



ESDBL3V3Y1 Bi-direction ESD Protection Diode

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.

FEATURES

- Bi-directional ESD protection of one line
- Low capacitance: 15pF(Max.)
- Reverse stand-off voltage: 3.3V
- Low reverse clamping voltage
- Low leakage current
- Excellent package: 1.0mm × 0.6mm × 0.5mm
- Fast response time
- 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 communication systems

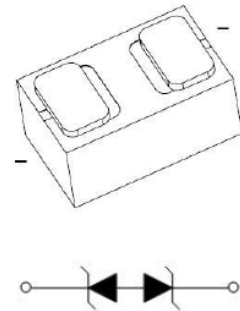
MARKING



Front side

X = Device code

WBFBP-02C-A





Taiwan Goodark Technology Co.,Ltd

ESDBL3V3Y1

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

| Parameter | Symbol | Limit | Unit |
|--|------------------------|------------|--------------------|
| IEC 61000-4-2 ESD Voltage | $V_{\text{ESD}}^{(1)}$ | ± 25 | kV |
| Air Model | | | |
| Contact Model | | ± 25 | |
| JESD22-A114-B ESD Voltage | | ± 16 | |
| ESD Voltage | Machine Model | ± 0.4 | |
| Peak Pulse Power | $P_{\text{PP}}^{(2)}$ | 70 | W |
| Peak Pulse Current | $I_{\text{PP}}^{(2)}$ | 7 | 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.

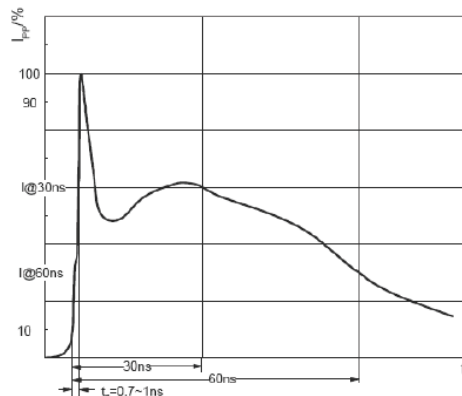
ESD standards compliance

IEC61000-4-2 Standard

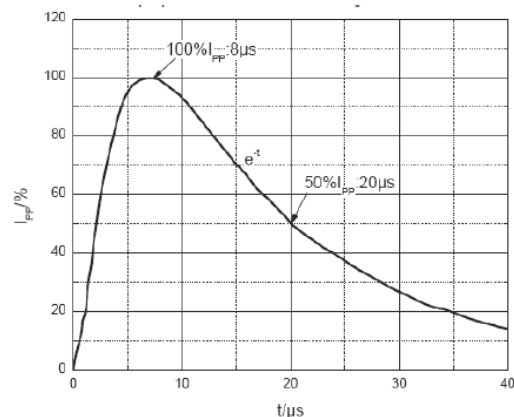
| Contact Discharge | | Air Discharge | |
|-------------------|-----------------|---------------|-----------------|
| Level | Test Voltage kV | Level | Test Voltage kV |
| 1 | 2 | 1 | 2 |
| 2 | 4 | 2 | 4 |
| 3 | 6 | 3 | 8 |
| 4 | 8 | 4 | 15 |

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

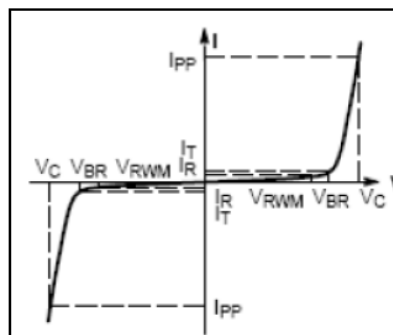


8/20 μs pulse waveform according to IEC 61000-4-5



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)

