

## Product Summary

V <sub>BR</sub> MIN	I <sub>PP</sub> MAX	C <sub>T</sub> 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

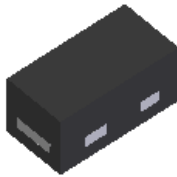
## Features

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

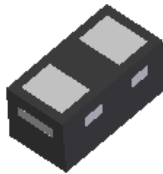
## Mechanical Data

- 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
- Weight: 0.001 grams (Approximate)

X3-DFN0603-2



Top View



Bottom View



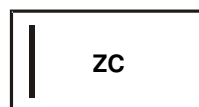
Device Schematic

## 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:
- 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/>.

## Marking Information



ZC = 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>	100	W	8/20μs, Figure 3
Peak Pulse Current	I <sub>PP</sub>	4	A	8/20μs, Figure 3
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>	—	—	12.0	V	—
Channel Leakage Current (Note 6)	I <sub>RM</sub>	—	—	1.0	μA	V <sub>RWM</sub> = 12V
Clamping Voltage, IEC 61000-4-5	V <sub>CL</sub>	—	—	20	V	I <sub>PP</sub> = 1A, t <sub>p</sub> = 8/20μs
		—	—	25		I <sub>PP</sub> = 4A, t <sub>p</sub> = 8/20μs
Breakdown Voltage	V <sub>BR</sub>	13	—	—	V	I <sub>R</sub> = 1mA
Channel Input Capacitance	C <sub>T</sub>	—	22	28	pF	V <sub>R</sub> = 0V, f = 1MHz

