

## Product Summary

<b>V<sub>BR</sub> (min)</b>	<b>I<sub>PP</sub> (max)</b>	<b>C<sub>T</sub> (typ)</b>
6.0V	3A	5.5pF

## 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 (0.600 \* 0.300 x 0.300mm)
- IEC 61000-4-2 (ESD): Air – ±15kV, Contact – ±14kV
- IEC 61000-4-5 (Lightning): 3A (8/20µs)
- 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)**

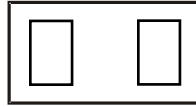
## Mechanical Data

- Case: X2-DSN0603-2
- Case Material: Chip Scale Package
- Terminals: NiAu Bump. Solderable per MIL-STD-202, Method 208 <sup>(e4)</sup>
- Weight: 0.0002 grams (Approximate)

X2-DSN0603-2



Top View



Bottom View



Device Schematic

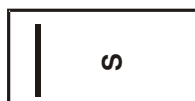
## Ordering Information (Note 4)

Product	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
D5V0Q1B2CSP-7	Standard	S	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](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

X2-DSN0603-2



S = Product Type Marking Code

**Maximum Ratings** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit	Conditions
Peak Pulse Current	I <sub>PP</sub>	3	A	8/20μs, per Figure 1
ESD Protection – Contact Discharge	V <sub>ESD_Contact</sub>	±14	kV	IEC 61000-4-2 Standard
ESD Protection – Air Discharge	V <sub>ESD_Air</sub>	±15	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>	—	—	5.5	V	—
Channel Leakage Current (Note 6)	I <sub>RM</sub>	—	—	100	nA	V <sub>RWM</sub> = 5.5V
Clamping Voltage	V <sub>CL</sub>	—	7.2	—	V	I <sub>PP</sub> = 1A, t <sub>p</sub> = 8/20μS
		—	8.4	—		I <sub>PP</sub> = 3A, t <sub>p</sub> = 8/20μS
ESD Clamping Voltage	V <sub>CL</sub>	—	5.9	—	V	TLP, 1A, t <sub>p</sub> = 100 ns, I/O to V <sub>SS</sub>
		—	8.3	—		TLP, 16A, t <sub>p</sub> = 100 ns, I/O to V <sub>SS</sub>
Differential Resistance	R <sub>DYN</sub>	—	0.2	—	Ω	TLP, 10A, t <sub>p</sub> = 100ns
Breakdown Voltage	V <sub>BR</sub>	6	—	10	V	I <sub>R</sub> = 1mA
Channel Input Capacitance	C <sub>T</sub>	—	5.5	—	pF	V <sub>R</sub> = 0V, f = 1MHz

Notes: 5. Device mounted on FR-4 PCB pad layout (2oz copper) as shown on Diodes, Inc. suggested pad layout, 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.

