



AD-ESDBNB24VS2 Plastic-Encapsulated Diode

AD-ESDBNB24VS2 Bi-direction ESD protection diode

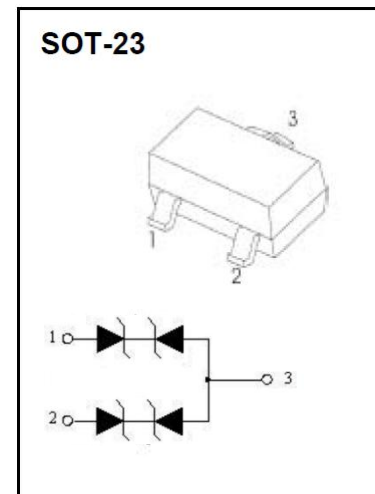
DESCRIPTION

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 multi-layer varistors (MLV) in consumer equipments applications such as mobile phone, notebook, PAD, STB, LCD TV etc.

FEATURES

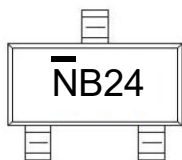
- Bi-directional ESD protection of one line
- Reverse stand-off voltage: 24V
- Low reverse clamping voltage
- Low leakage current
- Excellent package: 2.90mm X 1.30mm X 1.00mm
- Fast response time
- JESD22-A114-B ESD rating of class 3B per human body model
- IEC 61000-4-2 level 4 ESD protection
- AEC-Q101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



APPLICATIONS

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

MARKING



NB24= Device code

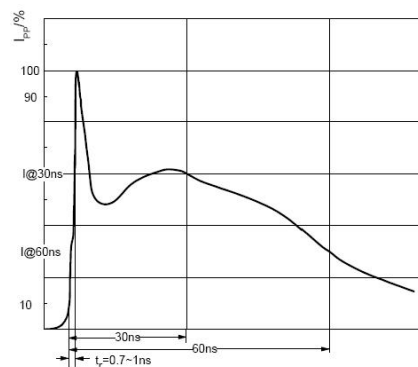
MAXIMUM RATINGS (T_j = 25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
IEC 61000-4-2 ESD voltage	Air model	±25	kV
	Contact model	±25	
JESD22-A114-B ESD voltage per human body model	V _{ESD} ¹⁾	±16	
ESD voltage per machine model		±0.4	
Peak pulse power	P _{PP} ²⁾	330	W
Peak pulse current	I _{PP} ²⁾	7.5	A
Maximum lead solder temperature (10 second duration)	T _L	260	°C
Operation junction and storage temperature range	T _j , T _{stg}	-55 ~ +150	°C

ESD STANDARD COMPLIANCE

IEC61000-4-2 standard

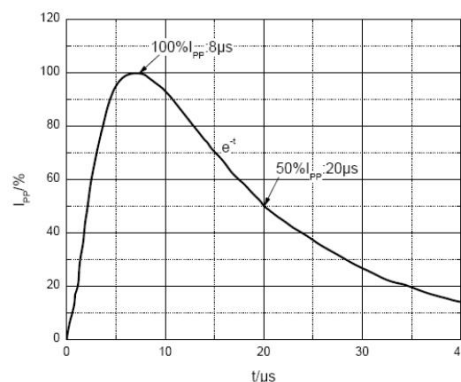
Contact discharge		Air discharge	
Level	Test voltage (kV)	Level	Test voltage (kV)
1	2	1	2
2	4	2	4
3	6	3	8
4	8	4	15



ESD pulse waveform according to IEC61000-4-2

JESD22-A114-B standard

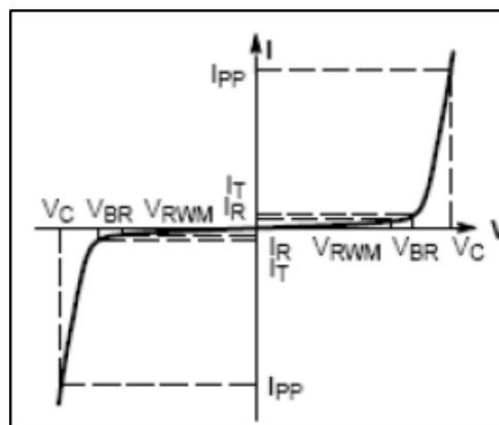
ESD class	Human body discharge (V)
0	0 ~ 249
1A	250 ~ 499
1B	500 ~ 999
1C	1000 ~ 1999
2	2000 ~ 3999
3A	4000 ~ 7999
3B	8000 ~ 15999



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

ELECTRICAL CHARACTERISTICS (T_j = 25°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}



V-I characteristics for a Bi-directional TVS

Parameter	Symbol	Test condition	Min	Typ	Max	Unit
Reverse standoff voltage	$V_{RWM}^{3)}$		-	-	24	V
Reverse leakage current	I_R	$V_{RWM} = 24V$	-	-	1	μA
Breakdown voltage	V_{BR}	$I_T = 1mA$	27.4	-	33.7	V
Clamping voltage	$V_C^{2)}$	$I_{PP} = 7.5A$	-	-	44.7	V
Junction capacitance	C_J	$V_R = 0V, f = 1MHz$	-	36	-	pF

