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 ±19kV, Contact ±17kV
- 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.

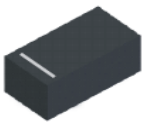
Applications

- Cellular Handsets
- Portable Electronics
- Computers and Peripheral

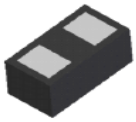
Mechanical Data

- Case: X2-ESN0603-2
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: NiAu Bump. Solderable per MIL-STD-202, Method 208 e4
- Weight: 0.0002 grams (Approximate)

X2-ESN0603-2



Top View



Bottom View

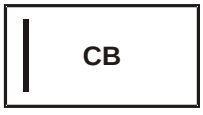
Device Schematic

Ordering Information (Note 4)

Product	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
DESD5V0V1BDLP3-7	Standard	CB	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



CB = 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}	20	W	8/20µs, per Figure 3
Peak Pulse Current	I_{PP}	2	A	8/20µs, per Figure 3
ESD Protection – Contact Discharge	$V_{ESD\_Contact}$	±17	kV	IEC 61000-4-2 Standard
ESD Protection – Air Discharge	V_{ESD_Air}	±19	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
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, tp = 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. suggested pad layout AP02001, which can be found on our website at http://www.diodes.com/datasheets/ap02001.pdf.
6. Short duration pulse test used to minimize self-heating effect.

