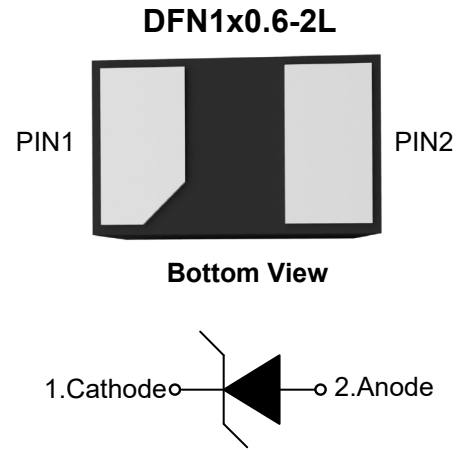


Descriptions

The ESDU...ADB series of TVS are designed to protect sensitive electronics from damage or latch-up due to ESD and other voltage-induced transient events. They are available with operating voltages of 3.3V, 5V, 12V. They are unidirectional device and may be used on lines where the signal polarities are above ground.

TVS diodes are solid-state devices designed specifically for transient suppression. They feature large cross-sectional area junctions for conducting high transient currents. They offer desirable characteristics for board level protection including fast response time, low operating and clamping voltage and no device degradation.

They are available in DFN1x0.6-2L package. Standard products are Pb-free and Halogen-free. They are particularly well-suited for cellular phones, portable device, digital cameras, power supplies and many other portable applications because of its small package and low weight.



Features

- Uni-directional ESD Protection of one line
- Working voltage: 3.3V, 5.0V, 12V
- Transient protection for each line according to IEC61000-4-2 (ESD): ±8kV (contact discharge)
- Low reverse clamping voltage
- Low leakage current

Applications

- Cell phone handsets and accessories
- Audio and video equipment
- Portable Electronics
- ther electronics equipments communication systems

Marking Code



Top View

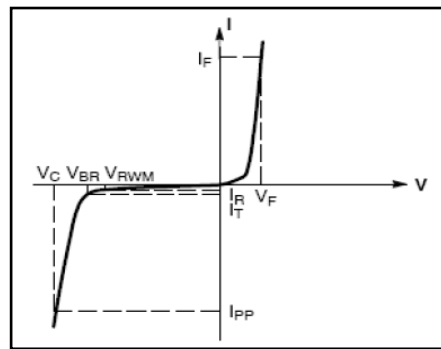
| | | | |
|--------------|------------|------------|------------|
| Device | ESDU3V3ADB | ESDU5V0ADB | ESDU12VADB |
| Marking Code | 33A | 50A | 12A |

Absolute Maximum Ratings ($T_A=25^\circ\text{C}$)

| Parameter | | Symbols | Value | Unit |
|---------------------------|---------------|-----------|-------------|------------------|
| IEC61000-4-2 ESD Voltage | Air Model | V_{ESD} | ± 15 | KV |
| | Contact Model | | ± 8 | |
| Junction Temperature | | T_J | 125 | $^\circ\text{C}$ |
| Storage Temperature Range | | T_{STG} | -45 to +125 | $^\circ\text{C}$ |

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_F | Forward Voltage @ I_F |
| I_F | Forward Current |



V-I characteristics for a uni-directional TVS

Electrical Characteristics ($T_A=25^\circ\text{C}$)

| ESDU3V3ADB | | | | | |
|---|-------------|------|---------|----------|---------------|
| Parameter | Symbols | Min. | Typ. | Max. | Unit |
| Reverse stand-off voltage | V_{RWM} | -- | -- | 3.3 | V |
| Reverse Leakage Current at $V_{RWM} = 3.3\text{ V}$ | I_R | -- | -- | 0.5 | μA |
| Forward Voltage at $I_F = 10\text{ mA}$ | V_F | -- | 0.79 | 1.1 | V |
| Breakdown Voltage at $I_T = 1\text{ mA}$ | $V_{R(BR)}$ | 5 | -- | 6.2 | V |
| Peak Pulse Power Dissipation $t_p = 8/20\mu\text{s}$ | P_{PP} | -- | -- | 240 | W |
| Peak Pulse Current $t_p = 8/20\mu\text{s}$ | I_{PP} | -- | -- | 12 | A |
| Clamping Voltage at $I_{PP} = 3\text{ A}$, $t_p = 8/20\mu\text{s}$ at $I_{PP} = 12\text{ A}$, $t_p = 8/20\mu\text{s}$ | V_C | -- | 7 15 | 10 20 | V |
| Junction Capacitance at $V_R = 0\text{ V}$, $f = 1\text{ MHz}$ | C_J | -- | 120 | -- | pF |

