Product Summary

$V_{BR\ MIN}$	$I_{PP\ MAX}$	$C_{T\ TYP}$
13V	4A	22pF

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

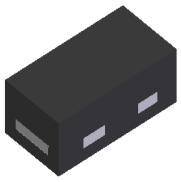
Features

- Provides ESD Protection per IEC 61000-4-2 Standard: Air ±30kV, Contact ±30kV
- 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)**

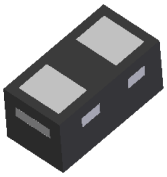
Mechanical Data

- 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: Matte Tin Finish Annealed over Copper Leadframe (Lead Free Plating). Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.001 grams (Approximate)

X3-DFN0603-2



Top View



Bottom View

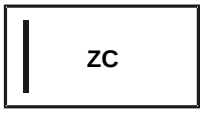
Device Schematic

Ordering Information (Note 4)

Part Number	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
D12V0M1U2LP3-7	Standard	ZC	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



ZC = Product Type Marking Code
Line Denotes Pin 1

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

Characteristic	Symbol	Value	Unit	Conditions
Peak Pulse Power Dissipation	P_{PP}	100	W	8/20µs, Figure 3
Peak Pulse Current	I_{PP}	4	A	8/20µs, Figure 3
ESD Protection – Contact Discharge	$V_{ESD\_CONTACT}$	±30	kV	IEC 61000-4-2 Standard
ESD Protection – Air Discharge	V_{ESD_AIR}	±30	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	°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}	—	—	12.0	V	—
Channel Leakage Current (Note 6)	I_{RM}	—	—	1.0	µA	V_{RWM} = 12V
Clamping Voltage, IEC 61000-4-5	V_{CL}	—	—	20	V	I_{PP} = 1A, t_p = 8/20µs
		—	—	25		I_{PP} = 4A, t_p = 8/20µs
Breakdown Voltage	V_{BR}	13	—	—	V	I_R = 1mA
Channel Input Capacitance	C_T	—	22	28	pF	V_R = 0V, f = 1MHz

Notes: 5. Device mounted on FR-4 PCB pad layout (2oz copper) as shown in Diodes Incorporated's package outline PDFs, which can be found on our website at http://www.diodes.com/package-outlines.html.
6. Short duration pulse test used to minimize self-heating effect.

