

Product Summary

| | | |
|---------------------------|---------------------------|--------------------------|
| V_{BR} MIN | I_{PP} MAX | C_T TYP |
| 25V | 1A | 0.3pF |

Description

This new generation TVS is designed to protect sensitive electronics from the damage due to ESD. The combination of small size and high ESD surge capability makes it ideal for use in portable applications such as cellular phones, digital cameras, and MP3 players.

Applications

- Cellular Handsets
- Portable Electronics
- Computers and Peripheral

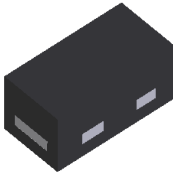
Features

- Provides ESD Protection per IEC 61000-4-2 Standard: Air ± 16 kV, Contact ± 12 kV
- 1 Channel of ESD Protection
- Low Channel Input Capacitance
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please [contact us](mailto:contact@diodes.com) or your local Diodes representative. <https://www.diodes.com/quality/product-definitions/>**

Mechanical Data

- Case: X2-DFN0603-2
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish Annealed over Copper Leadframe (Lead Free Plating). Solderable per MIL-STD-202, Method 208
- Weight: 0.0002 grams (Approximate)

X2-DFN0603-2



X2-DFN0603-2



Device Schematic

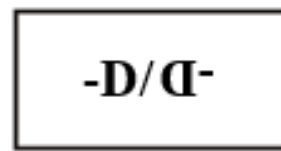
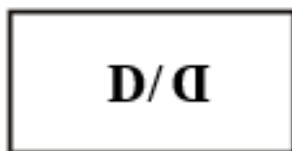


Ordering Information (Note 4)

| Part Number | Compliance | Marking Code | Reel Size (inches) | Tape Width (mm) | Quantity per Reel |
|-----------------|------------|--------------|--------------------|-----------------|--------------------|
| DESD18VS1BLP3-7 | Standard | D/Q or -D/Q- | 7 | 8 | 10,000/Tape & Reel |

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
 2. See <https://www.diodes.com/quality/lead-free/> for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
 3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
 4. For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

Marking Information



D/Q or -D/Q- = Product Type Marking Code

Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

| Characteristic | Symbol | Value | Unit | Conditions |
|------------------------------------|--------------------------|-------|------|------------------------|
| Peak Pulse Power Dissipation | PPP | 30 | W | 8/20μs |
| Peak Pulse Current | I _{PP} | 1 | A | 8/20μs |
| ESD Protection – Contact Discharge | V _{ESD_CONTACT} | ±12 | kV | IEC 61000-4-2 Standard |
| ESD Protection – Air Discharge | V _{ESD_AIR} | ±16 | kV | IEC 61000-4-2 Standard |

Thermal Characteristics

| Characteristic | Symbol | Value | Unit |
|--|-----------------------------------|-------------|------|
| Package Power Dissipation (Note 5) | P _D | 250 | mW |
| Thermal Resistance, Junction to Ambient (Note 5) | R _{θJA} | 500 | °C/W |
| Operating and Storage Temperature Range | T _J , T _{STG} | -55 to +150 | °C |

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Conditions |
|---------------------------|------------------|------|------|------|------|--|
| Reverse Working Voltage | V _{RWM} | — | — | 18 | V | — |
| Reverse Current (Note 6) | I _R | — | 1 | 50 | nA | V _R = 18V |
| Reverse Breakdown Voltage | V _{BR} | 25 | 28.5 | 32 | V | I _R = 1mA |
| Snapback Voltage | V _{SNP} | 10.0 | — | — | V | — |
| Reverse Clamping Voltage | V _{CL1} | — | 21 | — | V | I _{TLP} = 16A, t _p = 100ns |
| Reverse Clamping Voltage | V _{CL2} | — | — | 23 | V | I _{PP} = 1A, t _p = 8/20us |
| Dynamic Resistance | R _{DYN} | — | 0.65 | — | Ω | TLP, 10A, t _p = 100ns |
| Capacitance | C _T | — | 0.3 | 0.45 | pF | V _R = 0V, f = 1MHz |

- Notes:
- Device mounted on FR-4 PCB pad layout (2oz copper) as shown on Diodes Incorporated's suggested pad layout, which can be found on our website at <http://www.diodes.com/package-outlines.html>.
 - Short duration pulse test used to minimize self-heating effect.