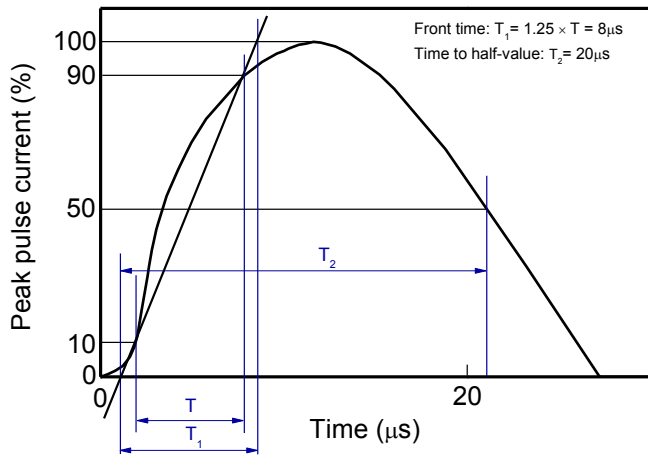


| ESDU5V0ADB | | | | | |
|---|----------------|-------------|-------------|-------------|---------------|
| Parameter | Symbols | Min. | Typ. | Max. | Unit |
| Reverse stand-off voltage | V_{RWM} | -- | -- | 5 | V |
| Reverse Leakage Current at $V_{RWM} = 5\text{ V}$ | I_R | -- | -- | 0.5 | μA |
| Forward Voltage at $I_F = 10\text{ mA}$ | V_F | -- | 0.79 | 1.1 | V |
| Breakdown Voltage at $I_T = 5\text{ mA}$ | $V_{R(BR)}$ | 6 | -- | 7.5 | V |
| Peak Pulse Power Dissipation $t_p = 8/20\mu\text{s}$ | P_{PP} | -- | -- | 250 | W |
| Peak Pulse Current $t_p = 8/20\mu\text{s}$ | I_{PP} | -- | -- | 10 | A |
| Clamping Voltage at $I_{PP} = 3\text{ A}$, $t_p = 8/20\mu\text{s}$ at $I_{PP} = 10\text{ A}$, $t_p = 8/20\mu\text{s}$ | V_C | -- -- | 8.8 17 | 12 25 | V |
| Junction Capacitance at $V_R = 0\text{ V}$, $f = 1\text{ MHz}$ | C_J | -- | 100 | 150 | pF |

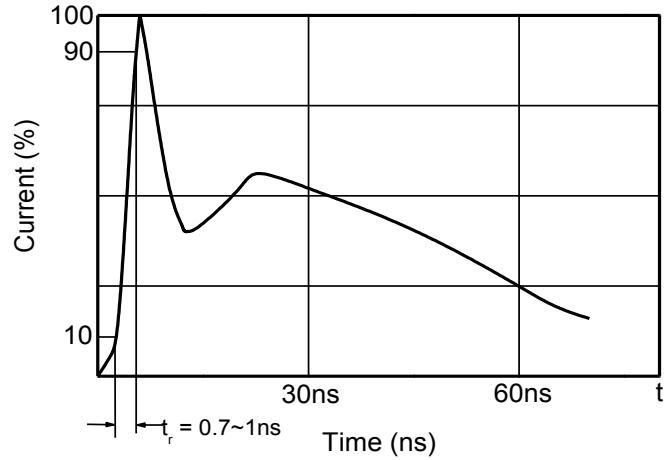
| ESDU12VADB | | | | | |
|---|----------------|-------------|-------------|-------------|---------------|
| Parameter | Symbols | Min. | Typ. | Max. | Unit |
| Reverse stand-off voltage | V_{RWM} | -- | -- | 12 | V |
| Reverse Leakage Current at $V_{RWM} = 12\text{ V}$ | I_R | -- | -- | 0.1 | μA |
| Forward Voltage at $I_F = 10\text{ mA}$ | V_F | -- | 0.79 | 1.1 | V |
| Breakdown Voltage at $I_T = 1\text{ mA}$ | $V_{R(BR)}$ | 13.5 | -- | 16.5 | V |
| Peak Pulse Power Dissipation $t_p = 8/20\mu\text{s}$ | P_{PP} | -- | -- | 500 | W |
| Peak Pulse Current $t_p = 8/20\mu\text{s}$ | I_{PP} | -- | -- | 10 | A |
| Clamping Voltage at $I_{PP} = 3\text{ A}$, $t_p = 8/20\mu\text{s}$ at $I_{PP} = 10\text{ A}$, $t_p = 8/20\mu\text{s}$ | V_C | -- -- | 17 45 | 20 50 | V |
| Junction Capacitance at $V_R = 0\text{ V}$, $f = 1\text{ MHz}$ | C_J | -- | 45 | -- | pF |



