

Bi-direction ESD Protection Diode
FEATURES

- Bi-directional ESD protection of one line
- Low capacitance: 3pF(Typ.)
- Low reverse stand-off voltage: 5V
- Low reverse clamping voltage
- Low leakage current
- Fast response time
- Moisture Sensitivity Level 1

DESCRIPTION

- Designed 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 that are exposed to ESD.
- The combination of small size, low capacitance, and high level of ESD protection makes them a flexible solution for applications such as HDMI, Display Port TM, and MDDI interfaces. It is designed to replace multiplayer varistors (MLV) in consumer equipments applications such as mobile phone, notebook, PAD, STB, LCD TV etc.

WBFBP-03E PACKAGE

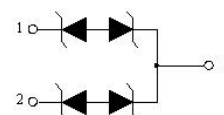
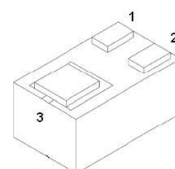
Marking : HD


MECHANICAL DATA

- Case : Molded plastic,WBFBP-03E
- Polarity : Shown above
- Terminals :Plated terminals, solderable per MIL-STD-750,Method 2026
- Epoxy : UL94-V0 rated flame retardant
- JESD22-A114-B ESD Rating of class 3B per human body model
- IEC 61000-4-2 Level 4 ESD protection

APPLICATIONS

- Computers and peripherals
- High speed data lines
- Audio and video equipment
- Cellular handsets and accessories
- Subscriber identity module(SIM) card protection
- Portable electronics
- FireWire
- Other electronics equipments communi- cation systems

Schematic & PIN Configuration


Bi-direction ESD Protection Diode
MAXIMUM RATINGS ($T_a=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Limit	Unit
IEC 61000-4-2 ESD Voltage	$V_{\text{ESD}}^{(1)}$	± 15	kV
Air Model			
Contact Model		± 15	
Per Human Body Model		± 16	
ESD Voltage	Machine Model	± 0.4	
Peak Pulse Power	$P_{\text{PP}}^{(2)}$	52	W
Peak Pulse Current	$I_{\text{PP}}^{(2)}$	4	A
Lead Solder Temperature – Maximum (10 Second Duration)	T_L	260	$^{\circ}\text{C}$
Junction Temperature	T_j	150	$^{\circ}\text{C}$
Storage Temperature Range	T_{stg}	-55 ~ +150	$^{\circ}\text{C}$

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

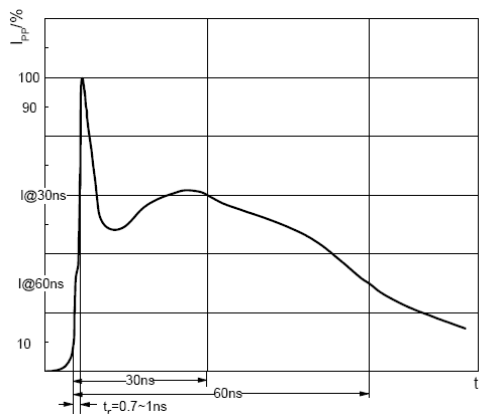
(2).Non-repetitive current pulse 8/20 μs exponential decay waveform according to IEC61000-4-5.

ESD standards compliance
IEC61000-4-2 Standard

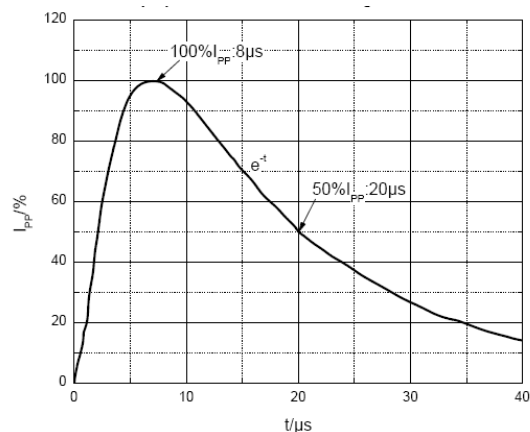
Contact Discharge		Air Discharge	
Level	Test Voltage kV	Level	Test Voltage kV
1	2	1	2
2	4	2	4
3	6	3	8
4	8	4	15

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



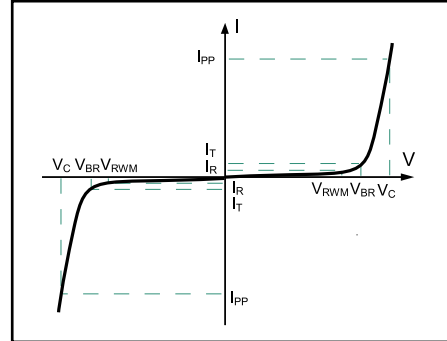
ESD pulse waveform according to IEC61000-4-2