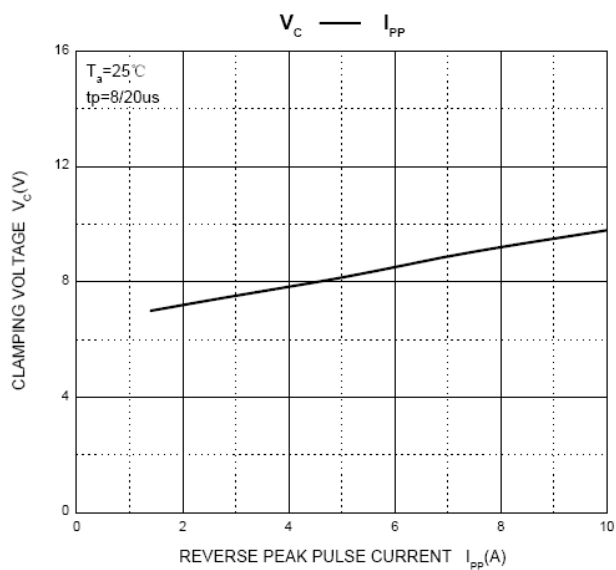
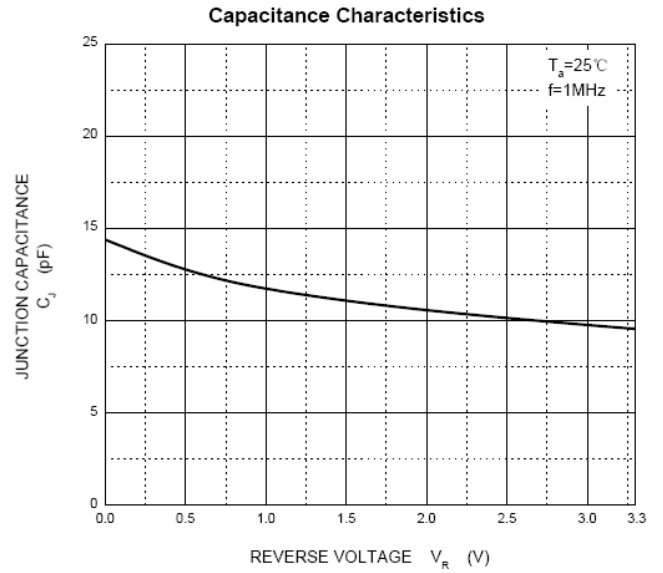
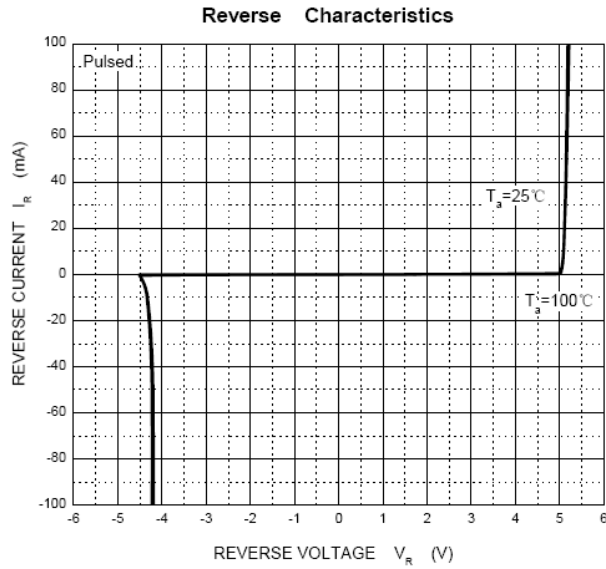
| Parameter | Symbol | Test conditions | Min | Typ | Max | Unit |
|---------------------------|-----------------|--------------------------------|-----|-----|-----|---------------|
| Reverse stand off voltage | $V_{RWM}^{(1)}$ | | | | 3.3 | V |
| Reverse leakage current | I_R | $V_{RWM}=3.3\text{V}$ | | | 0.4 | μA |
| Breakdown voltage | $V_{(BR)}$ | $I_T=1\text{mA}$ | 4 | | 6 | V |
| Clamping voltage | $V_C^{(2)}$ | $I_{PP}=7\text{A}$ | | | 10 | V |
| Junction capacitance | C_J | $V_R=0\text{V}, f=1\text{MHz}$ | | | 15 | pF |

(1).Other voltages available upon request.