Typical Characteristic Curves

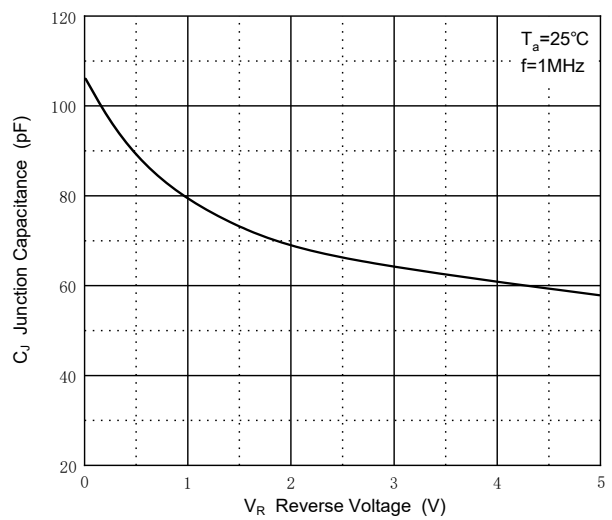
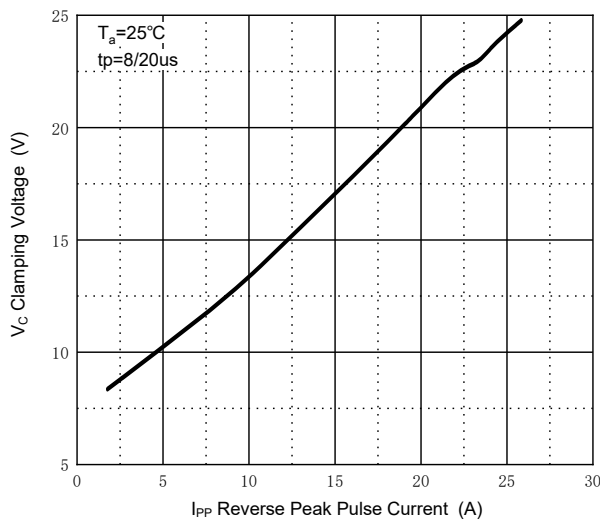
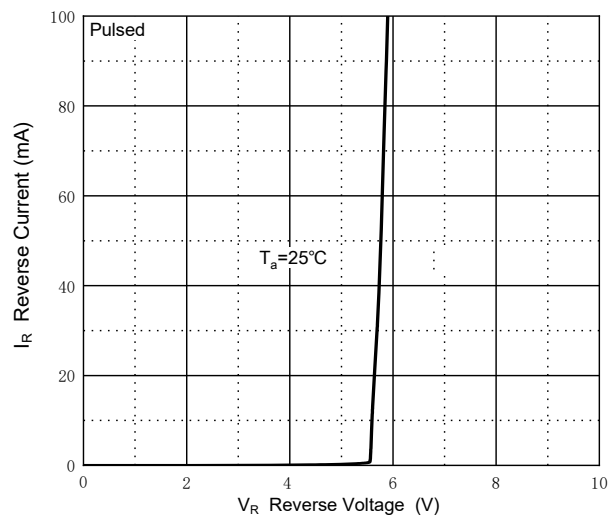
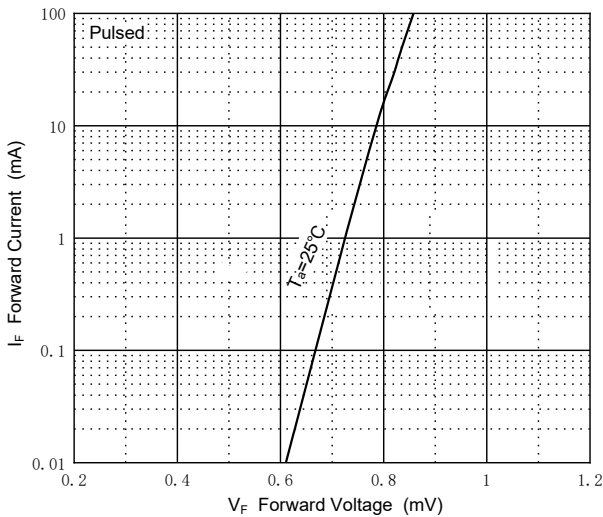