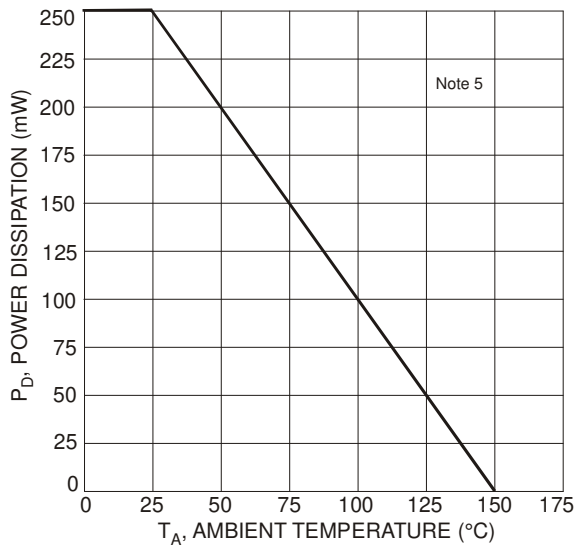


Figure 1 Power Derating Curve

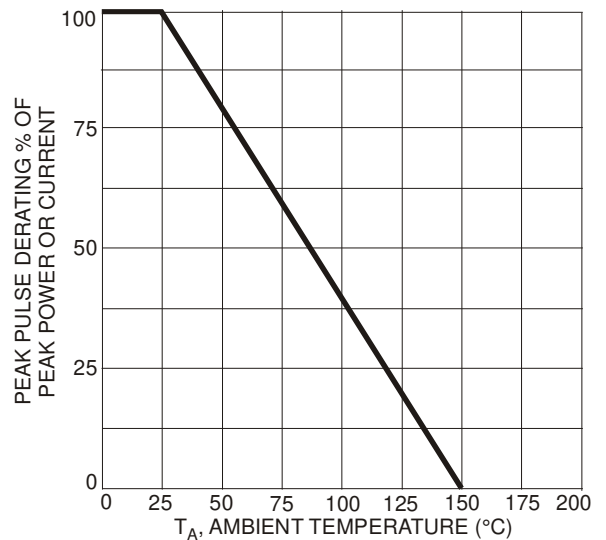
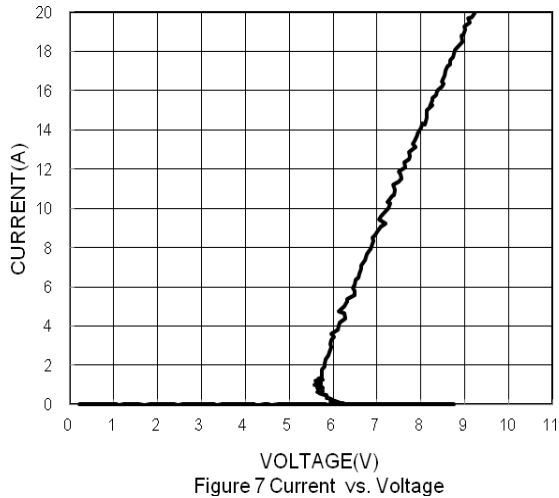
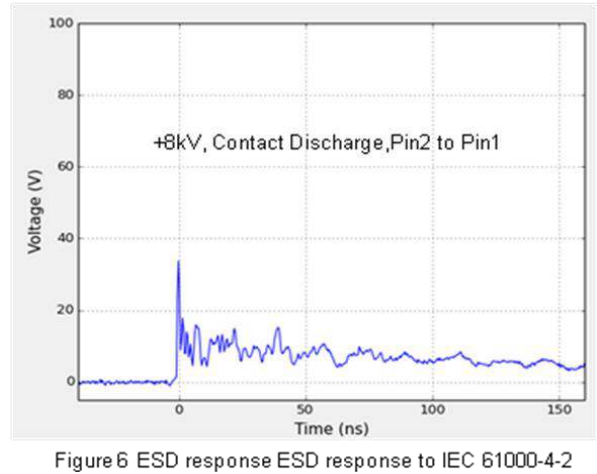
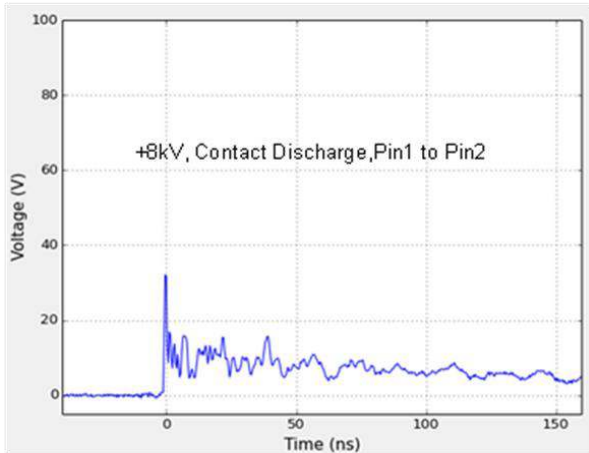
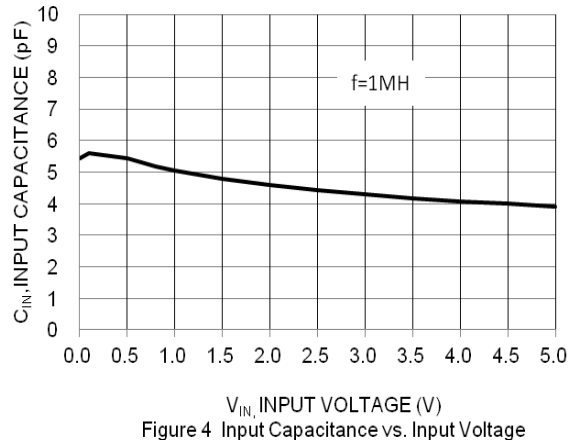
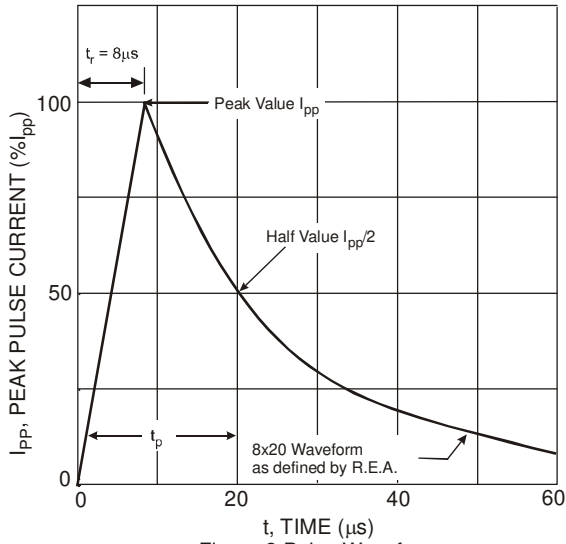