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

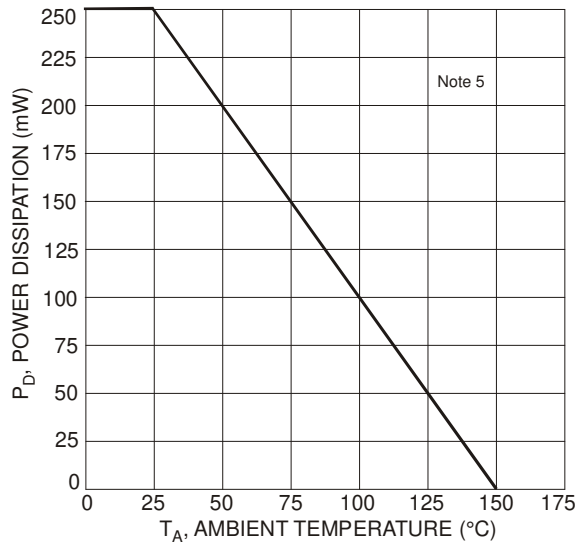


Figure 1 Power Derating Curve

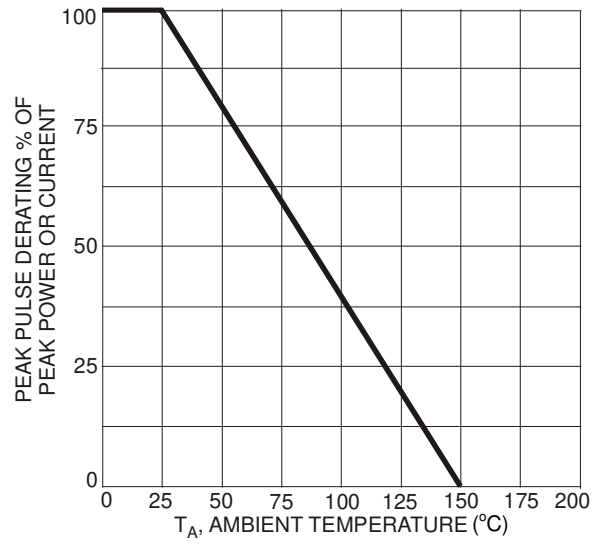
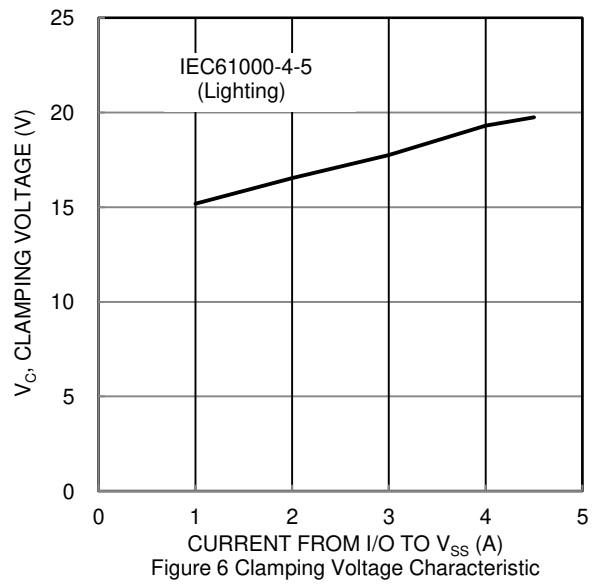
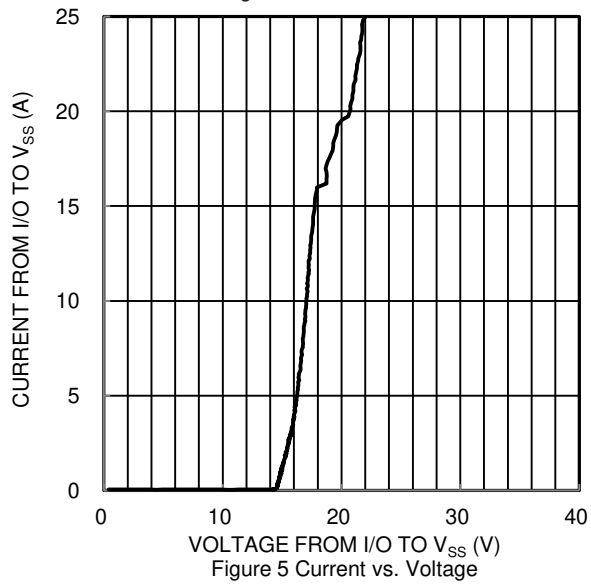
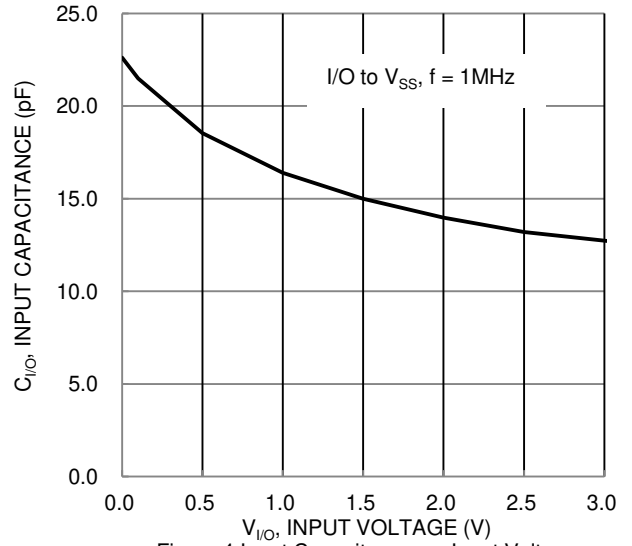
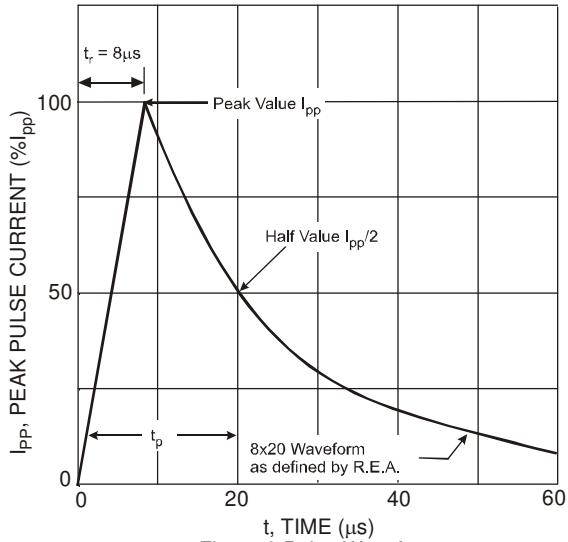


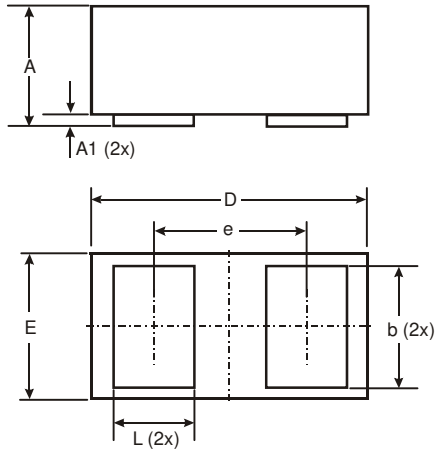
Figure 2 Pulse Derating Curve



**Package Outline Dimensions**

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

**X3-DFN0603-2**

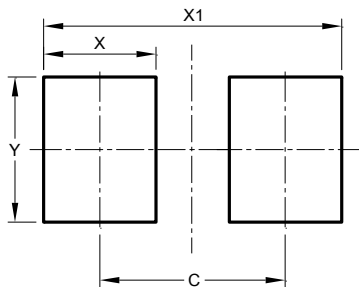


X3-DFN0603-2			
Dim	Min	Max	Typ
A	0.27	0.35	0.30
A1	0.00	0.03	0.02
b	0.19	0.29	0.24
D	0.595	0.645	0.62
E	0.295	0.345	0.32
e	-	-	0.355
L	0.14	0.24	0.19
All Dimensions in mm			

**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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