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



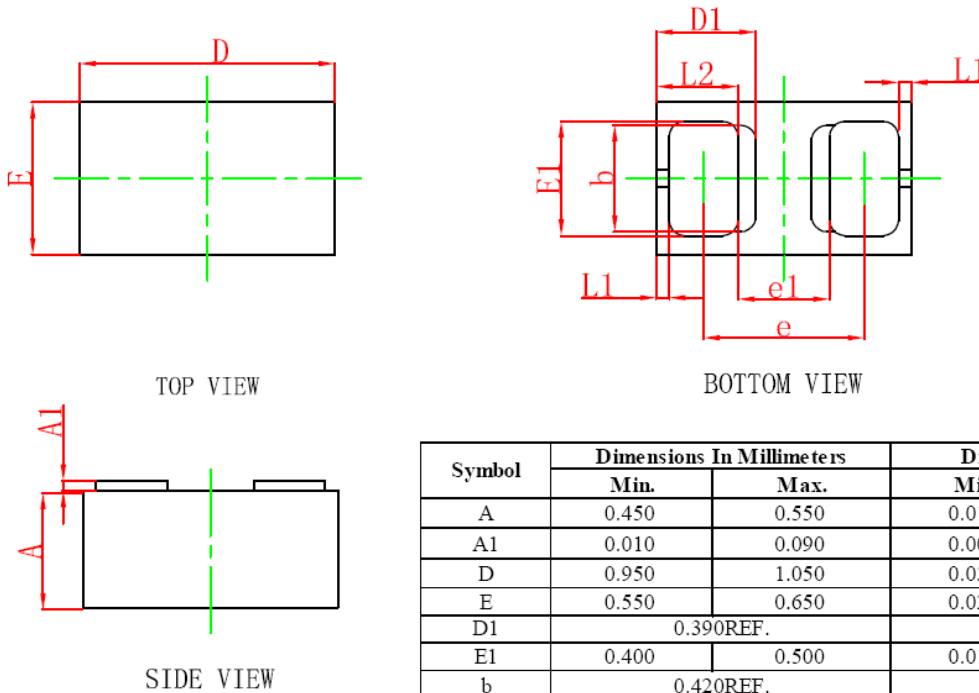
TYPICAL CHARACTERISTICS



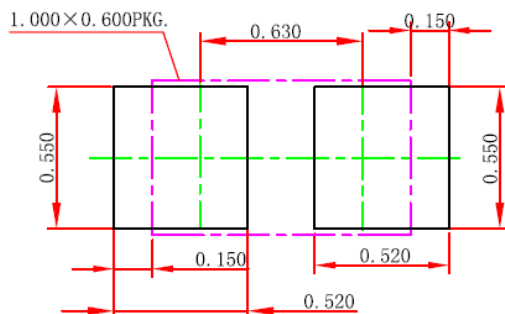


PACKAGE OUTLINE AND PAD LAYOUT INFORMATION

WBFBP-02C-A Package Outline Dimensions



WBFBP-02C-A Suggested Pad Layout



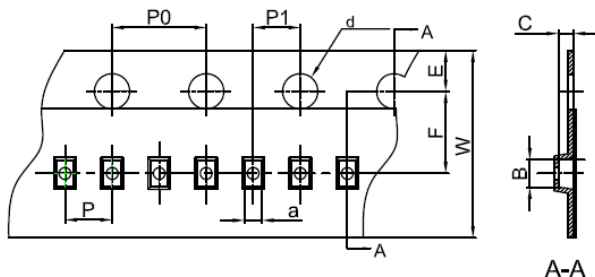
Note:

1. Controlling dimension: in millimeters.
2. General tolerance: ± 0.050 mm.
3. The pad layout is for reference purposes only.



TAPE AND REEL INFORMATION

DFN/FBP(1.0×0.6) Embossed Carrier Tape

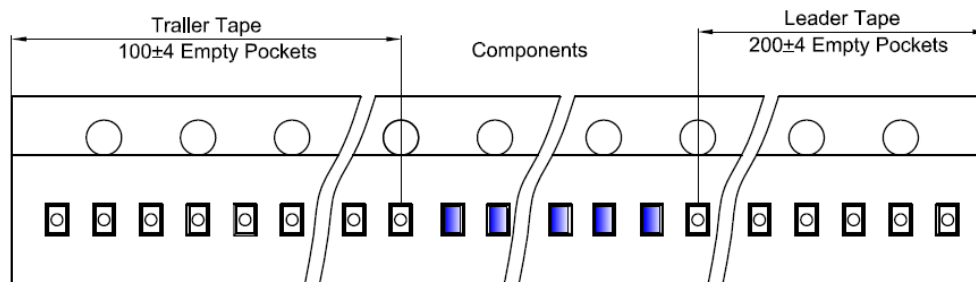


Packaging Description:

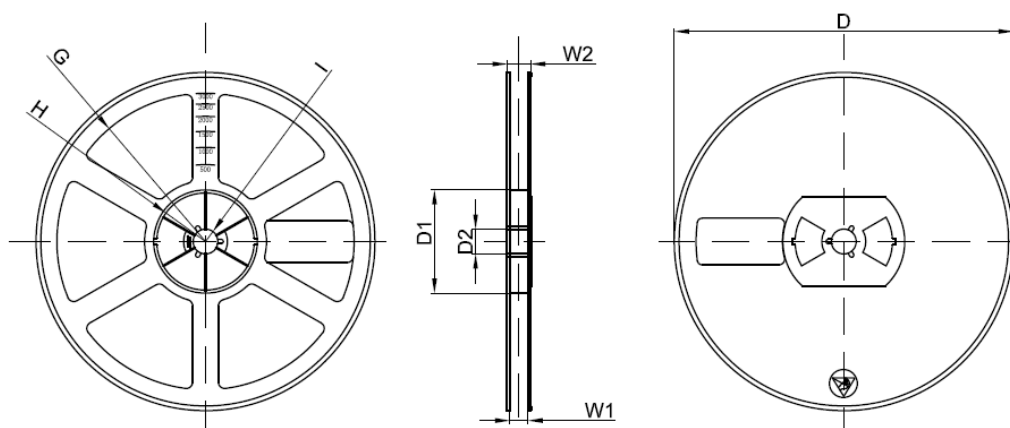
DFN/FBP(1.0×0.6) parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 10,000 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 |
| DFN/FBP(1.0×0.6) | 0.66 | 1.15 | 0.66 | Ø1.50 | 1.75 | 3.50 | 4.00 | 2.00 | 2.00 | 8.00 |

DFN/FBP(1.0×0.6) Tape Leader and Trailer



DFN/FBP(1.0×0.6) 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) |
|-----------|-----------|-------------|--------------|-------------|-----------------|----------|
| 10000 pcs | 7 Inch | 150,000 pcs | 203×203×195 | 600,000 pcs | 438×438×220 | |