

LOW CAPACITANCE BIDIRECTIONAL TVS DIODE
Product Summary

V_{BR} (min)	I_{PP} (max)	C_T (typ)
6.0V	3A	6pF

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

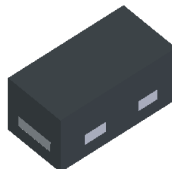
Features

- Ultra-Small, Low Profile Leadless Surface Mount Package (0.6 * 0.3 * 0.3mm)
- Provides ESD Protection per IEC 61000-4-2 Standard: Air ±17kV, Contact ±15kV
- 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)**

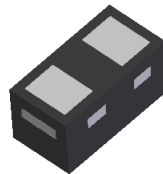
Mechanical Data

- 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)

X3-DFN0603-2



Top View



Bottom View



Device Schematic

Ordering Information (Note 4)

Product	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
D5V0Q1B2LP3-7	Standard	8	7	8	10,000/Tape & Reel

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
 2. See 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

X3-DFN0603-2



8 = Product Type Marking Code

Maximum Ratings (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Value	Unit	Conditions
Peak Pulse Current	I_{PP}	3	A	8/20 μs , per Figure 1
ESD Protection – Contact Discharge	$V_{ESD_Contact}$	± 15	kV	IEC 61000-4-2 Standard
ESD Protection – Air Discharge	V_{ESD_Air}	± 17	kV	IEC 61000-4-2 Standard

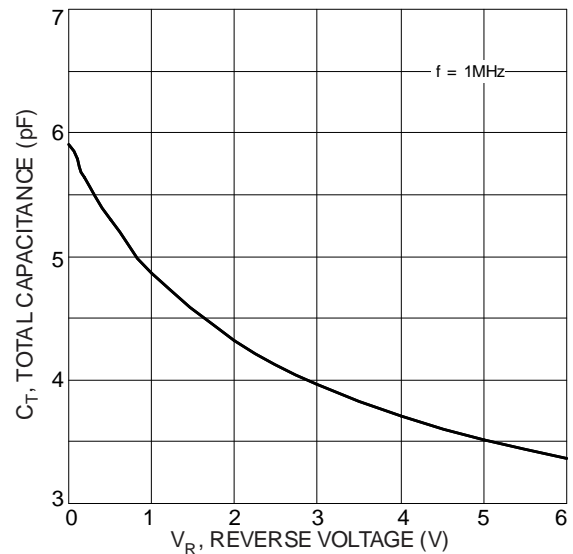
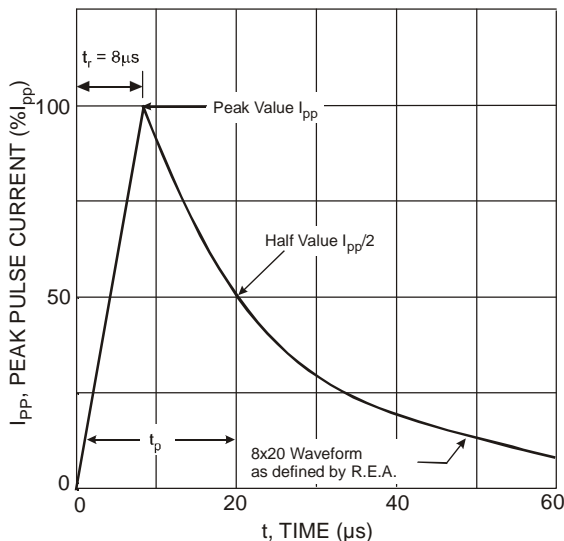
Thermal Characteristics

Characteristic	Symbol	Value	Unit
Package Power Dissipation (Note 5)	P_D	250	mW
Thermal Resistance, Junction to Ambient (Note 5)	$R_{\theta JA}$	500	$^\circ\text{C}/\text{W}$
Operating and Storage Temperature Range	T_J, T_{STG}	-65 to +150	$^\circ\text{C}$

Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions
Reverse Standoff Voltage	V_{RWM}	—	—	5.5	V	—
Channel Leakage Current (Note 6)	I_{RM}	—	10	100	nA	$V_{RWM} = 5\text{V}$
Clamping Voltage, Positive Transients	V_{CL}	—	7.0	9.0	V	$I_{PP} = 1\text{A}$, $t_p = 8/20\mu\text{s}$, Figure 1
		—	9.0	11.0		$I_{PP} = 3\text{A}$, $t_p = 8/20\mu\text{s}$, Figure 1
Breakdown Voltage	V_{BR}	6	7	8	V	$I_R = 1\text{mA}$
Channel Input Capacitance	C_T	—	6	8	pF	$V_R = 0\text{V}$, $f = 1\text{MHz}$

- Notes:
- 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>.
 - Short duration pulse test used to minimize self-heating effect.