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

Bi-direction ESD Protection Diode
ELECTRICAL PARAMETER

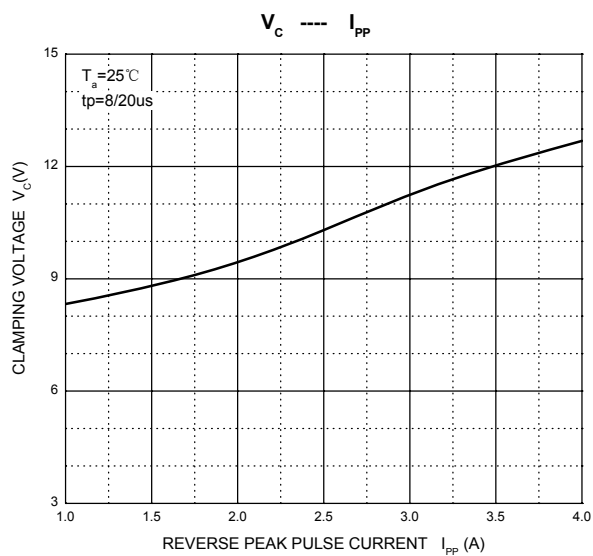
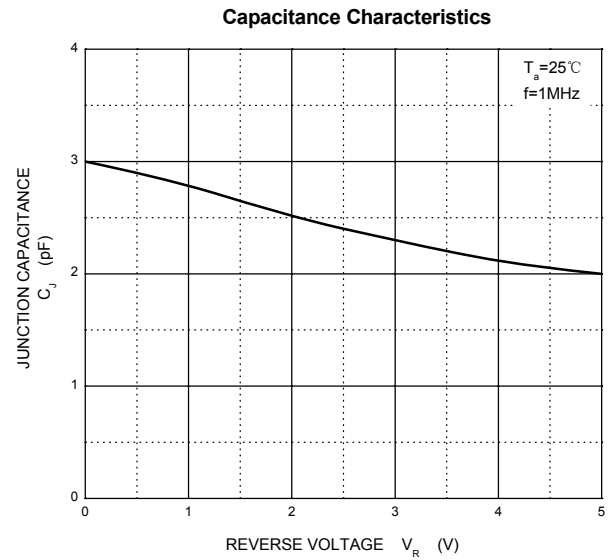
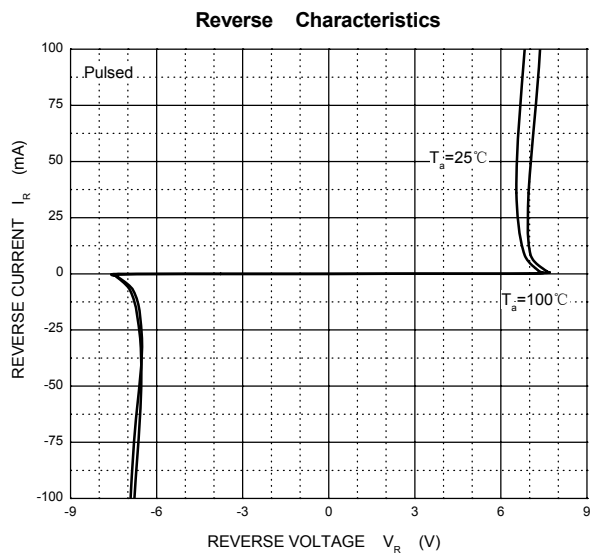
Symbol	Parameter
V_C	Clamping Voltage @ I_{PP}
I_{PP}	Peak Pulse Current
V_{BR}	Breakdown Voltage @ I_T
I_T	Test Current
I_R	Reverse Leakage Current @ V_{RWM}
V_{RWM}	Reverse Standoff Voltage

