

Product Summary

V _{BR} Min	I _{PP} Max	C _T Typ
21V	2.5A	6pF

Description

This new generation TVS is designed to protect sensitive electronics from 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 Peripherals

Features

- Provides ESD Protection per IEC 61000-4-2 Standard:
Air ±25kV, Contact ±20kV
- One 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 refer to the related automotive grade (Q-suffix) part. A listing can be found at
<https://www.diodes.com/products/automotive/automotive-products/>.
- This part is qualified to JEDEC standards (as references in AEC-Q) for High Reliability.
<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)

X3-DFN0603-2



Top View



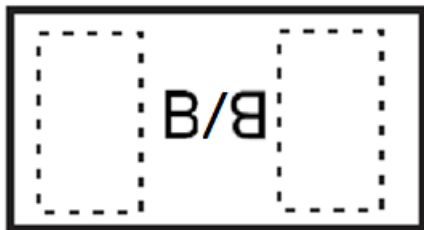
Device Schematic

Ordering Information (Notes 4, 5)

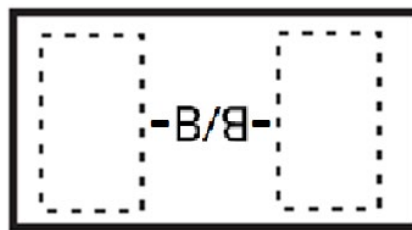
Product	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
D20V0L1B2LP3-7	Commercial	B/B (Reversed)	7	8	10,000/Tape & Reel

- Notes:
- No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
 - 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.
 - Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
 - For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.
 - Package is non-polarized. Parts may be on reel in orientation as illustrated, 180° rotated, or mixed (both ways).

Marking Information



B/B = Product Type Marking



-B/B- = Product Type Marking

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

Characteristic	Symbol	Value	Unit	Conditions
Peak Pulse Power Dissipation	P _{PP}	80	W	8/20μs, See Figure 3
Peak Pulse Current	I _{PP}	2.5	A	8/20μs, See Figure 3
ESD Protection – Contact Discharge	V _{ESD_CONTACT}	±20	kV	IEC 61000-4-2 Standard
ESD Protection – Air Discharge	V _{ESD_AIR}	±25	kV	IEC 61000-4-2 Standard