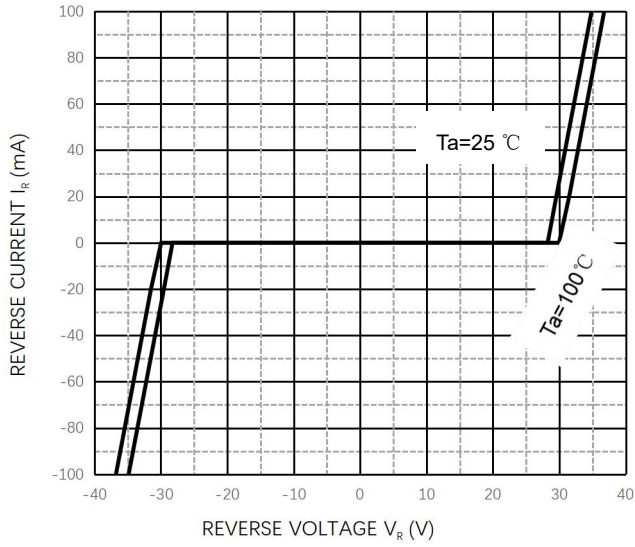
1) Device stressed with ten non-repetitive ESD pulses.

2) Non-repetitive current pulse 8/20 μs exponential decay waveform according to IEC61000-4-5.

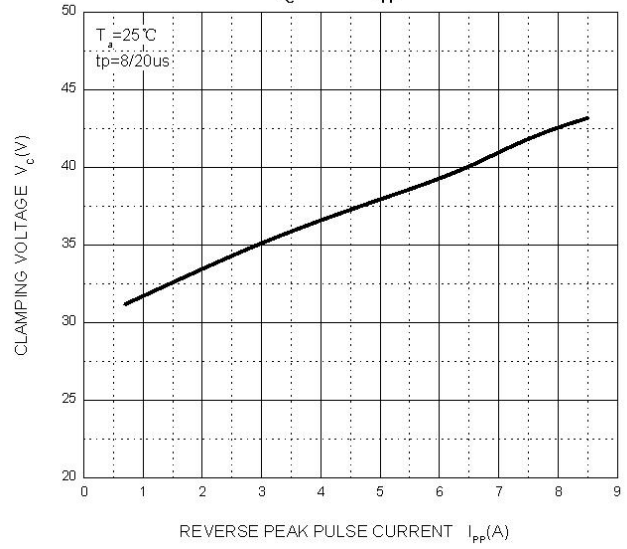
3) Other voltages available upon request.