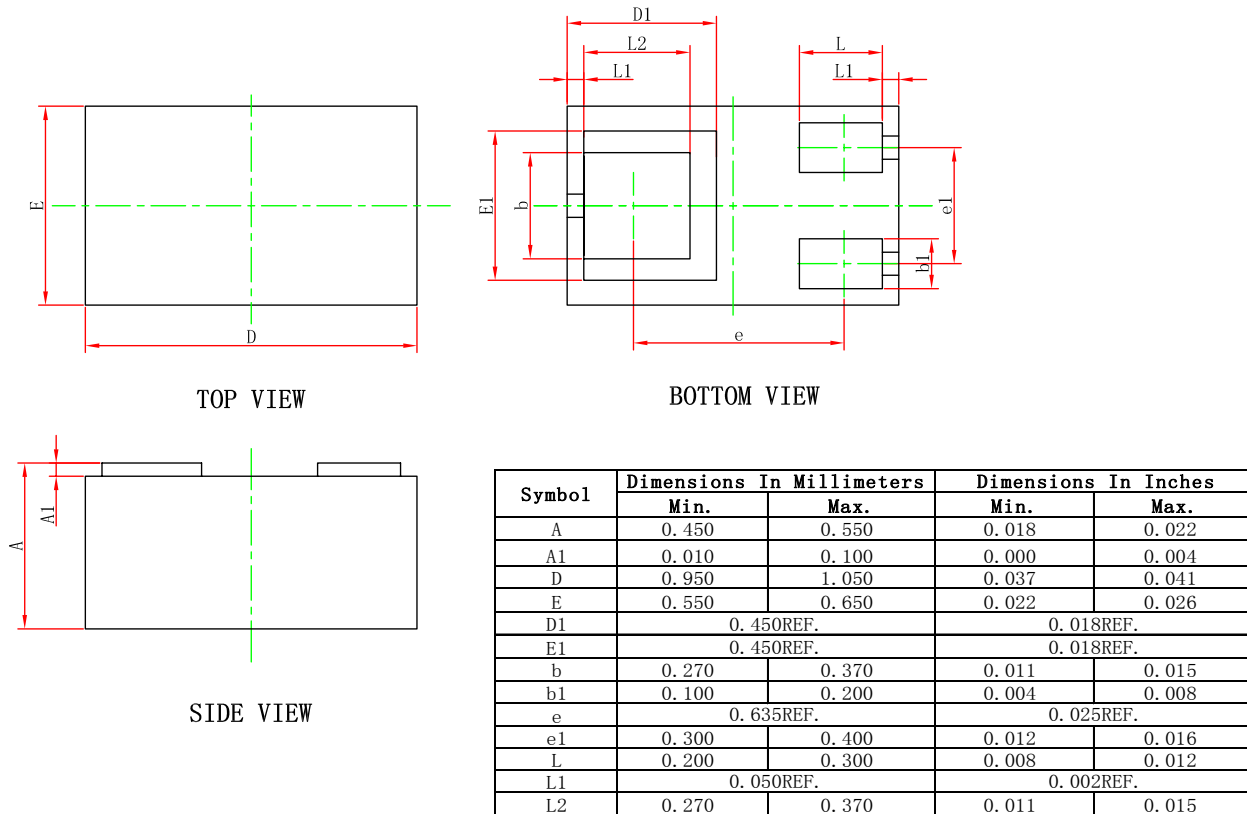
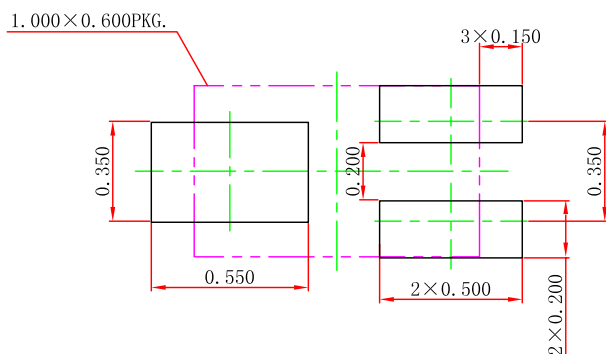

V-I characteristics for a Bi-directional TVS
ELECTRICAL CHARACTERISTICS($T_a=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Reverse stand off voltage	$V_{RWM}^{(1)}$				5	V
Reverse leakage current	I_R	$V_{RWM}=5\text{V}$			1	μA
Breakdown voltage	$V_{(BR)}$	$I_T=1\text{mA}$	5.6		8	V
Clamping voltage	$V_C^{(2)}$	$I_{PP}=4\text{A}$			13	V
Junction capacitance	C_J	$V_R=0\text{V}, f=1\text{MHz}$		3		pF

(1).Other voltages available upon request.

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

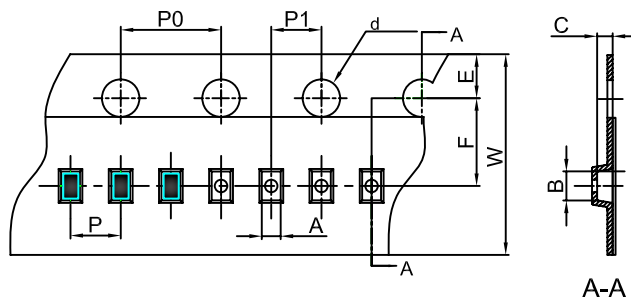
Bi-direction ESD Protection Diode
TYPICAL CHARACTERISTICS


