

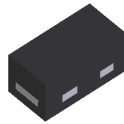
### Features

- Ultra-Small, Low Profile Leadless Surface Mount Package (0.6mm x 0.3mm x 0.3mm)
- Provides ESD Protection per IEC 61000-4-2 Standard: Air – ±30kV, Contact – ±30kV
- One Channel of ESD Protection
- Low Channel Input Capacitance
- 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)**
- **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](https://www.diodes.com/quality/product-definitions/) or your local Diodes representative.**

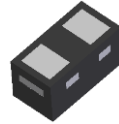
<https://www.diodes.com/quality/product-definitions/>

### Mechanical Data

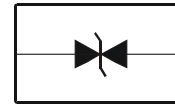
- Case: X3-DFN0603-2
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin over Copper Leadframe. Solderable per MIL-STD-202, Method 208 (E3)
- Weight: 0.0002 grams (Approximate)



Top View

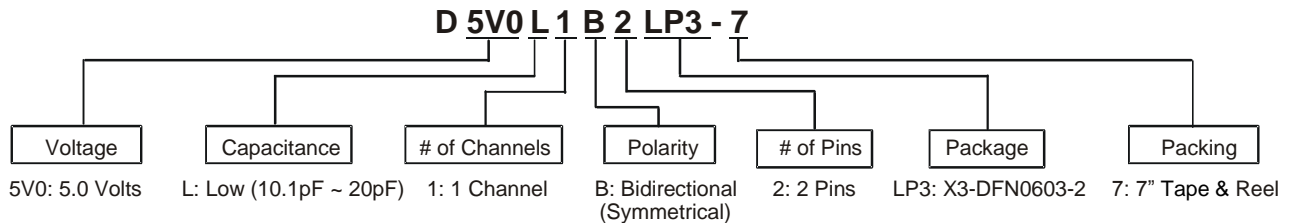


Bottom View



Device Schematic

### Ordering Information (Note 4)

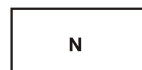


Part Number	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity Per Reel
D5V0L1B2LP3-7	Standard	N	7	8	10,000/Tape & Reel

- Notes:
1. EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant. All applicable RoHS exemptions applied.
  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

X3-DFN0603-2



N = Product Type Marking Code

**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 Fig. 1
Peak Pulse Current	I <sub>PP</sub>	6	A	8/20μs, Per Fig. 1
ESD Protection – Contact Discharge	V <sub>ESD_CONTACT</sub>	±30	kV	Standard IEC 61000-4-2
ESD Protection – Air Discharge	V <sub>ESD_AIR</sub>	±30	kV	Standard IEC 61000-4-2

**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 6)	I <sub>RM</sub>	—	10	100	nA	V <sub>RWM</sub> = 5V
Clamping Voltage, Positive Transients	V <sub>CL</sub>	—	7.0	9.0	V	I <sub>PP</sub> = 1A, t <sub>p</sub> = 8/20μs, Figure 1
		—	8.7	10.7		I <sub>PP</sub> = 3A, t <sub>p</sub> = 8/20μs, Figure 1
		—	10.5	12.0		I <sub>PP</sub> = 5A, t <sub>p</sub> = 8/20μs, Figure 1
		—	11.5	14.0		I <sub>PP</sub> = 6A, t <sub>p</sub> = 8/20μs, Figure 1
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
ESD Clamping Voltage (Note 7)	V <sub>C</sub>	—	9.6	—	V	I <sub>PP</sub> = 4A, t <sub>p</sub> = 10/100ns
		—	16.0	—		I <sub>PP</sub> = 16A, t <sub>p</sub> = 10/100ns
Channel Input Capacitance	C <sub>T</sub>	—	15	18	pF	V <sub>R</sub> = 0V, f = 1MHz
		—	12.5	—		V <sub>R</sub> = 2.5V, 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.
  - Transmission Line Pulse Test (TLP) settings: t<sub>p</sub>=100ns, t<sub>r</sub>=10ns, I<sub>TLP</sub> and V<sub>TLP</sub> averaging window is from 70ns to 90ns.

