LOW CAPACITANCE BIDIRECTIONAL TVS DIODE

Product Summary

V_{BR} Min	I_{PP} Max	C_{IN} Typ
6V	2A	5.3pF

Features

- Provides ESD Protection per IEC 61000-4-2 Standard:
  Air ±15kV, Contact ±14kV
- 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)**

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.

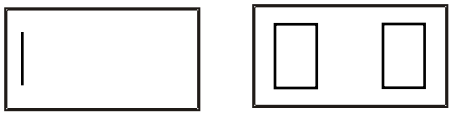
Applications

- Cellular Handsets
- Portable Electronics
- Computers and Peripheral

Mechanical Data

- Case: X2-DSN0603-2
- Case Material: Molded Plastic, "Green" Molding Compound.
  UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: NiPdAu Bump. Solderable per MIL-STD-202, Method 208 e4
- 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
DESD5V0V1BCSP-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 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

S = Product Type Marking Code
Bar Denotes Pin 1

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

Characteristic	Symbol	Value	Unit	Conditions
Peak Pulse Power Dissipation	P_{PP}	20	W	8/20µs, See Figure 3
Peak Pulse Current	I_{PP}	2	A	8/20µs, See Figure 3
ESD Protection – Contact Discharge	$V_{ESD\_CONTACT}$	±14	kV	IEC 61000-4-2 Standard
ESD Protection – Air Discharge	V_{ESD_AIR}	±15	kV	IEC 61000-4-2 Standard
ESD Protection – Human Body Model	V_{ESD_HBM}	±10	kV	MIL-STD-883; Class 3B

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}	—	—	5	V	—
Channel Leakage Current (Note 6)	I_{RM}	—	1	100	nA	V_{RWM} = 5V
Snapback Voltage	V_{SNP}	5.3	—	—	V	—
Clamping Voltage, Positive Transients	V_{CL}	—	—	11.5	V	I_{PP} = 0.5A, t_P = 8/20µS
		—	—	12.8		I_{PP} = 1A, t_P = 8/20µS
Breakdown Voltage	V_{BR}	6	—	10	V	I_R = 1mA
Differential Resistance	R_{DYN}	—	2.0	—	Ω	TLP, 10A, t_P = 100ns
Channel Input Capacitance	C_{IN}	4	5.3	6	pF	V_R = 0V, f = 1MHz