8/20 μs waveform per IEC61000-4-5



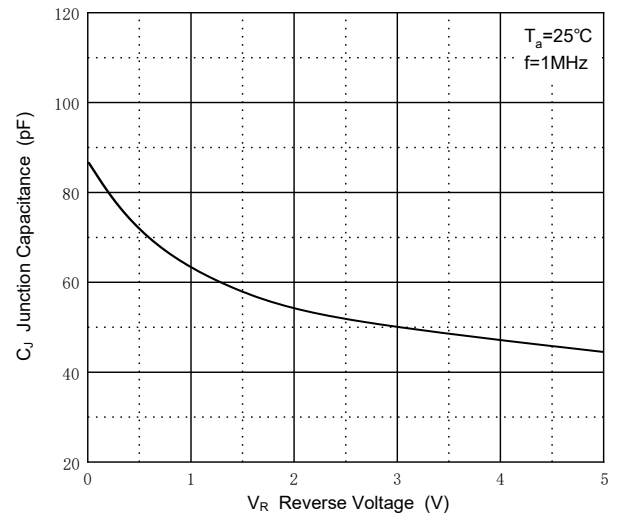
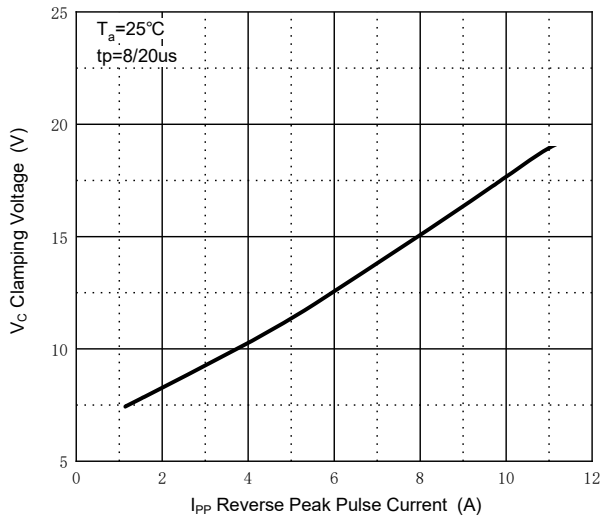
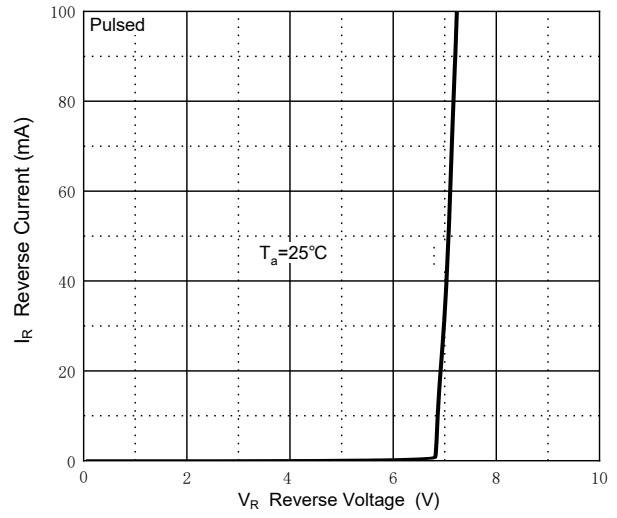
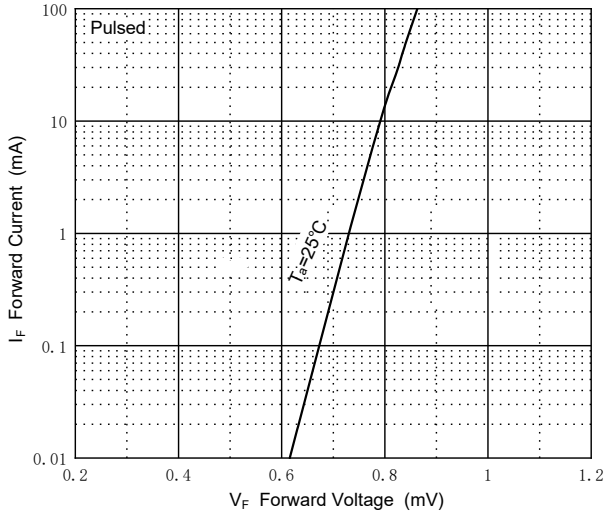
Contact discharge current waveform per IEC61000-4-2