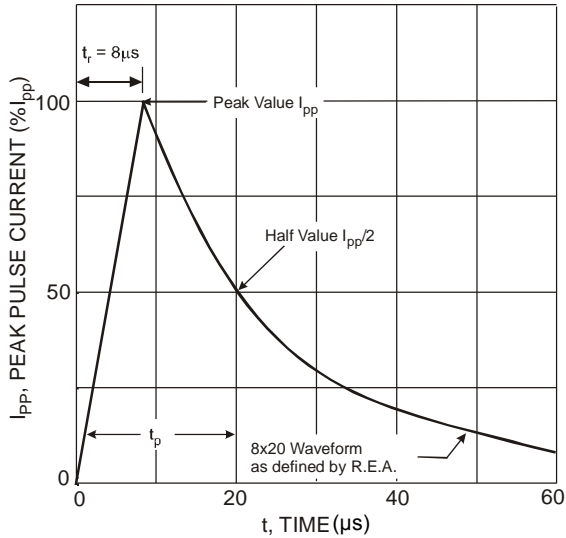


Figure 1 Pulse Waveform

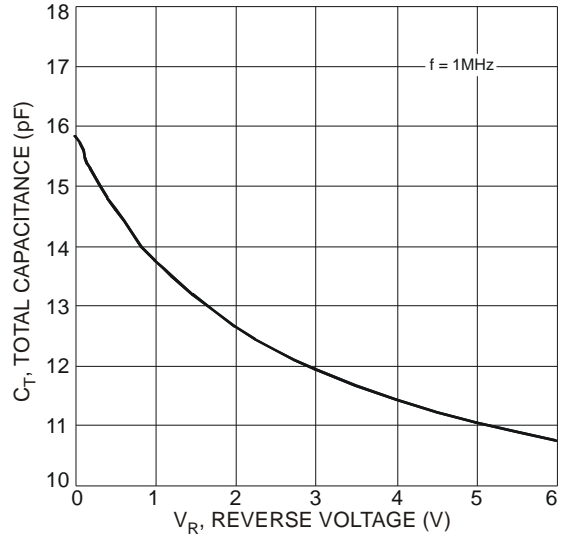


Figure 2 Typical Total Capacitance vs. Reverse Voltage

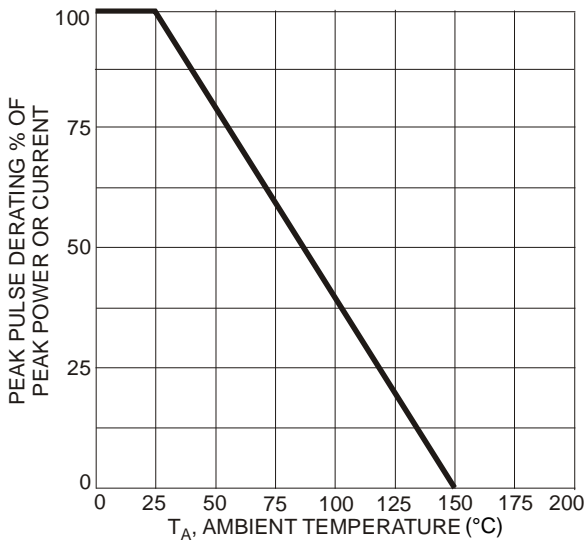


Figure 3 Pulse Derating Curve

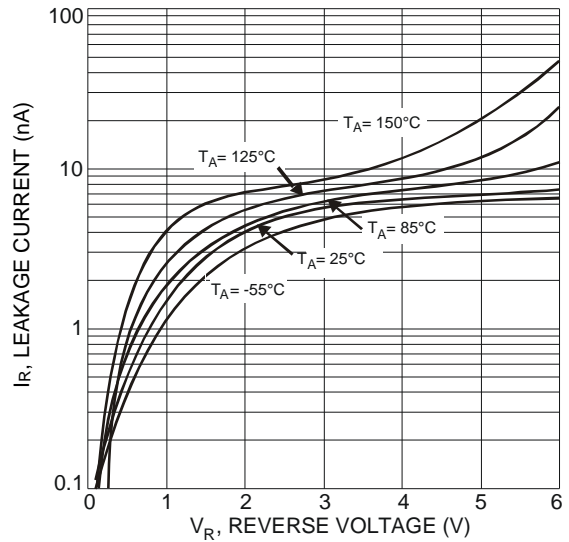