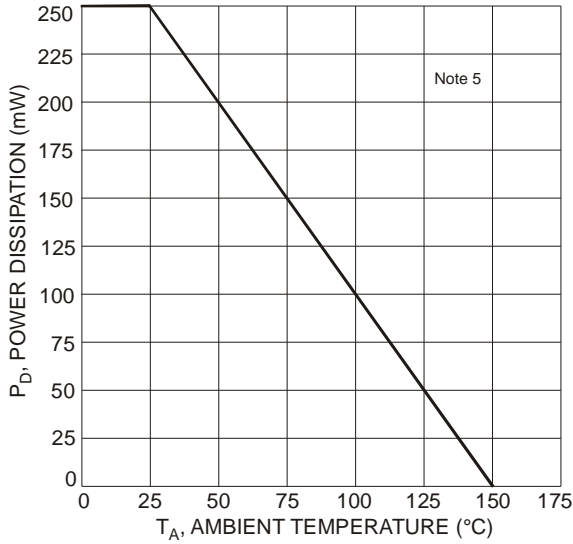


Figure 1 Power Derating Curve

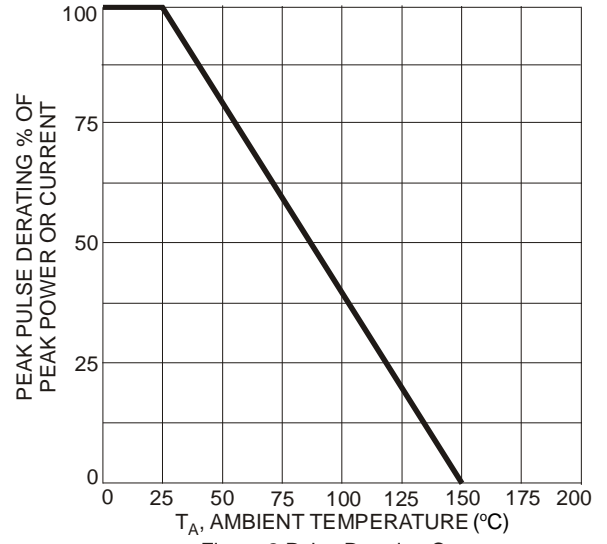


Figure 2 Pulse Derating Curve

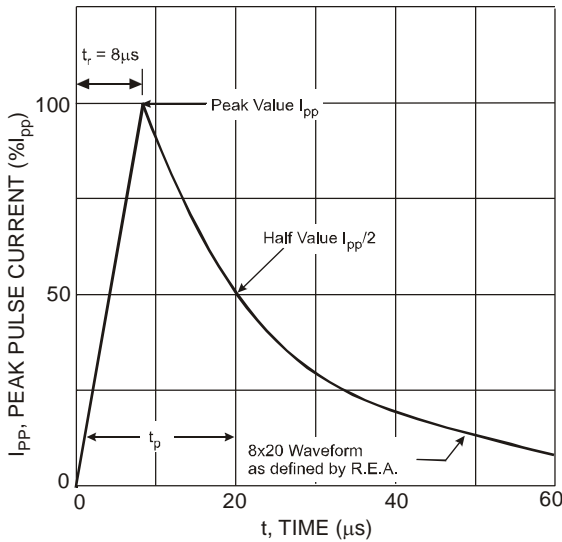


Figure 3 Pulse Waveform

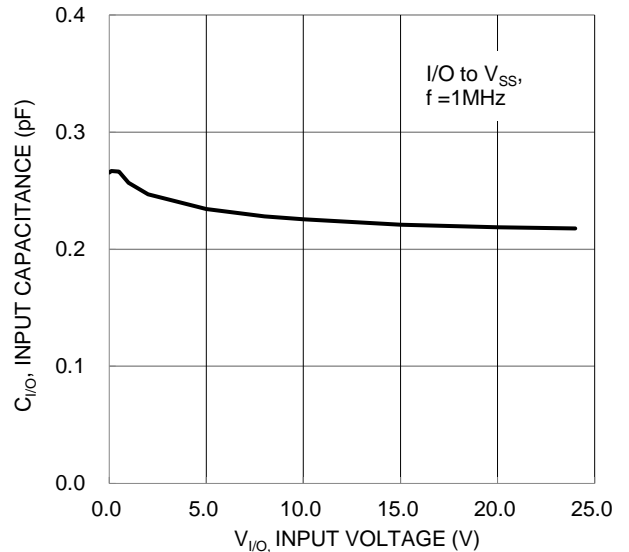


Figure 4 Input Capacitance vs. Input Voltage

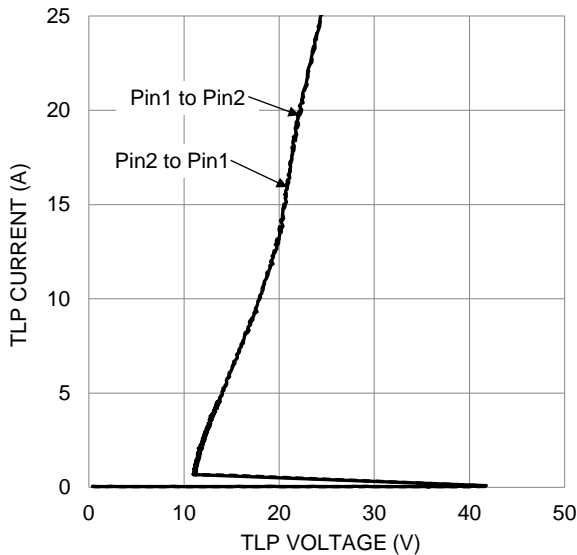


Figure 5 Current vs. Voltage ($t_p=100ns$)