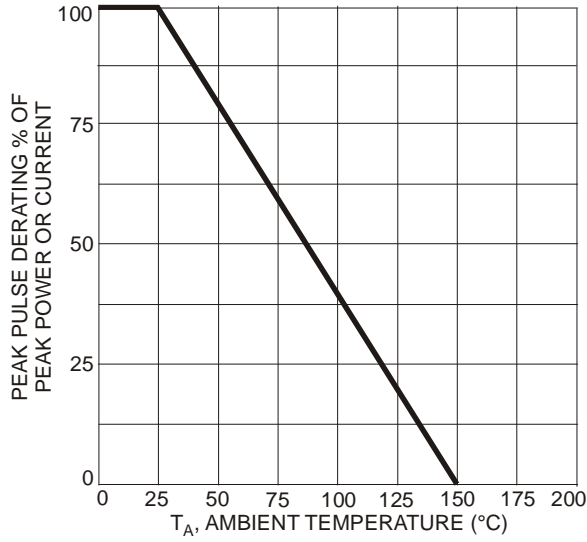


Figure 3 Pulse Derating Curve

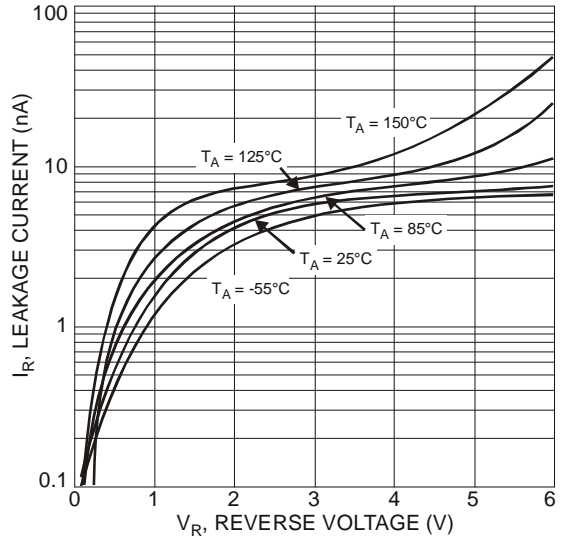


Figure 4 Typical Reverse Characteristics

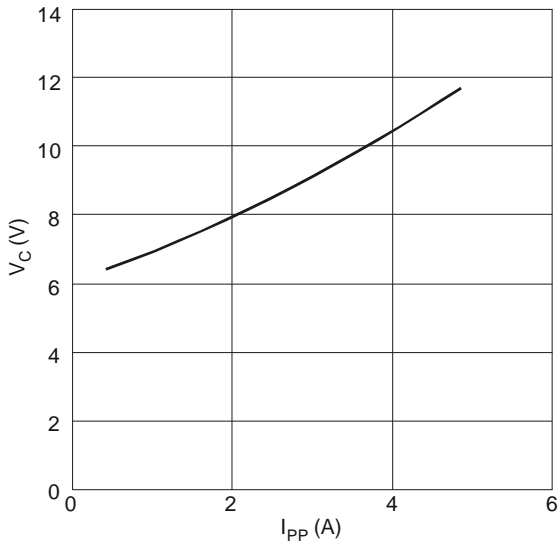


Figure 5 Typical Peak Clamping Voltage V_C vs. Peak Pulse Current I_{PP}

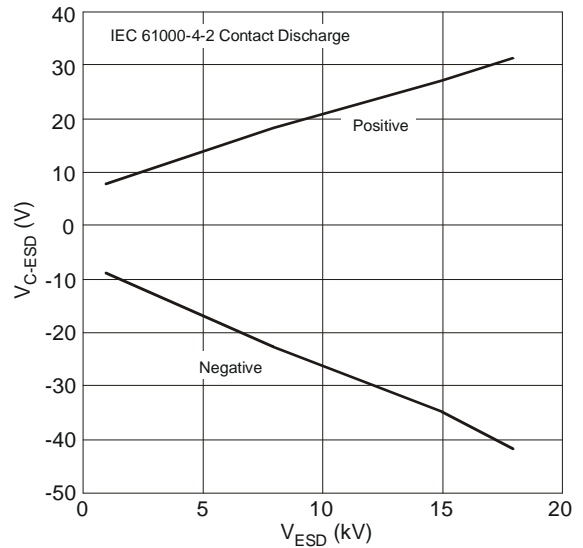


Figure 6 Typical Clamping Voltage vs. Contact Discharge Voltage

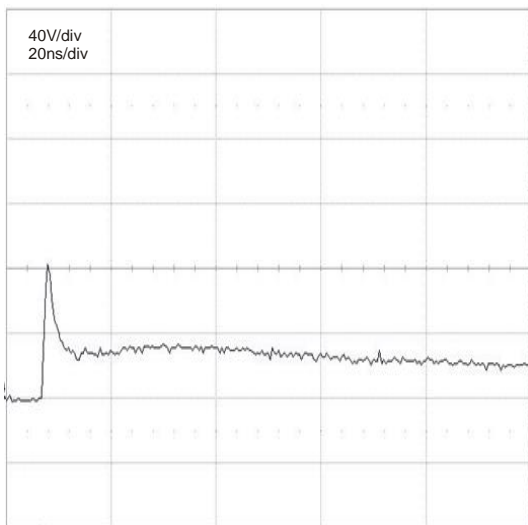


Figure 7 IEC 6100-4-2 Clamping Voltage +8kV Contact

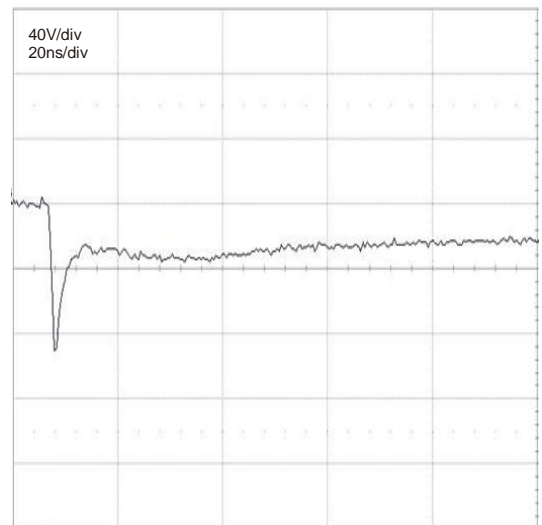


