

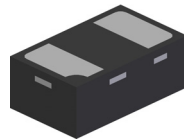
## Features

- Provides ESD Protection per IEC 61000-4-2 Standard: Air – ±30kV, Contact – ±30kV
- IEC61000-4-4 (EFT): ±50 A (5/50ns)
- IEC61000-4-5 (surge): ±6 A (8/20µs)
- Ultra Low Profile (0.4mm), Ideal for Thin Portable Electronics
- 1 Channel of ESD Protection
- Typically Used in Cellular Handsets, Portable Electronics, Communication Systems, Computers and Peripherals
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

## Mechanical Data

- Case: X2-DFN1006-2
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: NiPdAu over Copper leadframe. Solderable per MIL-STD-202, Method 208 (4)
- Weight: 0.001 grams (approximate)

X2-DFN1006-2

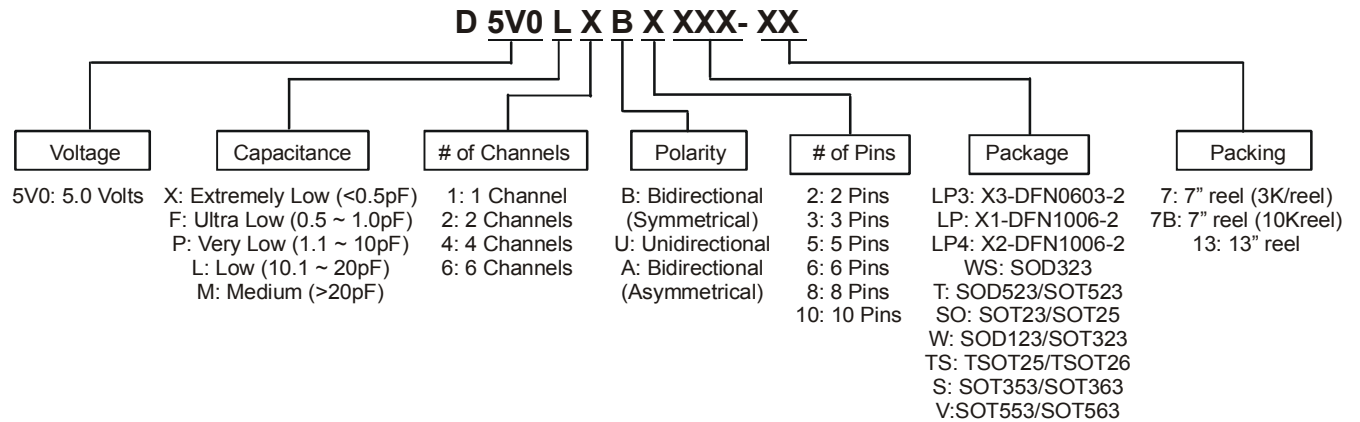


Bottom View



Device Schematic

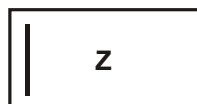
## Ordering Information (Note 4)



| Product        | Compliance | Marking | Reel Size (inches) | Tape Width (mm) | Quantity per Reel  |
|----------------|------------|---------|--------------------|-----------------|--------------------|
| D5V0L1B2LP4-7B | Standard   | Z       | 7                  | 8               | 10,000/Tape & Reel |

- Notes:
1. EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. All applicable RoHS exemptions applied.
  2. See [http://www.diodes.com/quality/lead\\_free.html](http://www.diodes.com/quality/lead_free.html) 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 <http://www.diodes.com/products/packages.html>.

## Marking Information



Z = Product Type Marking Code  
Line Denotes Pin 1

**Maximum Ratings** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

| Characteristic                     | Symbol                   | Value | Unit | Conditions             |
|------------------------------------|--------------------------|-------|------|------------------------|
| Peak Pulse Power Dissipation       | P <sub>PP</sub>          | 84    | W    | 8/20μs, Per Figure 1   |
| Peak Pulse Current                 | I <sub>PP</sub>          | 6     | A    | 8/20μs, Per Figure 1   |
| ESD Protection – Contact Discharge | V <sub>ESD_Contact</sub> | ±30   | kV   | IEC 61000-4-2 Standard |
| ESD Protection – Air Discharge     | V <sub>ESD_Air</sub>     | ±30   | kV   | IEC 61000-4-2 Standard |

**Thermal Characteristics**

| Characteristic                                   | Symbol                            | Value       | Unit |
|--|-----------------------------------|-------------|------|
| Package Power Dissipation (Note 5)               | P <sub>D</sub>                    | 250         | mW   |
| Thermal Resistance, Junction to Ambient (Note 5) | R <sub>θJA</sub>                  | 500         | °C/W |
| Operating and Storage Temperature Range          | T <sub>J</sub> , T <sub>STG</sub> | -65 to +150 | °C   |

**Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

| Characteristic                        | Symbol           | Min | Typ                        | Max                         | Unit | Test Conditions  |
|---------------------------------------|------------------|-----|----------------------------|-----------------------------|------|--|
| Reverse Standoff Voltage              | V <sub>RWM</sub> | —   | —                          | 5                           | V    | —  |
| Channel Leakage Current (Note 5)      | I <sub>RM</sub>  | —   | 10                         | 100                         | nA   | V <sub>RWM</sub> = 5V  |
| Clamping Voltage, Positive Transients | V <sub>CL</sub>  | —   | 7.0<br>9.0<br>10.5<br>11.5 | 9.0<br>11.0<br>12.0<br>14.0 | V    | I <sub>PP</sub> = 1A, t <sub>p</sub> = 8/20μs<br>I <sub>PP</sub> = 3.5A, t <sub>p</sub> = 8/20μs<br>I <sub>PP</sub> = 5A, t <sub>p</sub> = 8/20μs<br>I <sub>PP</sub> = 6A, t <sub>p</sub> = 8/20μs |
| Breakdown Voltage                     | V <sub>BR</sub>  | 6   | 7                          | 8                           | V    | I <sub>R</sub> = 1mA   |
| Differential Resistance               | R <sub>DIF</sub> | —   | 0.2                        | —                           | Ω    | I <sub>R</sub> = 1A, t <sub>p</sub> = 8/20μs   |
| Channel Input Capacitance             | C <sub>T</sub>   | —   | 15                         | 20                          | pF   | V <sub>R</sub> = 0V, f = 1MHz  |

- Notes:
5. Device mounted on FR-4 PCB pad layout (2oz copper) as shown on Diodes, Inc. suggested pad layout AP02001, which can be found on our website at <http://www.diodes.com>.
  6. Short duration pulse test used to minimize self-heating effect.