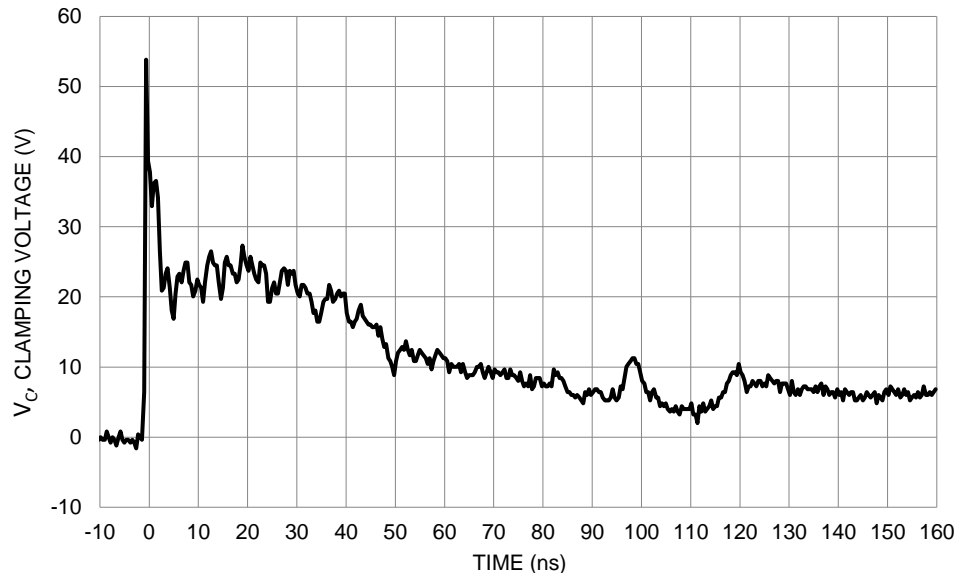


Figure 6 ESD Clamping Voltage of IEC61000-4-2 +8kV Contact Mode

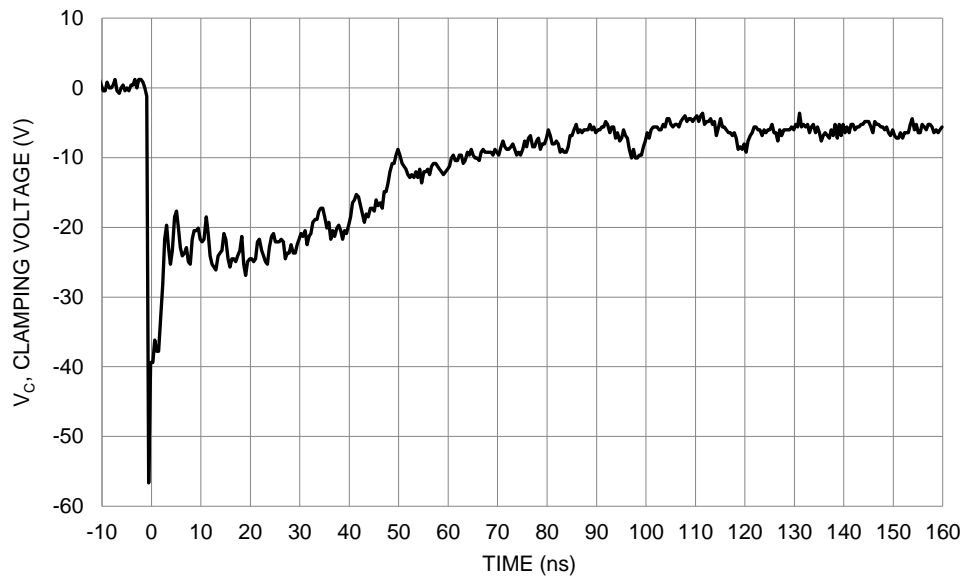
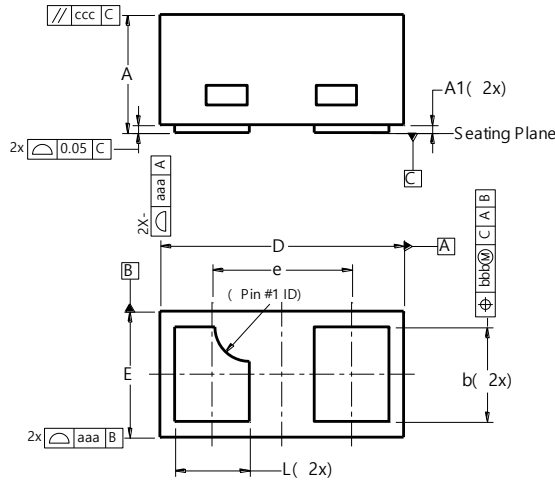


Figure 7 ESD Clamping Voltage of IEC61000-4-2 -8kV Contact Mode

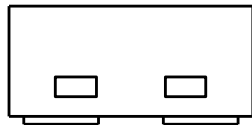
Package Outline Dimensions

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

X2-DFN0603-2



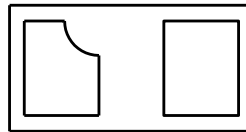
| X2-DFN0603-2 | | | |
|----------------------|-------|-------|-------|
| Dim | Min | Max | Typ |
| A | 0.27 | 0.35 | 0.30 |
| A1 | 0.00 | 0.03 | 0.02 |
| b | 0.19 | 0.29 | 0.24 |
| D | 0.595 | 0.645 | 0.620 |
| E | 0.295 | 0.345 | 0.320 |
| e | -- | -- | 0.355 |
| L3 | 0.14 | 0.24 | 0.19 |
| aaa | 0.08 | | |
| bbb | 0.07 | | |
| ccc | 0.05 | | |
| All Dimensions in mm | | | |



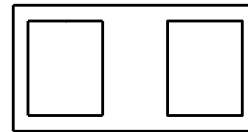
OPTION A
(SIDE VIEW)



OPTION B
(SIDE VIEW)



OPTION A
(BOTTOM VIEW)

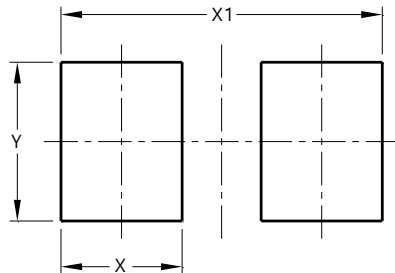


OPTION B
(BOTTOM VIEW)

Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

X2-DFN0603-2



| Dimensions | Value (in mm) |
|------------|---------------|
| X | 0.230 |
| X1 | 0.610 |
| Y | 0.300 |

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