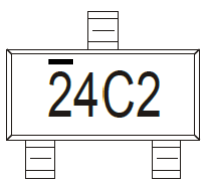
- Uni-directional ESD protection of one line
- Reverse stand-off voltage: 24V
- Low reverse clamping voltage
- Low leakage current
- Excellent package: 2.90mm X 1.30mm X 1.00mm
- Fast response time
- JESD22-A114-B ESD rating of class 3B per human body model
- IEC 61000-4-2 level 3 ESD protection
- AEC-Q101 qualified



#### APPLICATIONS

- Computers and peripherals
- Audio and video equipment
- Cellular handsets and accessories
- Digital cameras
- Portable electronics
- Other electronics equipment communication systems

## MARKING



24C2 = Device code

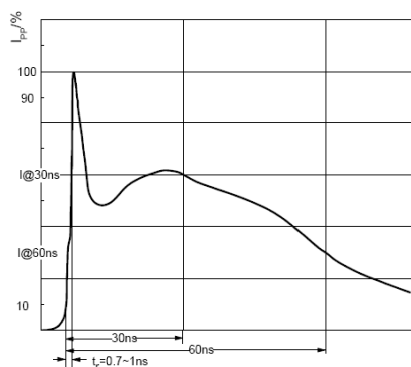
MAXIMUM RATINGS ( $T_j = 25^\circ\text{C}$  unless otherwise specified)

Parameter		Symbol	Value	Unit
IEC 61000-4-2 ESD voltage	Air model	$V_{\text{ESD}}^{1)}$	$\pm 25$	kV
	Contact model		$\pm 25$	
JESD22-A114-B ESD voltage per human body model			$\pm 16$	
ESD voltage per machine model			$\pm 0.4$	
Peak pulse power		$P_{\text{PP}}^{2)}$	406	W
Peak pulse current		$I_{\text{PP}}^{2)}$	7	A
Maximum lead solder temperature (10 second duration)		$T_L$	260	$^\circ\text{C}$
Operation junction and storage temperature range		$T_j, T_{\text{stg}}$	-55 ~ 150	$^\circ\text{C}$

## ESD STANDARD COMPLIANCE

## IEC61000-4-2 standard

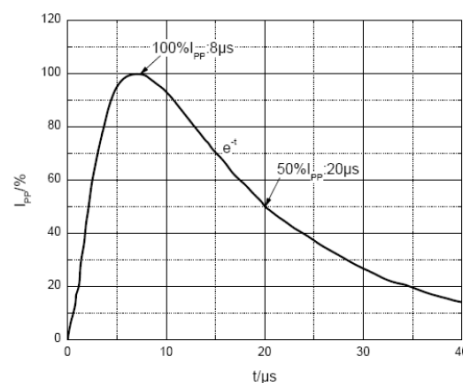
Contact discharge		Air discharge	
Level	Test voltage (kV)	Level	Test voltage (kV)
1	2	1	2
2	4	2	4
3	6	3	8
4	8	4	15



ESD pulse waveform according to IEC61000-4-2

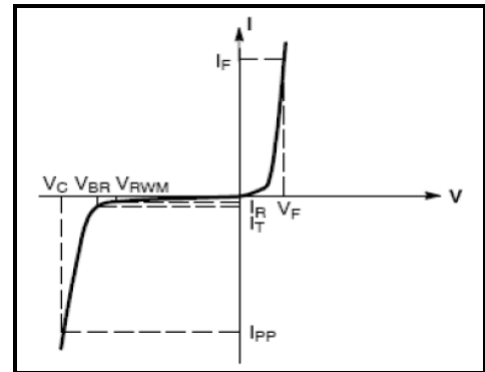
## JESD22-A114-B standard

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

8/20 $\mu\text{s}$  pulse waveform according to IEC 61000-4-5

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

Parameter	Symbol
Clamping voltage @ $I_{PP}$	$V_C$
Peak pulse current	$I_{PP}$
Breakdown voltage @ $I_T$	$V_{BR}$
Test current	$I_T$
Reverse leakage current @ $V_{RWM}$	$I_R$
Reverse standoff voltage	$V_{RWM}$
Forward voltage @ $I_F$	$V_F$
Forward current	$I_F$