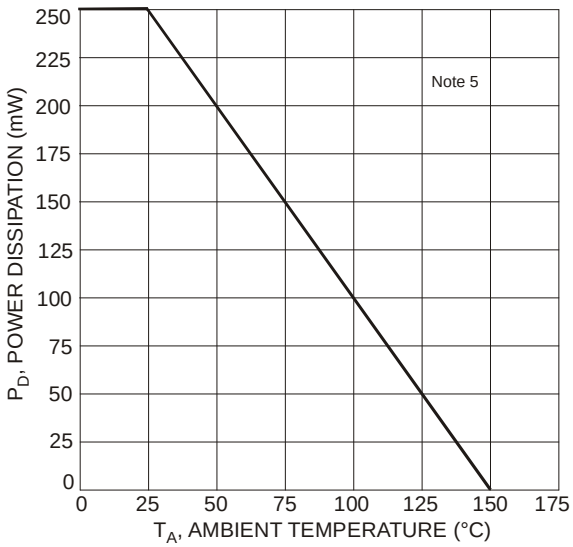


Figure 1 Power Derating Curve

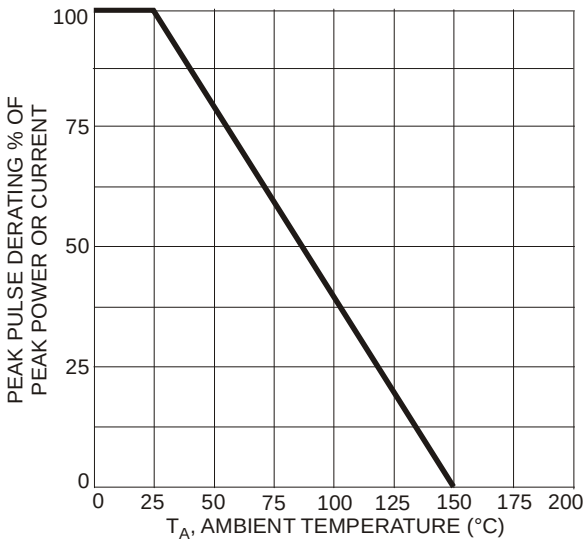


Figure 2 Pulse Derating Curve

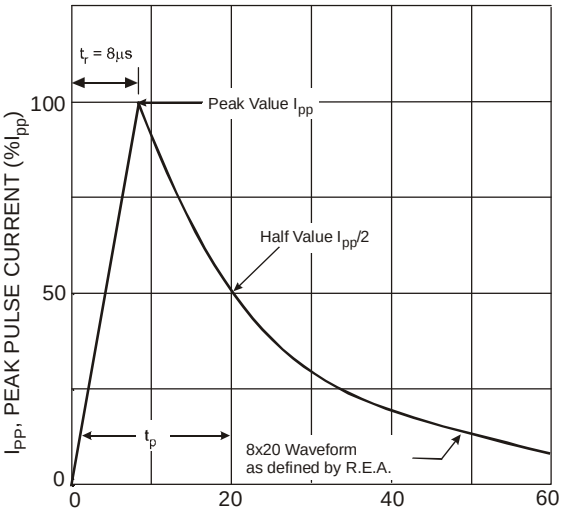


Figure 3 Pulse Waveform

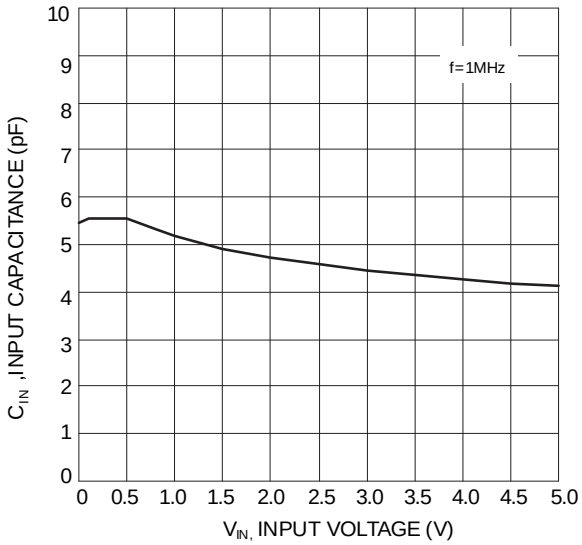


Figure 4. Input Capacitance vs. Input Voltage

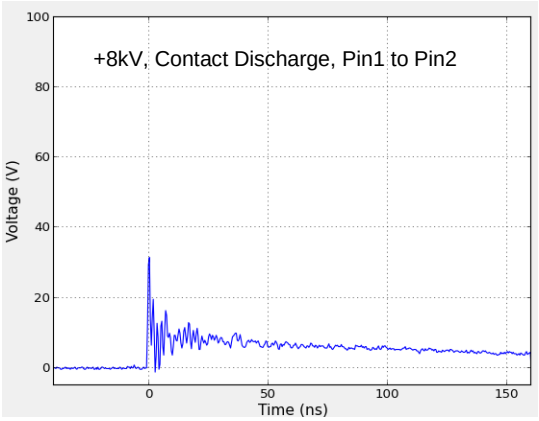


Figure5. ESD response ESD response to IEC 61000-4-2

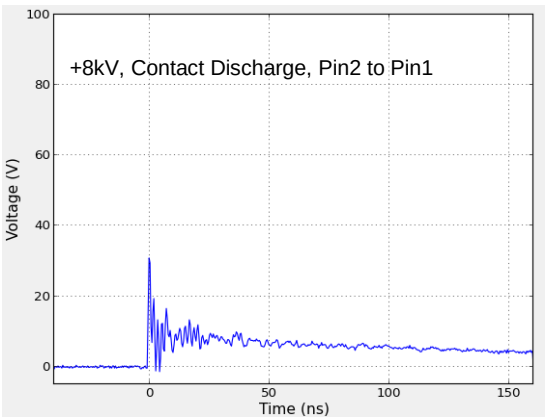


Figure6. ESD response ESD response to IEC 61000-4-2

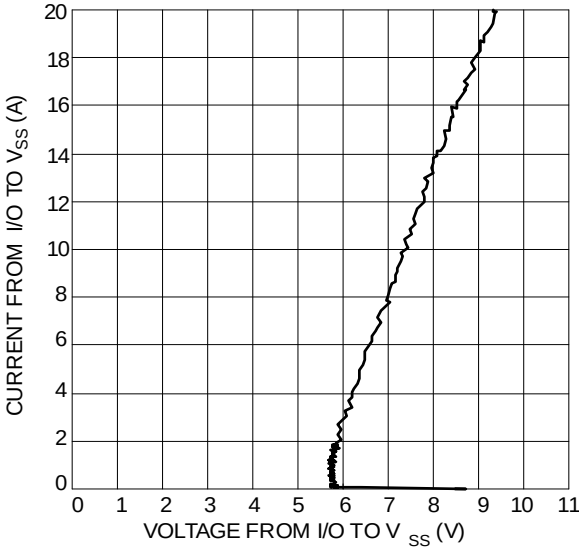
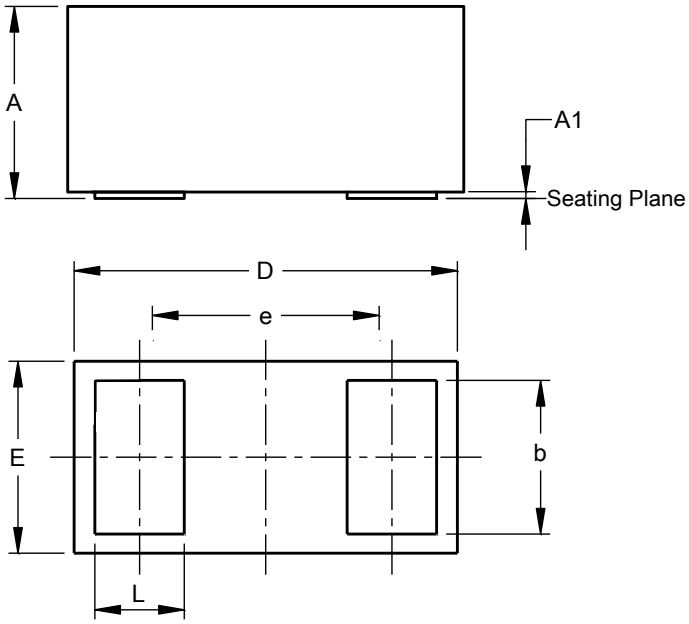


Figure 7. Current vs. Voltage

Package Outline Dimensions

Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for the latest version.

X2-ESN0603-2

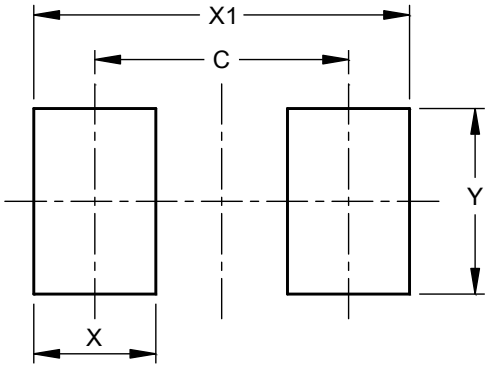


X2-ESN0603-2			
Dim	**Min**	**Max**	**Typ**
A	0.28	0.32	0.30
A1	0.00	0.02	0.01
b	0.22	0.26	0.24
D	0.575	0.625	0.600
E	0.275	0.325	0.300
e	—	—	0.395
L	0.13	0.15	0.14
All Dimensions in mm			

Suggested Pad Layout

Please see AP02001 at http://www.diodes.com/datasheets/ap02001.pdf for the latest version.

X2-ESN0603-2



Dimensions	Value (in mm)
C	0.395
X	0.190
X1	0.580
Y	0.290

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