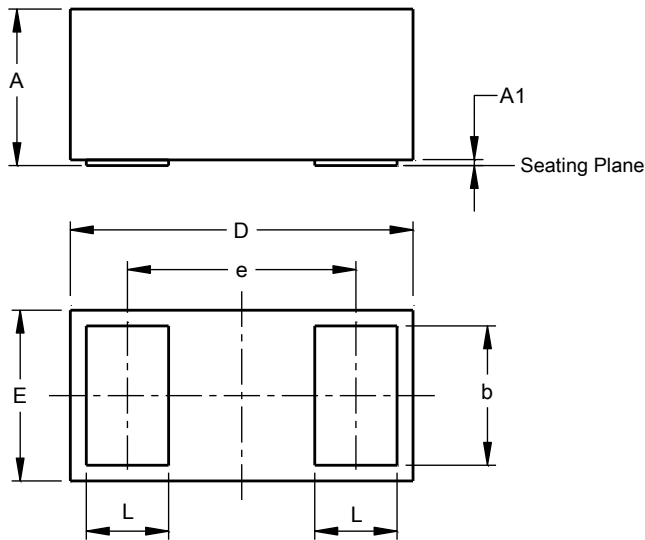
Figure 2 Pulse Derating Curve



**Package Outline Dimensions** (Note 7)

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

**X2-DSN0603-2**



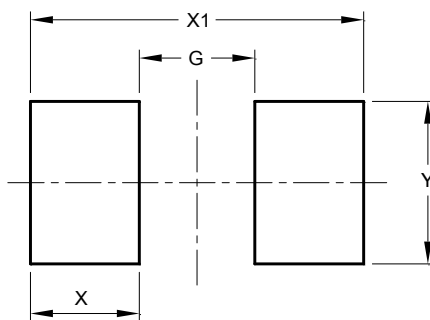
X2-DSN0603-2			
Dim	Min	Max	Typ
A	0.280	0.320	0.300
A1	0.00	0.020	0.010
b	0.220	0.260	0.240
D	0.575	0.625	0.600
E	0.275	0.325	0.300
e	-	-	0.400
L	0.120	0.160	0.140
All Dimensions in mm			

Note: 7. Device side walls are electrically active bare silicon. Avoid contact of solder or flux on the side walls during the PCB assembly process.

**Suggested Pad Layout**

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

**X2-DSN0603-2**



Dimensions	Value (in mm)
G	0.206
X	0.194
Y	0.291
X1	0.594

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