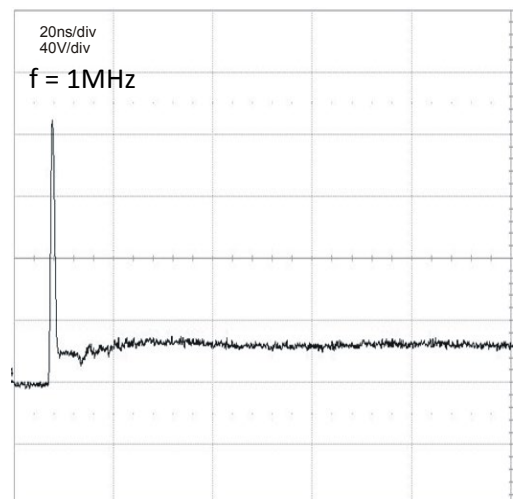
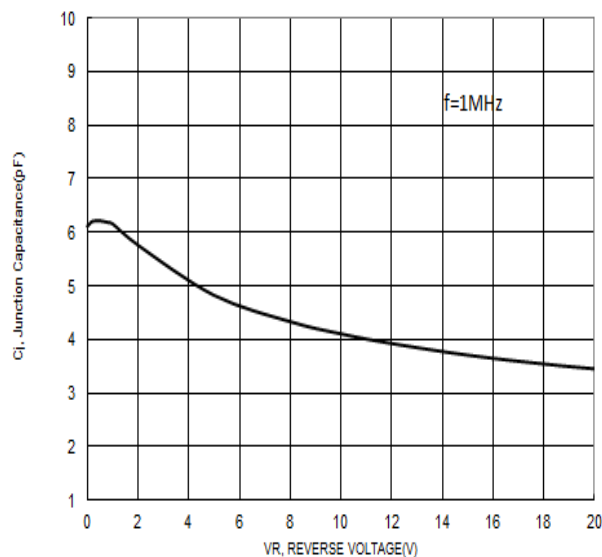
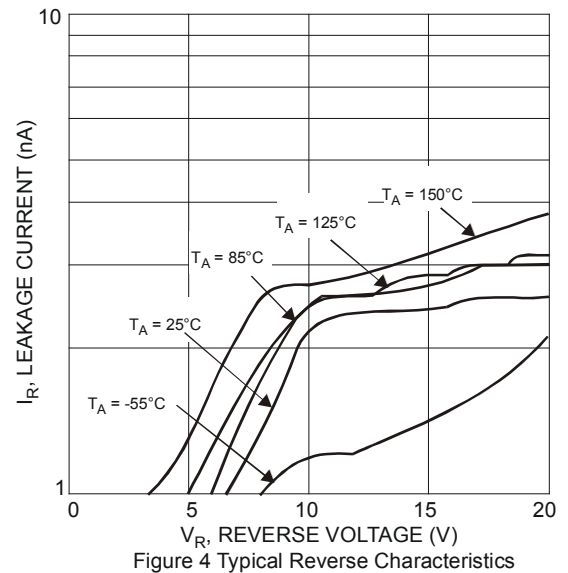
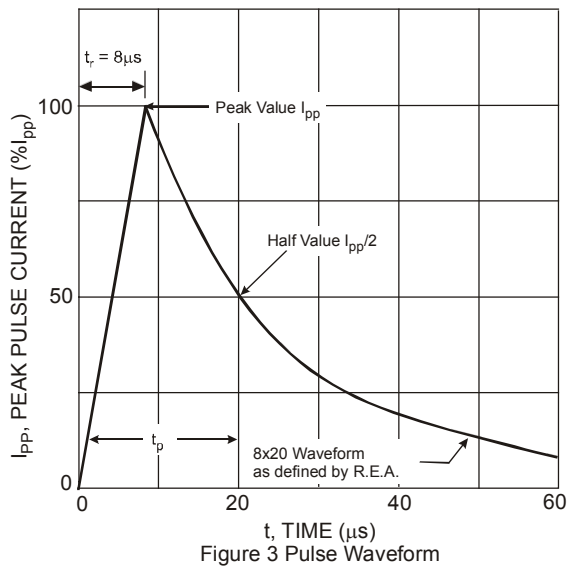
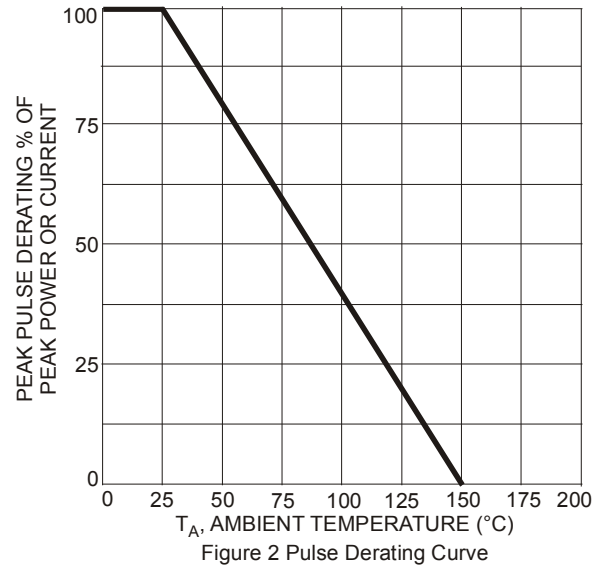
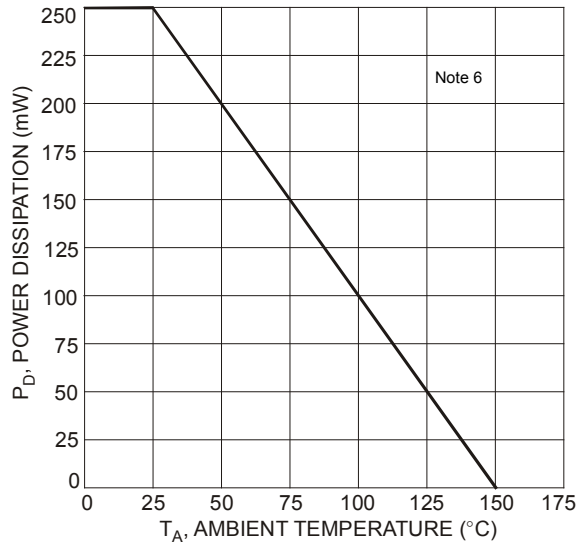
Thermal Characteristics

Characteristic	Symbol	Value	Unit
Package Power Dissipation (Note 6)	P _D	250	mW
Thermal Resistance, Junction to Ambient (Note 6)	R _{θJA}	500	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-65 to +150	°C

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions
Reverse Standoff Voltage	V _{RWM}	—	—	20	V	—
Channel Leakage Current (Note 7)	I _{RM}	—	—	100	nA	V _{RWM} = 20V
Clamping Voltage, Positive Transients	V _{CL}	—	25	29	V	I _{PP} = 1A, t _p = 8/20μS
		—	29	32	V	I _{PP} = 2.5A, t _p = 8/20μS
Breakdown Voltage	V _{BR}	21	—	25	V	I _R = 1mA
Differential Resistance	R _{DIF}	—	2.4	—	Ω	I _R = 1A, t _p = 8/20μS
Channel Input Capacitance	C _T	—	6	—	pF	V _R = 0V, f = 1MHz

Notes: 6. Device mounted on FR-4 PCB pad layout (2oz copper) as shown on our website at <http://www.diodes.com/package-outlines.html>.
 7. Short duration pulse test used to minimize self-heating effect.