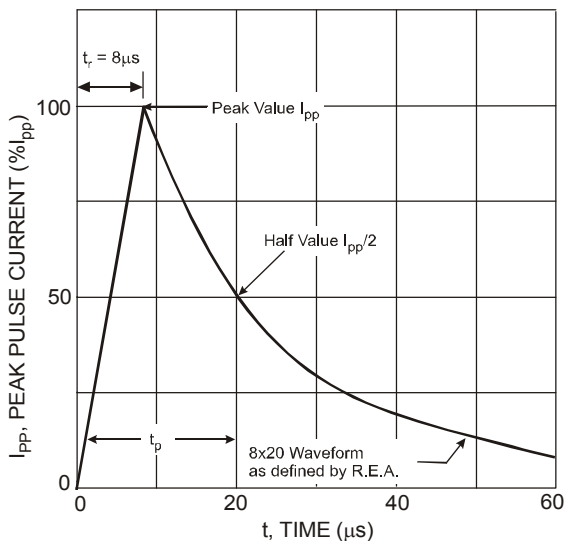


Fig. 1 Pulse Waveform

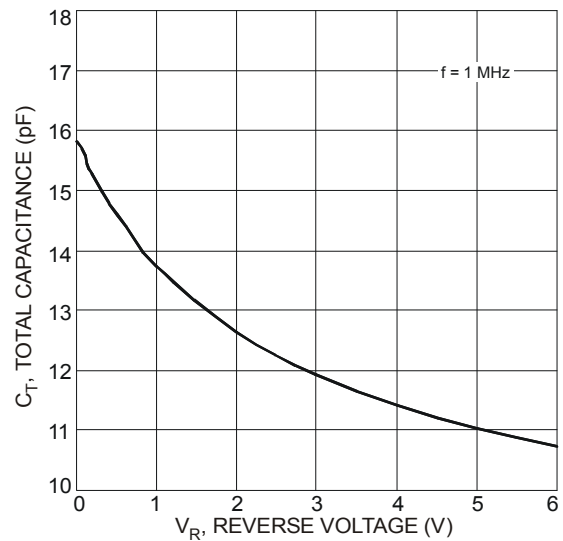


Fig. 2 Typical Total Capacitance vs. Reverse Voltage

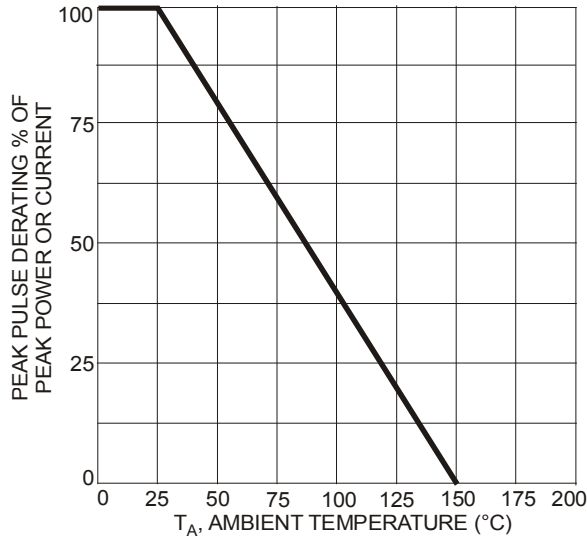


Fig. 3 Pulse Derating Curve

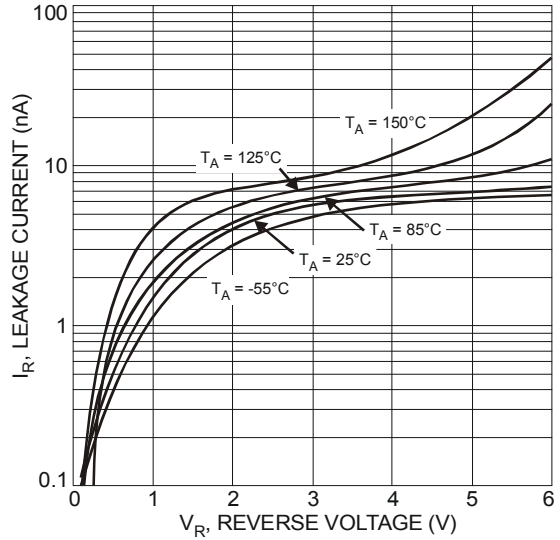


Fig. 4 Typical Reverse Characteristics

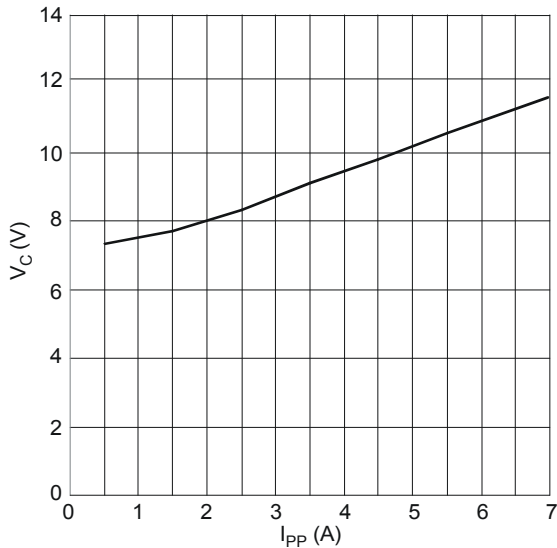


Figure 5 Typical Peak Clamping Voltage  $V_C$  vs. Peak Pulse Current  $I_{PP}$

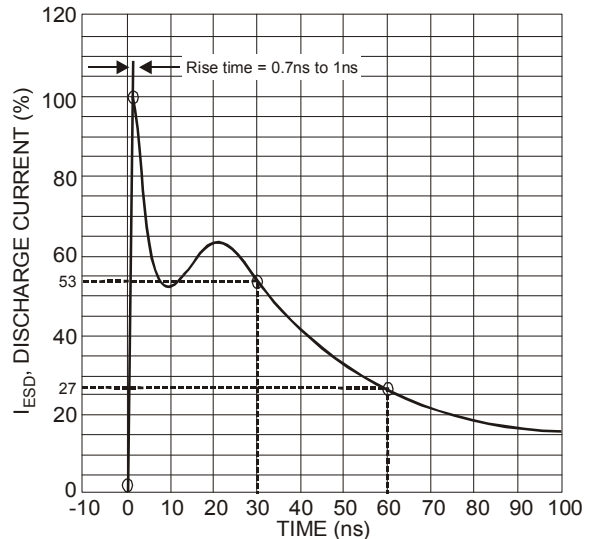


Figure 6 ESD Discharge Current Wave Form IEC 6100-4-2 (330Ω/150pF)