Figure 4 Typical Reverse Characteristics

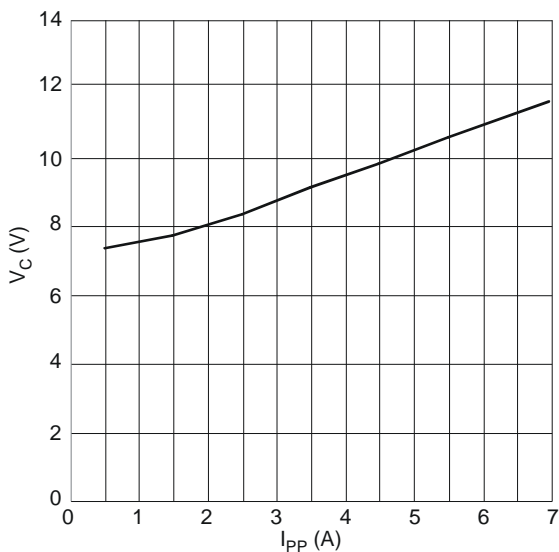


Figure 5 Typical Peak Clamping Voltage  $V_C$  vs. Peak Pulse Current  $I_{PP}$

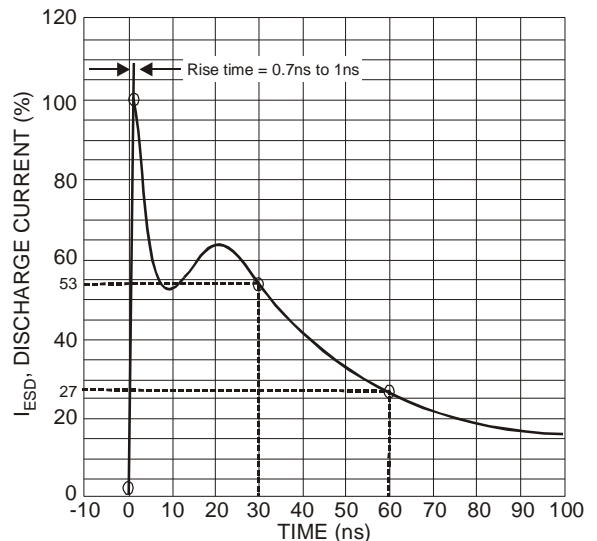


Figure 6 ESD Discharge Current Wave Form IEC 61000-4-2 (330Ω/150pF)