**V-I characteristics for a uni-directional TVS**

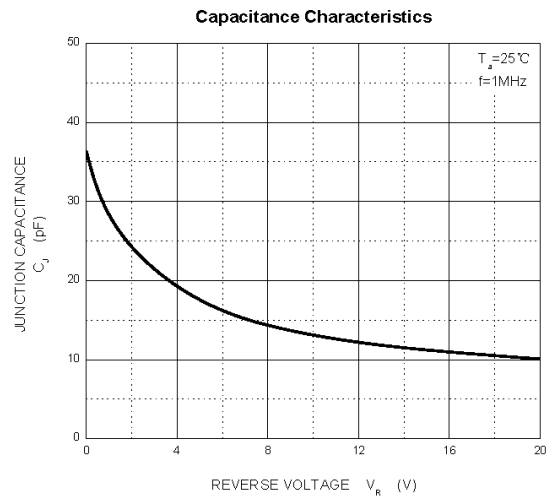
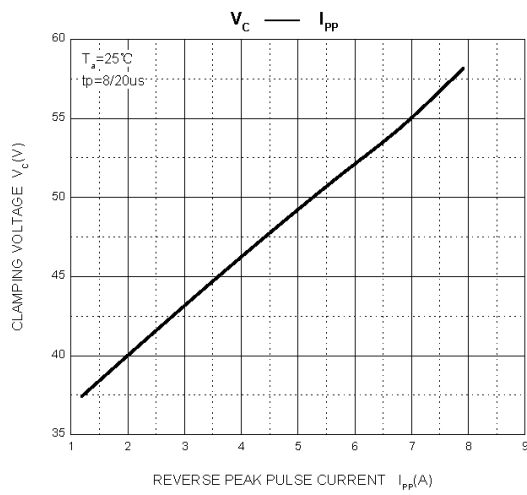
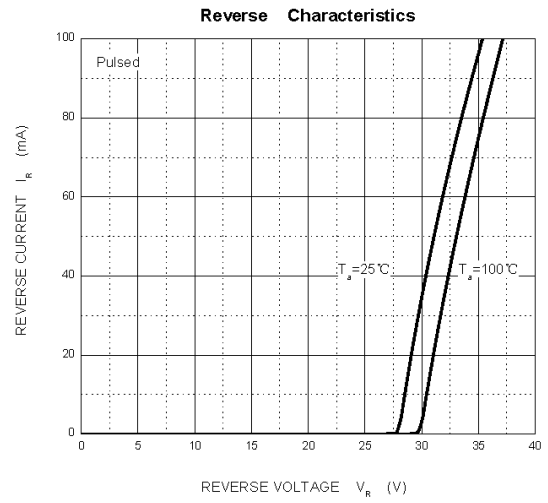
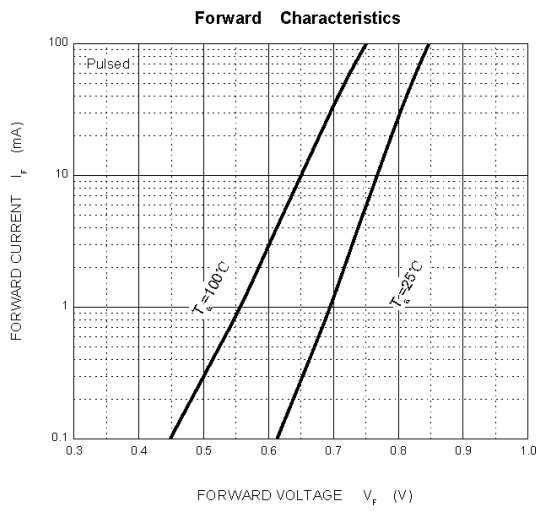
Parameter	Symbol	Test condition	Min	Typ	Max	Unit
Reverse standoff voltage	$V_{RWM}^{3)}$		-	-	24	V
Reverse leakage current	$I_R$	$V_{RWM} = 24\text{V}$	-	-	1	$\mu\text{A}$
Breakdown voltage	$V_{BR}$	$I_T = 1\text{mA}$	26.7	-	33	V
Clamping voltage	$V_C^{2)}$	$I_{PP} = 9\text{A}$	-	-	58	V
Forward voltage	$V_F$	$I_F = 10\text{mA}$	-	-	0.9	V
Junction capacitance	$C_J$	$V_R = 0\text{V}, f = 1\text{MHz}$	-	36	-	pF

1) Device stressed with ten non-repetitive ESD pulses.

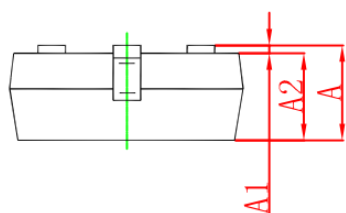
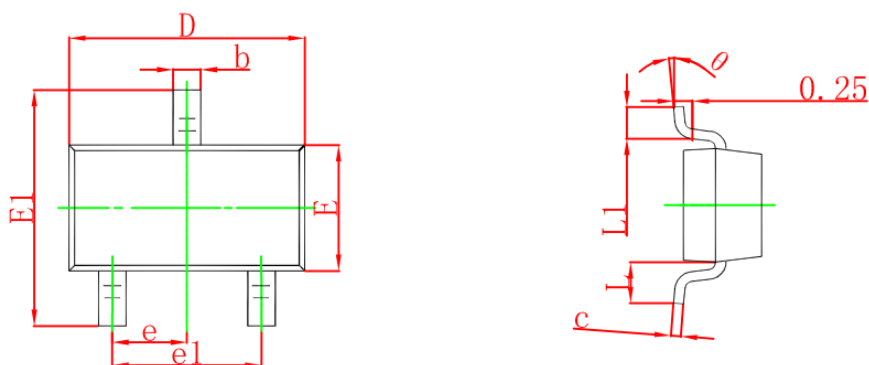
2) Non-repetitive current pulse 8/20 $\mu\text{s}$  exponential decay waveform according to IEC61000-4-5.