ESDU3V3ADB



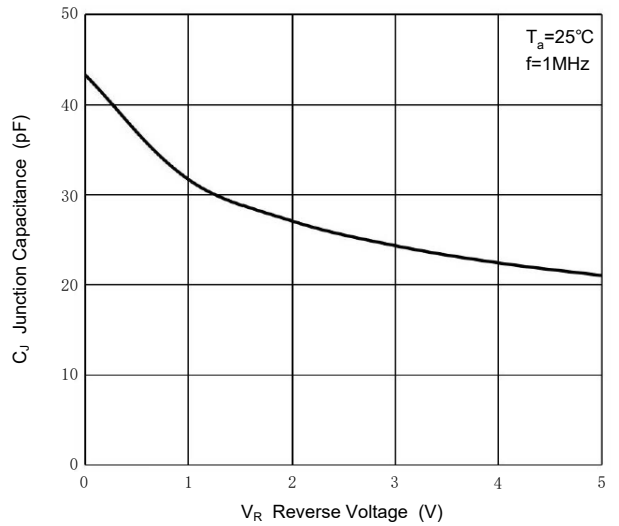
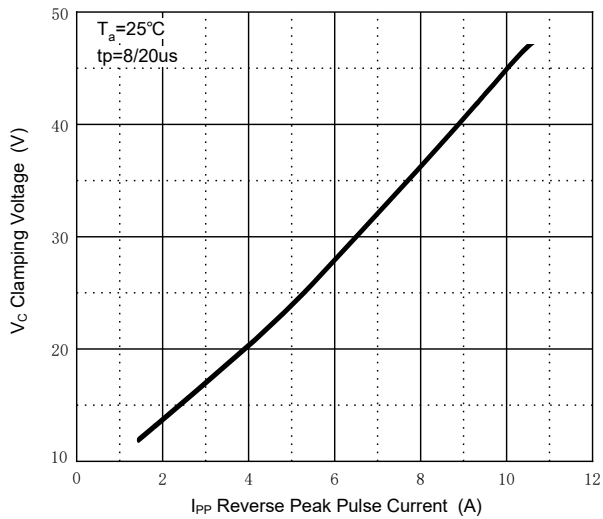
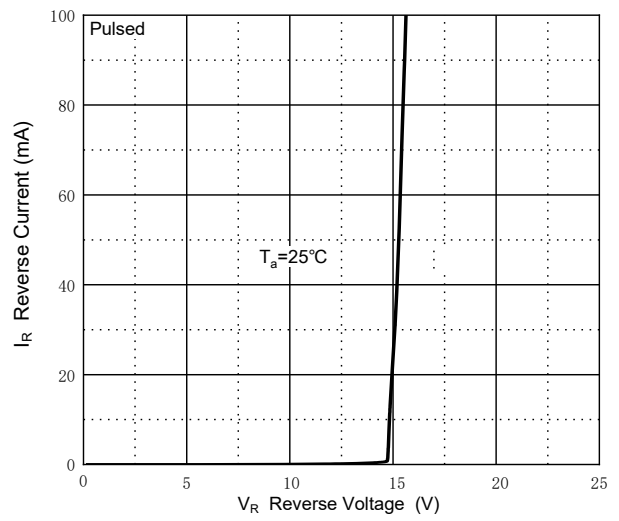
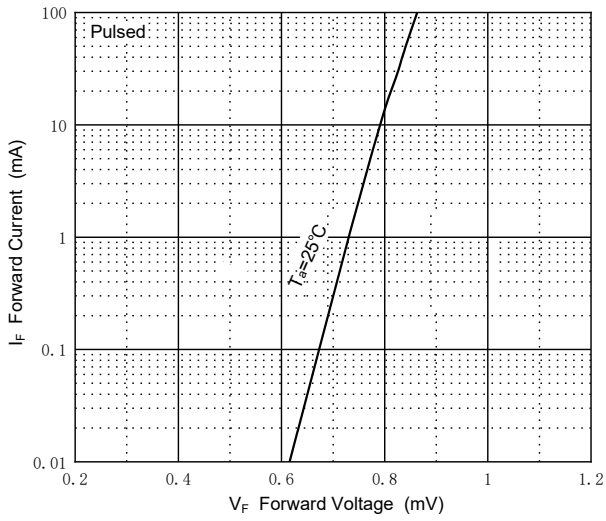