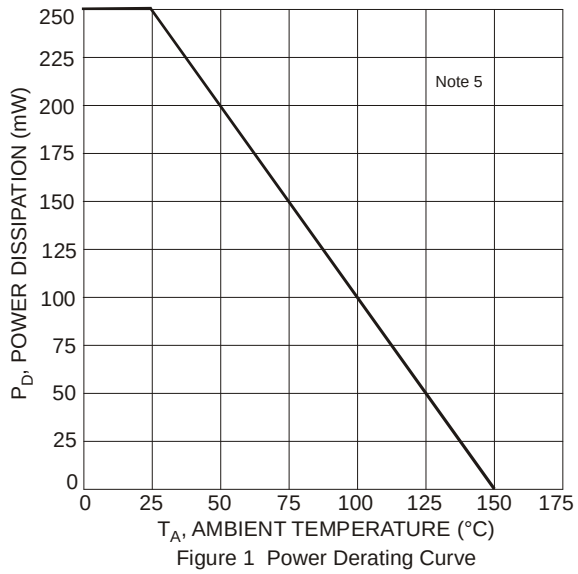


Figure 1 Power Derating Curve

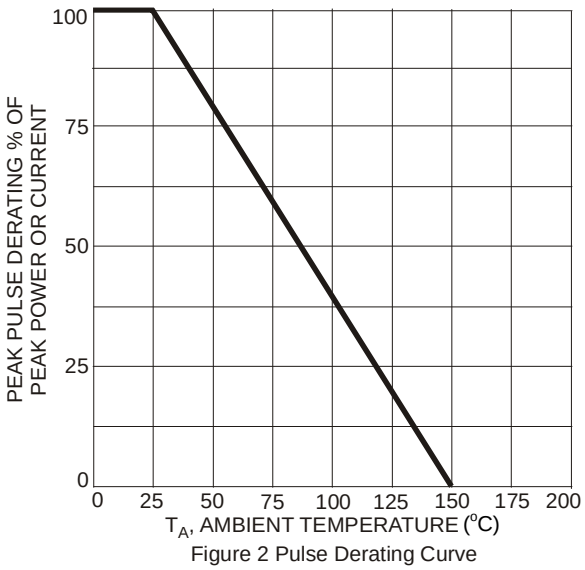


Figure 2 Pulse Derating Curve

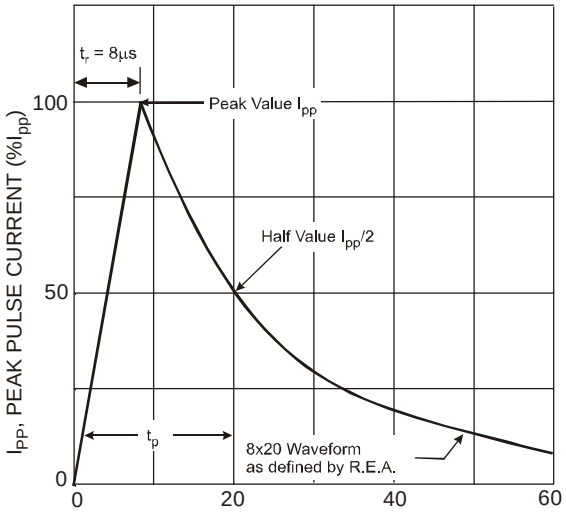


Figure 3 Pulse Waveform

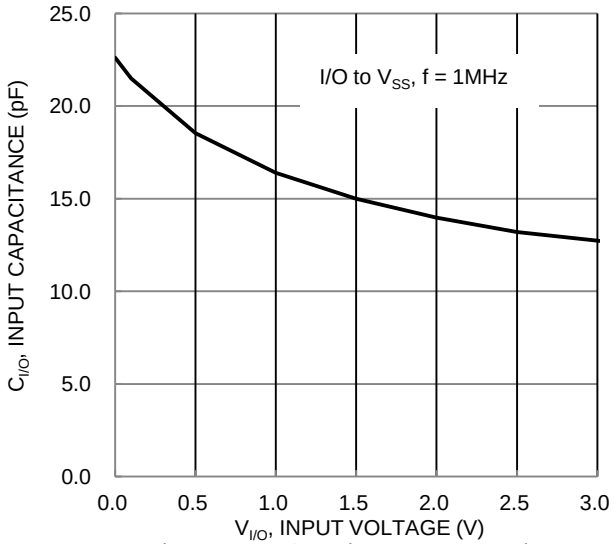


Figure 4 Input Capacitance vs. Input Voltage

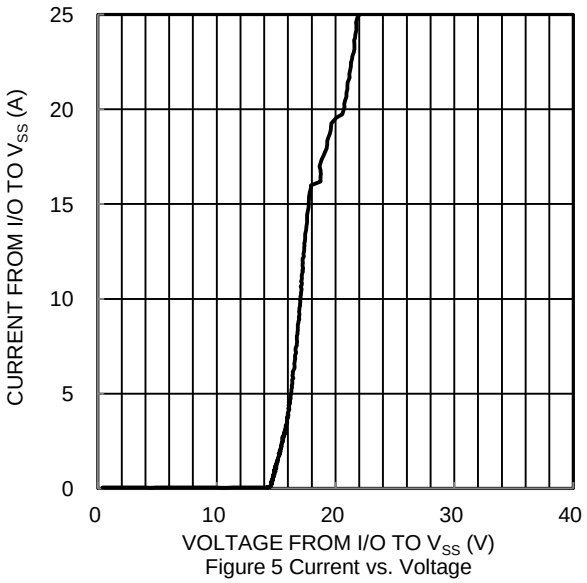


Figure 5 Current vs. Voltage

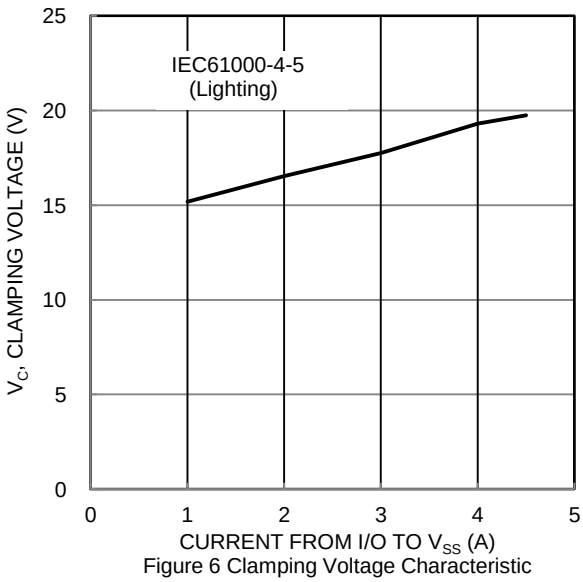
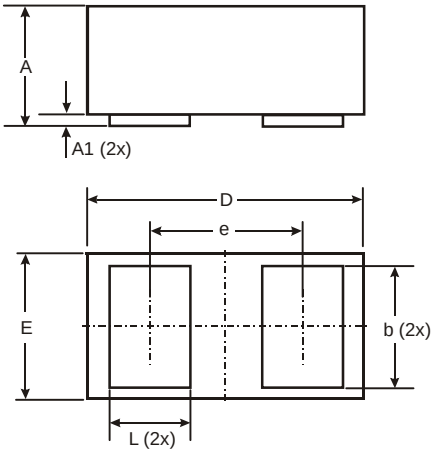


Figure 6 Clamping Voltage Characteristic

Package Outline Dimensions

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

X3-DFN0603-2

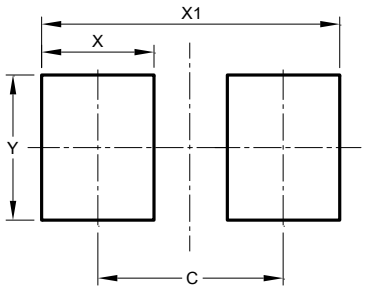


X3-DFN0603-2			
Dim	**Min**	**Max**	**Typ**
A	0.27	0.35	0.30
A1	0.00	0.03	0.02
b	0.19	0.29	0.24
D	0.595	0.645	0.62
E	0.295	0.345	0.32
e	-	-	0.355
L	0.14	0.24	0.19
All Dimensions in mm			

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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