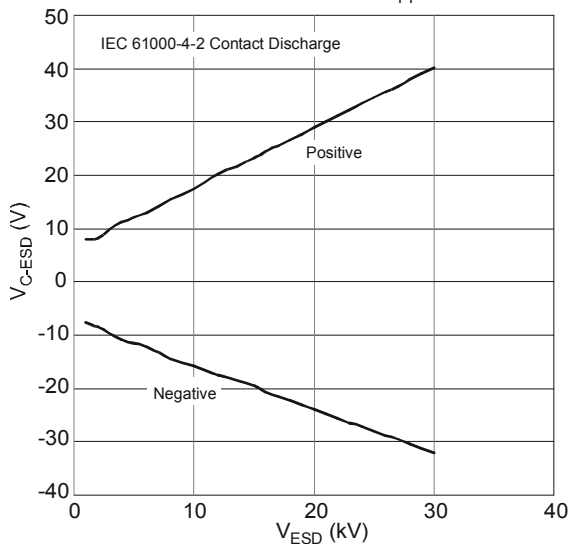


Figure 7 Typical Clamping Voltage vs. Contact Discharge Voltage

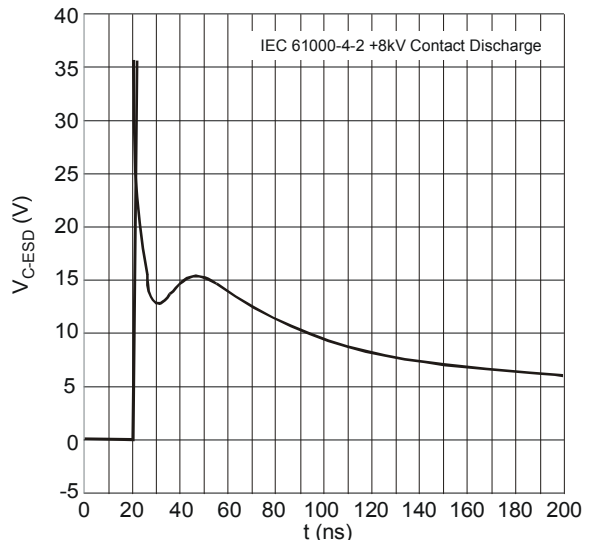


Figure 8 Typical Clamping Performance @ 8kV Contact Discharge

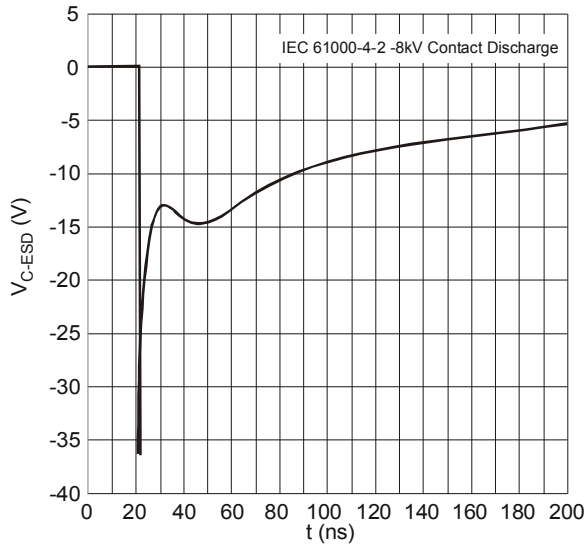
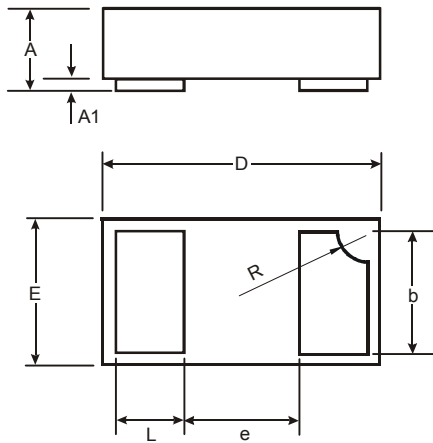


Figure 9 Typical Clamping Performance @ -8kV Contact Discharge

### Package Outline Dimensions

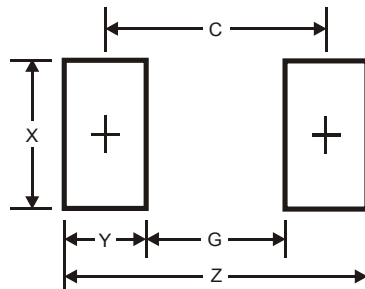
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



| X2-DFN1006-2         |      |       |      |
|----------------------|------|-------|------|
| Dim                  | Min  | Max   | Typ  |
| A                    | 0.34 | 0.4   | 0.37 |
| A1                   | 0    | 0.05  | 0.03 |
| b                    | 0.45 | 0.55  | 0.50 |
| D                    | 0.95 | 1.075 | 1.00 |
| E                    | 0.55 | 0.675 | 0.60 |
| e                    | —    | —     | 0.40 |
| L                    | 0.20 | 0.30  | 0.25 |
| R                    | 0.05 | 0.15  | 0.10 |
| All Dimensions in mm |      |       |      |

### Suggested Pad Layout

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.



| Dimensions | Value (in mm) |
|------------|---------------|
| Z          | 1.1           |
| G          | 0.3           |
| X          | 0.7           |
| Y          | 0.4           |
| C          | 0.7           |

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