Bi-direction ESD Protection Diode
WBFBP-03E Package Outline Dimensions

WBFBP-03E Suggested Pad Layout

Note:

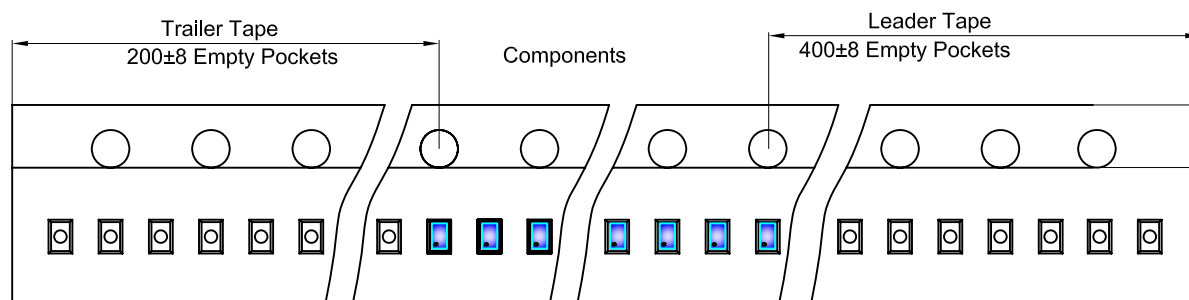
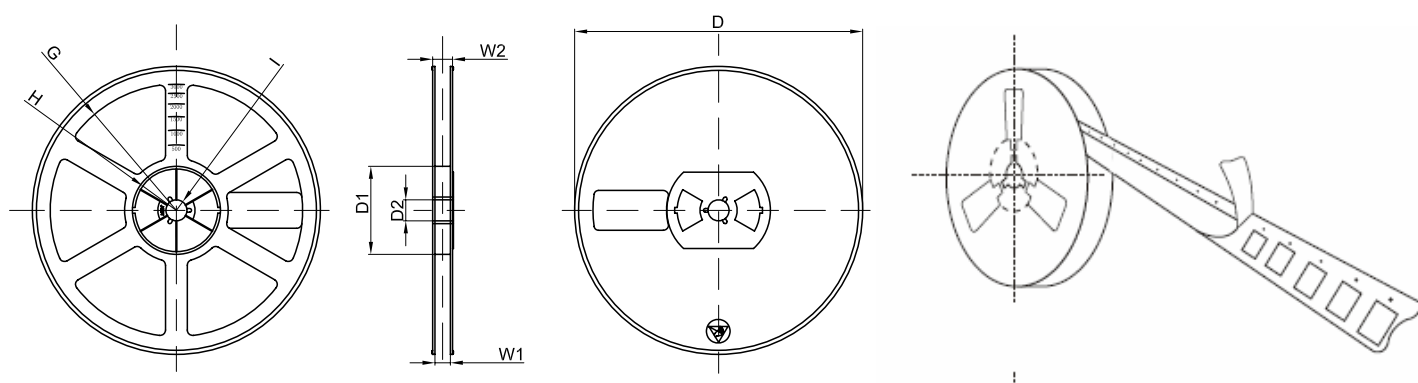
1. Controlling dimension: in millimeters.
2. General tolerance: $\pm 0.050\text{mm}$.
3. The pad layout is for reference purposes only.

NOTICE

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Bi-direction ESD Protection Diode
WBFBP-03E Tape and Reel
WBFBP-03E(1.0×0.6×0.5) Embossed Carrier Tape


Dimensions are in millimeter										
Pkg type	A	B	C	d	E	F	P0	P	P1	W
WBFBP-03E	0.66	1.15	0.55	Ø1.50	1.75	3.50	4.00	2.00	2.00	8.00
(Tolerance)	+/-0.05	+/-0.05	+/-0.05	+/-0.1	+/-0.1	+/-0.1	+/-0.1	+/-0.1	+/-0.1	+0.3/-0.1

WBFBP-03E(1.0×0.6×0.5) Tape Leader and Trailer

WBFBP-03E(1.0×0.6×0.5) 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
Tolerance	+/-2	+/-1	+/-1	+/-1	+/-1	+/-1	+/-1	+/-1

Bi-direction ESD Protection Diode
Ordering Information:

Device PN	Packing
{9{5.±5p ² .o-T ⁽¹⁾ D ⁽²⁾ -WS	Tape&Reel: MЛ Kpcs/Reel

Note: (1) Packing code, Tape & Reel Packing

(2) w2 I { LJW2RdzOú f2W LJl-Ölly3 Ö2RŠ ädzFFlE éDÉT I f23Šy/7WŠŠ LJW2RdzOú f2W LJl-Ölly3 Ö2RŠ ädzFFlE á I éΦ

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