TYPICAL CHARACTERISTICS

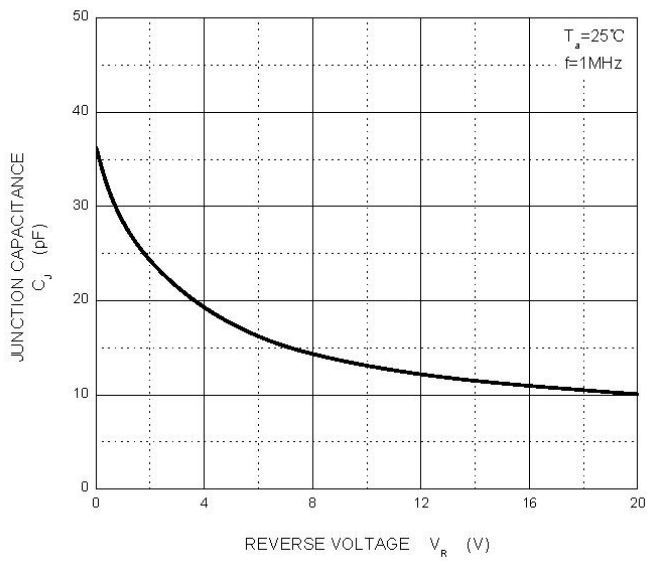
Reverse Characteristics



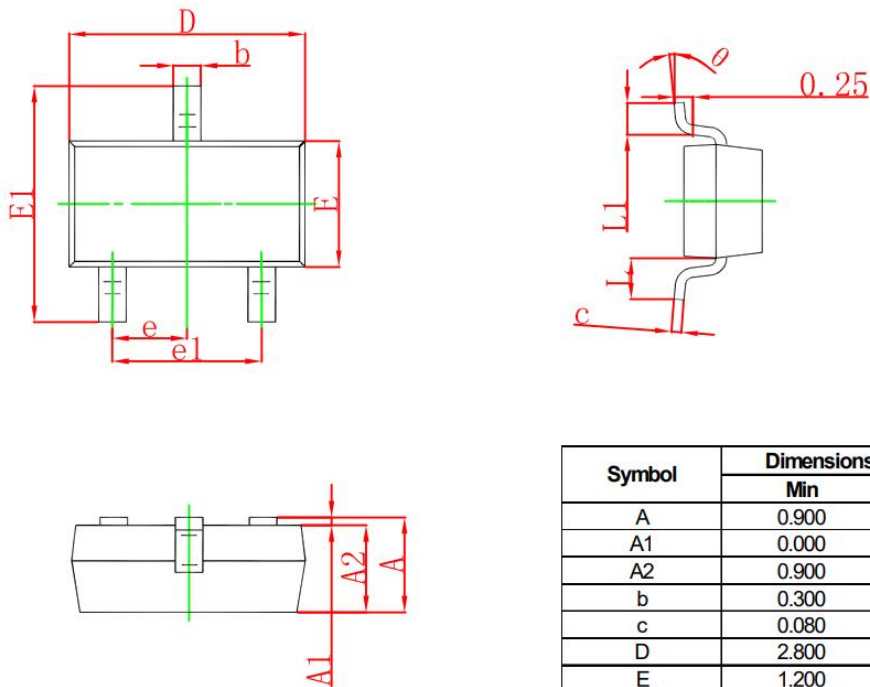
V_c — I_{pp}



Capacitance Characteristics

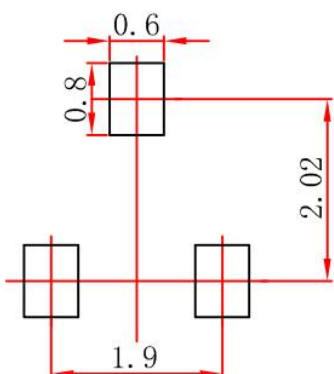


SOT-23 PACKAGE OUTLINE DIMENSIONS



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

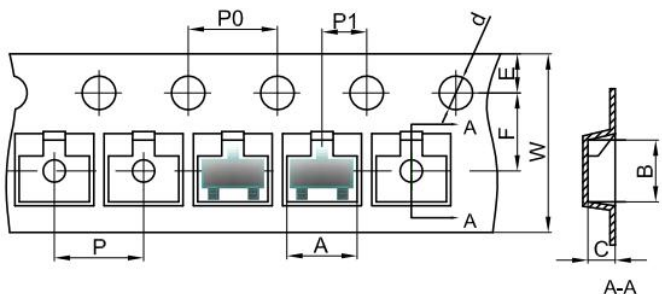


Note:

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

SOT-23 TAPE AND REEL

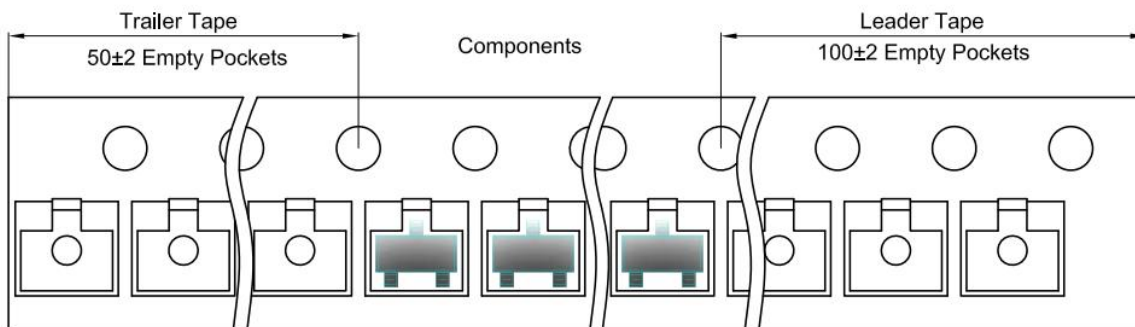
SOT-23 Embossed Carrier Tape



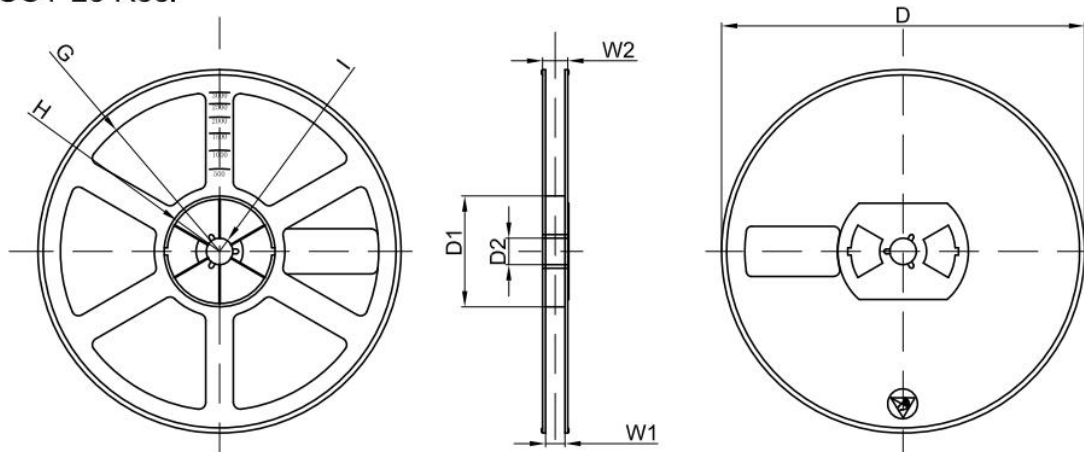
Packaging Description:
 SOT-23 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. 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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