3) Other voltages available upon request.

# TYPICAL CHARACTERISTICS

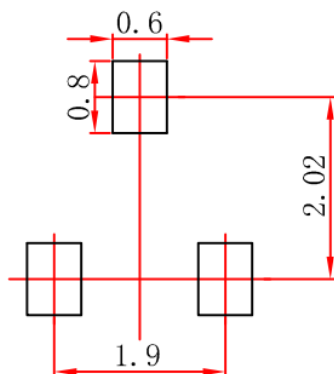


### SOT-23 PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

### SOT-23 SUGGESTED PAD LAYOUT

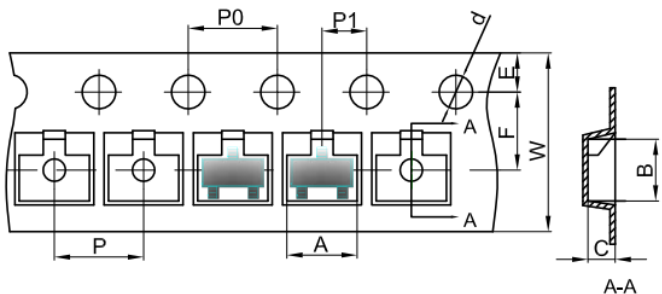


Note:

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

# SOT-23 TAPE AND REEL

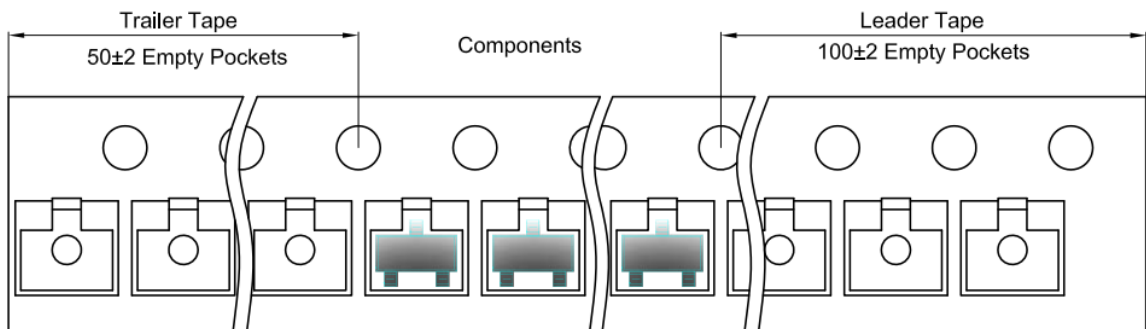
## SOT-23 Embossed Carrier Tape



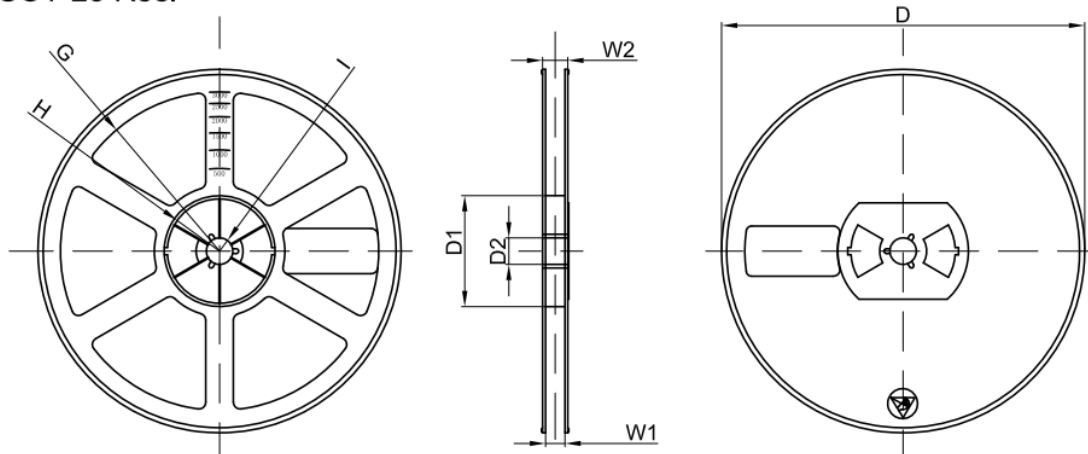
**Packaging Description:**  
 SOT-23 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed 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
SOT-23	3.15	2.77	1.22	Ø1.50	1.75	3.50	4.00	4.00	2.00	8.00

## SOT-23 Tape Leader and Trailer



## SOT-23 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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