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

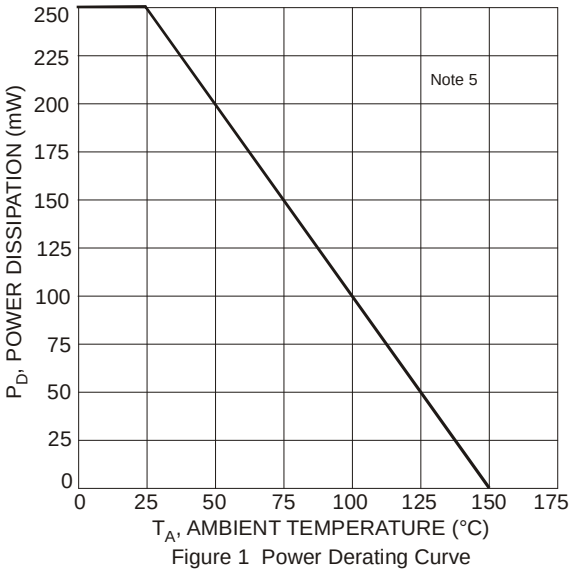


Figure 1 Power Derating Curve

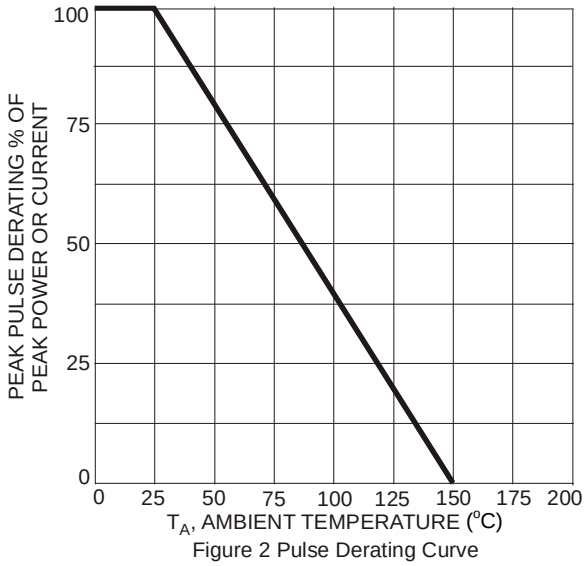


Figure 2 Pulse Derating Curve

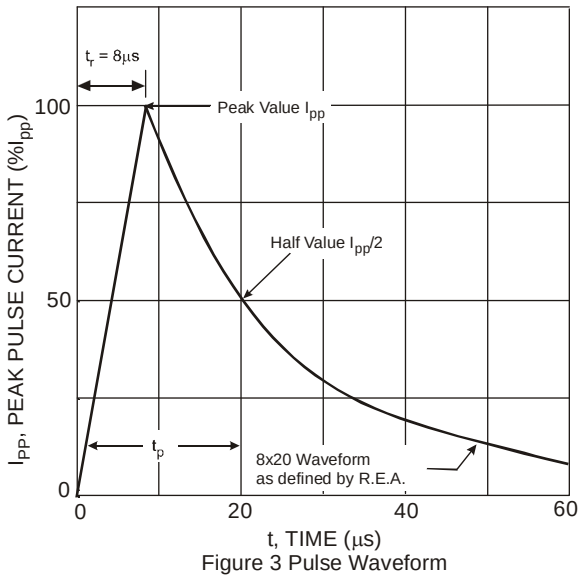


Figure 3 Pulse Waveform

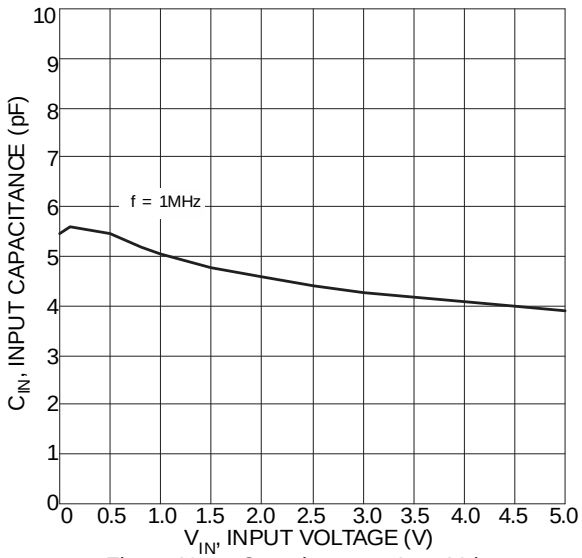


Figure 4 Input Capacitance vs. Input Voltage

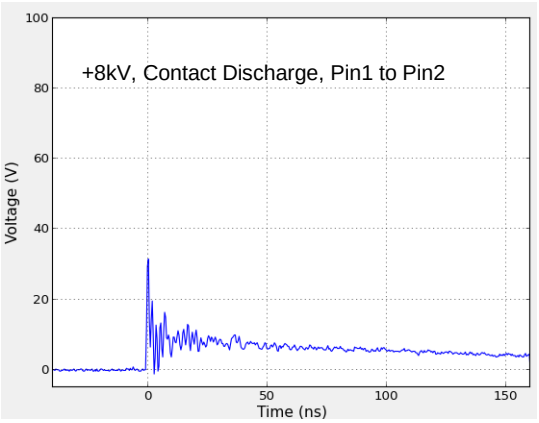


Figure 5 ESD Response to IEC 61000-4-2

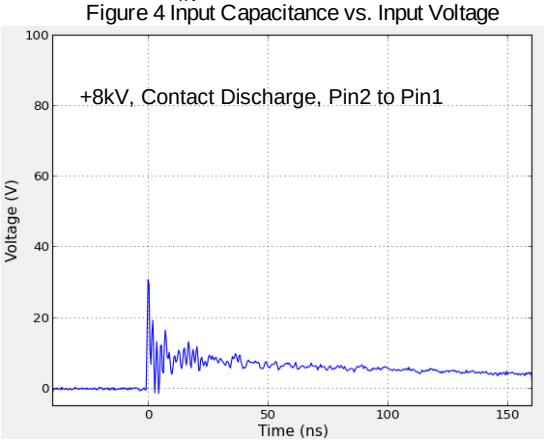


Figure 6 ESD Response to IEC 61000-4-2

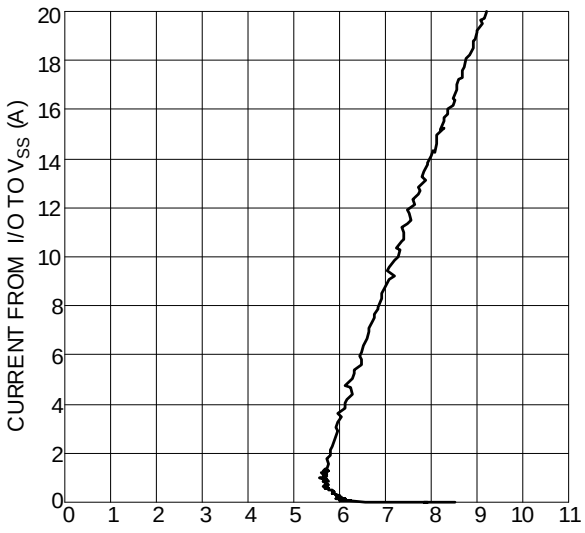