Figure 8 IEC 6100-4-2 Clamping Voltage -8kV Contact

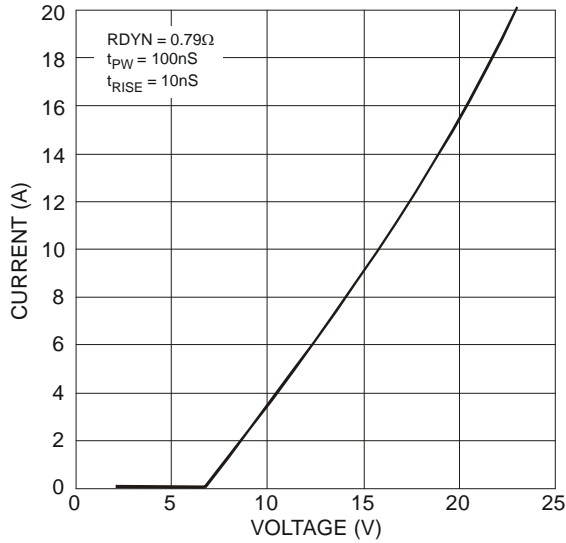
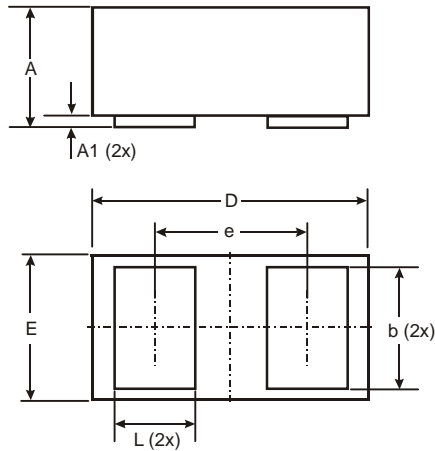


Figure 9 4 TLP, tPW = 100nS, tRISE = 10nS
Data to GND

Package Outline Dimensions

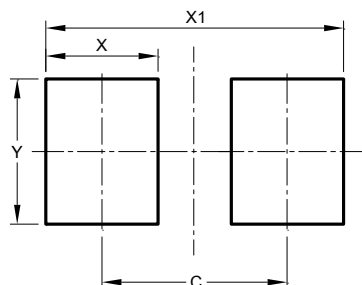
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



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



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

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