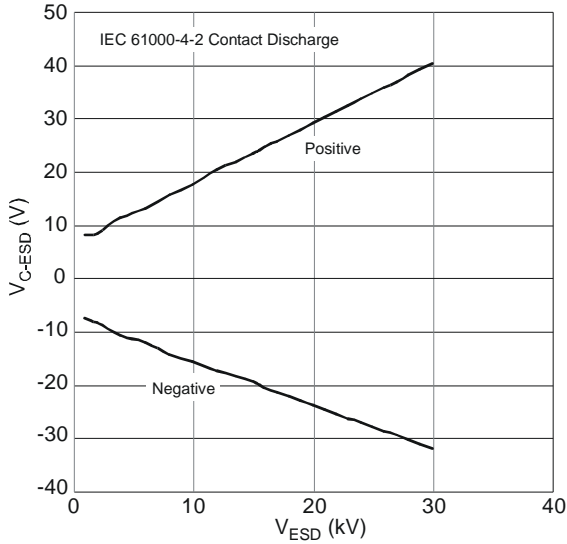


Figure 7 Typical Clamping Voltage vs. Contact Discharge Voltage

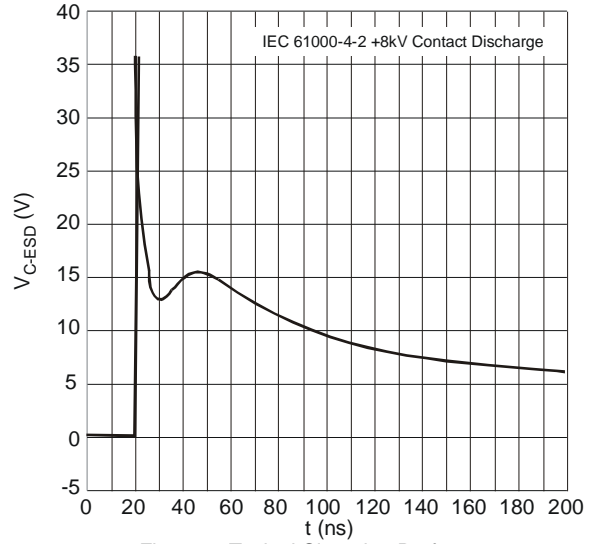


Figure 8 Typical Clamping Performance @ 8kV Contact Discharge

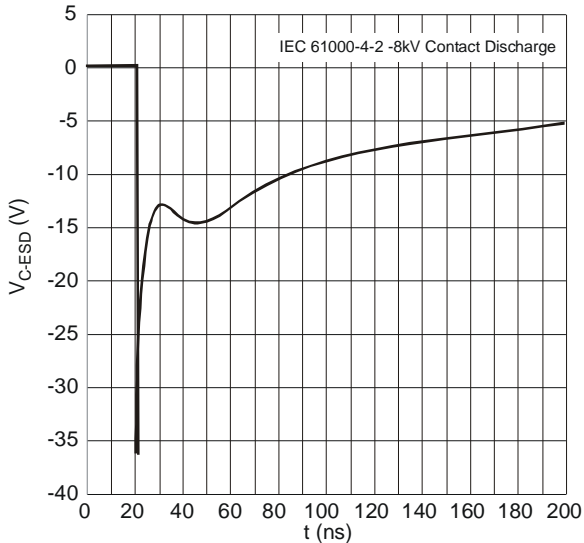


Figure 9 Typical Clamping Performance @ -8kV Contact Discharge

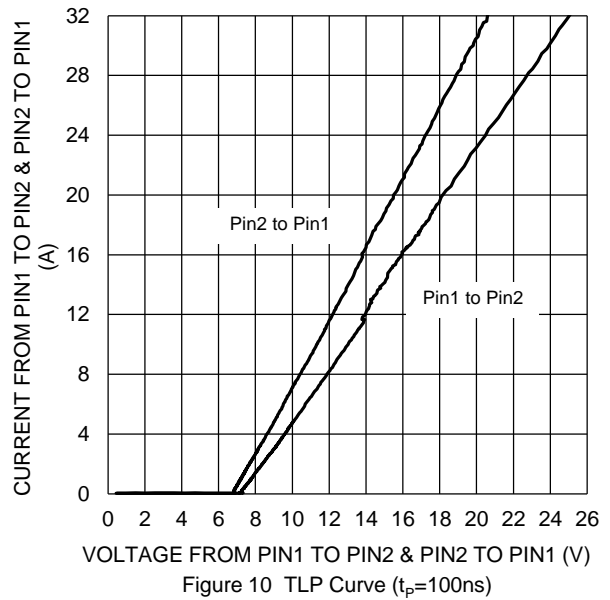
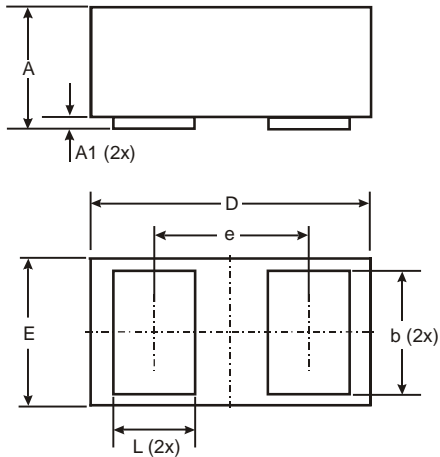


Figure 10 TLP Curve ( $t_p=100\text{ns}$ )

**Package Outline Dimensions**

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

**X3-DFN0603-2**

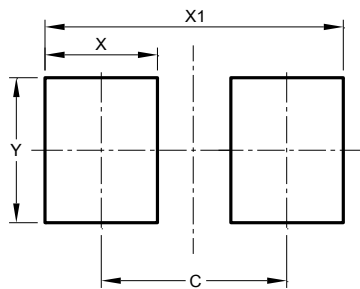


X3-DFN0603-2			
Dim	Min	Max	Typ
A	0.27	0.35	0.30
A1	0.00	0.03	0.02
b	0.19	0.29	0.24
D	0.595	0.645	0.62
E	0.295	0.345	0.32
e	-	-	0.355
L	0.14	0.24	0.19
All Dimensions in mm			

**Suggested Pad Layout**

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

**X3-DFN0603-2**



Dimensions	Value (in mm)
C	0.380
X	0.230
X1	0.610
Y	0.300

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