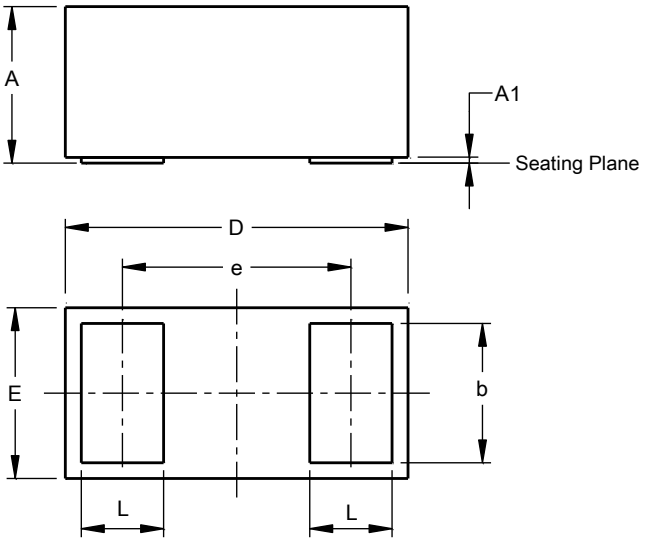


Figure 7. Current vs. Voltage

Package Outline Dimensions (Note 7)

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

X2-DSN0603-2



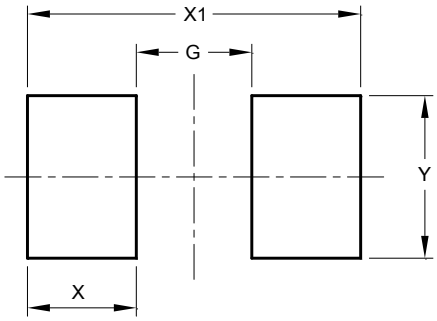
X2-DSN0603-2			
Dim	**Min**	**Max**	**Typ**
A	0.280	0.320	0.300
A1	0.00	0.020	0.010
b	0.220	0.260	0.240
D	0.575	0.625	0.600
E	0.275	0.325	0.300
e	-	-	0.400
L	0.120	0.160	0.140
All Dimensions in mm			

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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