ESDU5V0ADB





ESDU12VADB

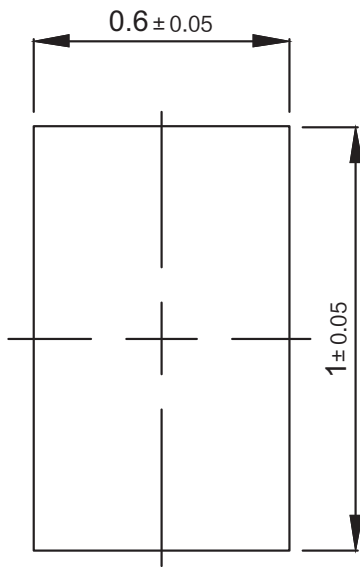




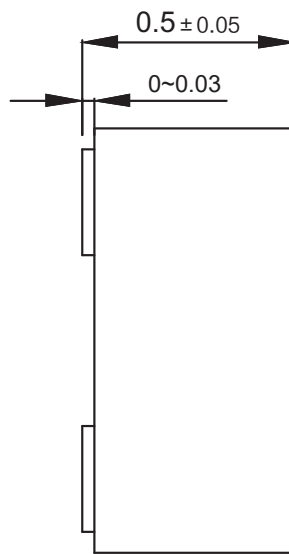
Package Outline

DFN1x0.6-2L-0011

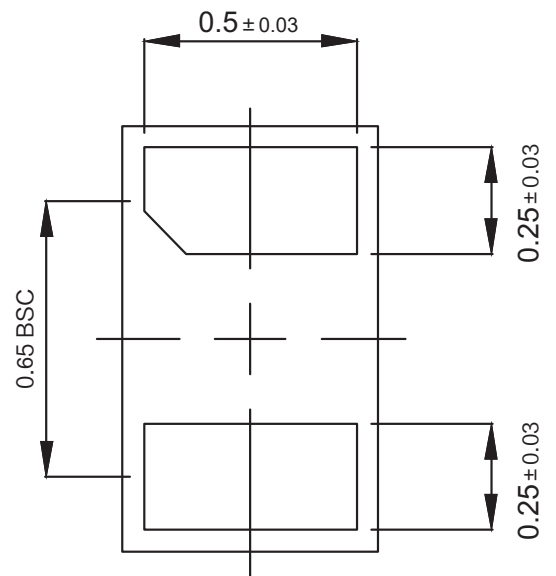
Dimensions in mm



TOP VIEW



SIDE VIEW



BOTTOM VIEW

Ordering Information

| Device | Package | Shipping |
|------------|-------------|------------------------|
| ESDU...ADB | DFN1x0.6-2L | 10,000PCS/Reel&7inches |

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