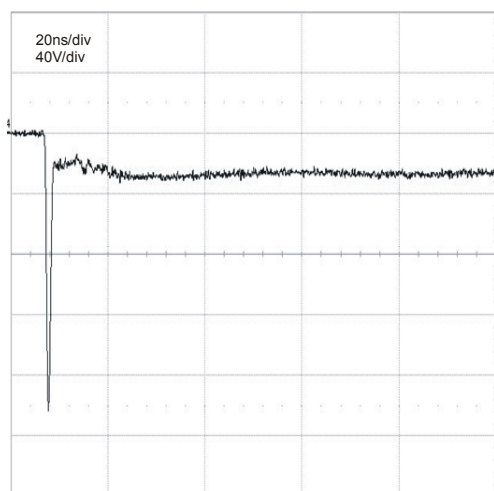


Figure 7 ESD Response to IEC 6100-4-2
(-8kV Contact Discharge)

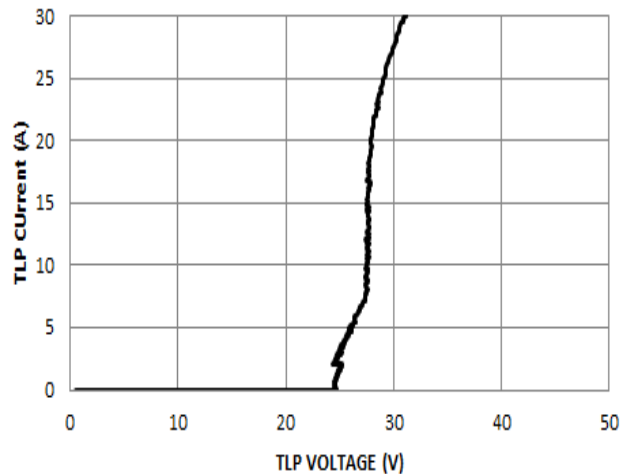


Figure 8 Transmission Line Pulsing (TLP) Current vs. Voltage

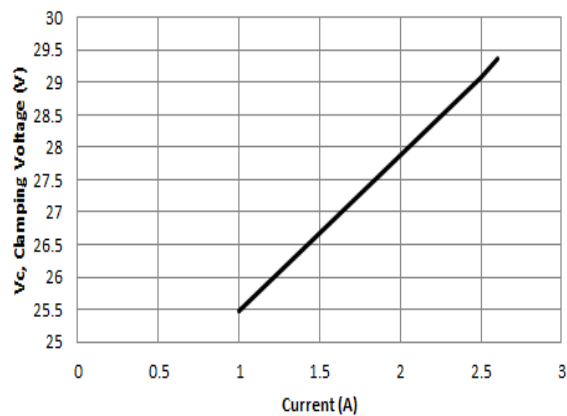
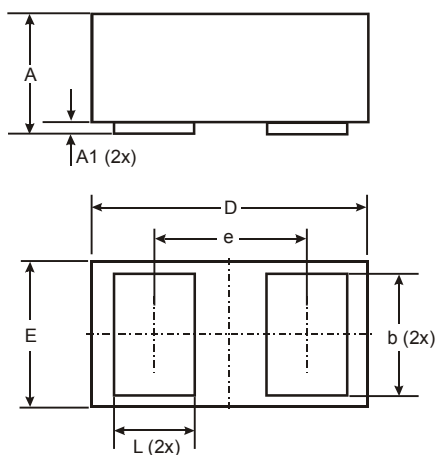


Figure 9 Clamping Voltage Characteristic ($t_p=8/20\mu s$)

Package Outline Dimensions

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

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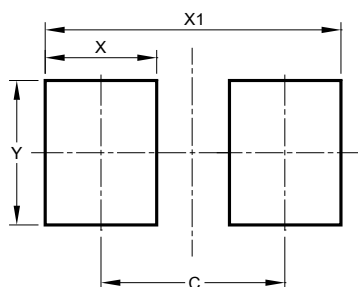


X3-DFN0603-2			
Dim	Min	Max	Typ
A	0.27	0.35	0.30
A1	0.00	0.03	0.02
b	0.19	0.29	0.24
D	0.595	0.645	0.62
E	0.295	0.345	0.32
e	-	-	0.355
L	0.14	0.24	0.19
All Dimensions in mm			

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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