



**THE DATASHEET OF  
DESD18VS1BLP3-7**



## Product Summary

V <sub>BR</sub> MIN	I <sub>PP</sub> MAX	C <sub>T</sub> TYP
25V	1A	0.3pF

## 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

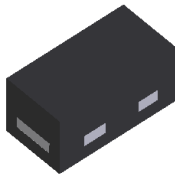
## Features

- Provides ESD Protection per IEC 61000-4-2 Standard: Air ±16kV, Contact ±12kV
- 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)**
- **For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please [contact us](mailto:contact@diodes.com) or your local Diodes representative. <https://www.diodes.com/quality/product-definitions/>**

## Mechanical Data

- Case: X2-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: 0.0002 grams (Approximate)

X2-DFN0603-2



X2-DFN0603-2



Device Schematic

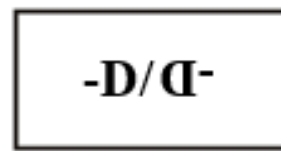
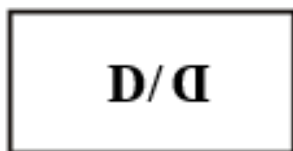


## Ordering Information (Note 4)

Part Number	Compliance	Marking Code	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
DESD18VS1BLP3-7	Standard	D/Q or -D/Q-	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



D/Q or -D/Q- = Product Type Marking Code

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

Characteristic	Symbol	Value	Unit	Conditions
Peak Pulse Power Dissipation	PPP	30	W	8/20μs
Peak Pulse Current	I <sub>PP</sub>	1	A	8/20μs
ESD Protection – Contact Discharge	V <sub>ESD_CONTACT</sub>	±12	kV	IEC 61000-4-2 Standard
ESD Protection – Air Discharge	V <sub>ESD_AIR</sub>	±16	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>	-55 to +150	°C

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions
Reverse Working Voltage	V <sub>RWM</sub>	—	—	18	V	—
Reverse Current (Note 6)	I <sub>R</sub>	—	1	50	nA	V <sub>R</sub> = 18V
Reverse Breakdown Voltage	V <sub>BR</sub>	25	28.5	32	V	I <sub>R</sub> = 1mA
Snapback Voltage	V <sub>SNP</sub>	10.0	—	—	V	—
Reverse Clamping Voltage	V <sub>CL1</sub>	—	21	—	V	I <sub>TLP</sub> = 16A, t <sub>p</sub> = 100ns
Reverse Clamping Voltage	V <sub>CL2</sub>	—	—	23	V	I <sub>PP</sub> = 1A, t <sub>p</sub> = 8/20us
Dynamic Resistance	R <sub>DYN</sub>	—	0.65	—	Ω	TLP, 10A, t <sub>p</sub> = 100ns
Capacitance	C <sub>T</sub>	—	0.3	0.45	pF	V <sub>R</sub> = 0V, f = 1MHz

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

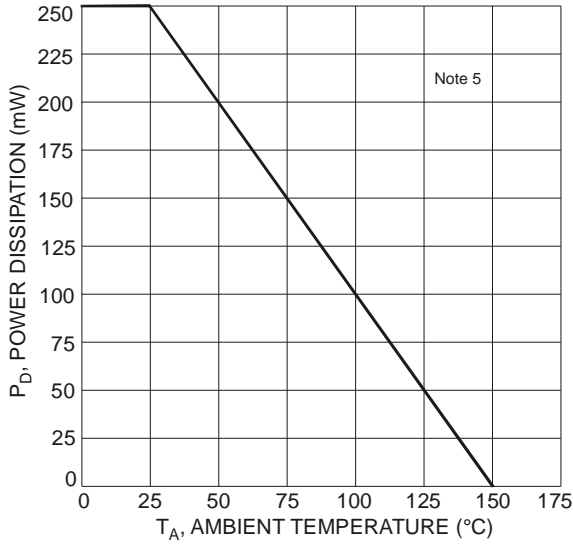


Figure 1 Power Derating Curve

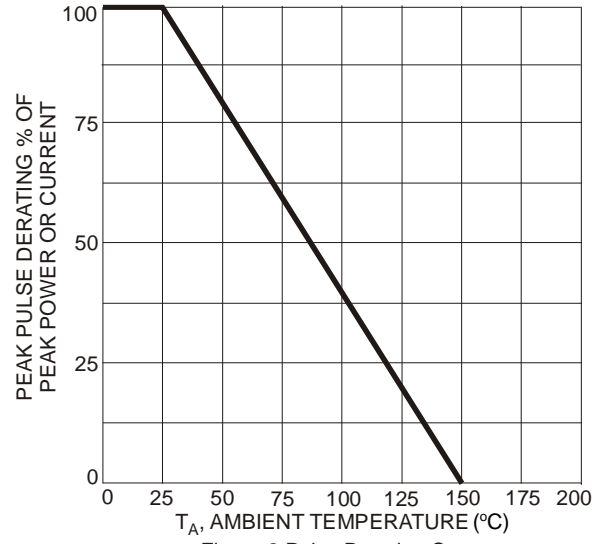


Figure 2 Pulse Derating Curve

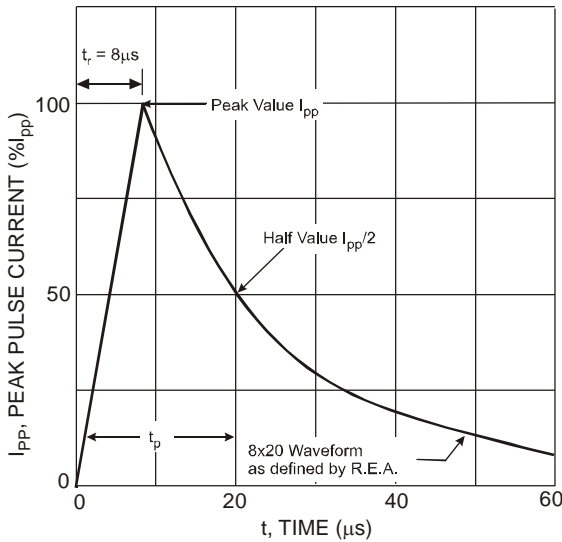


Figure 3 Pulse Waveform

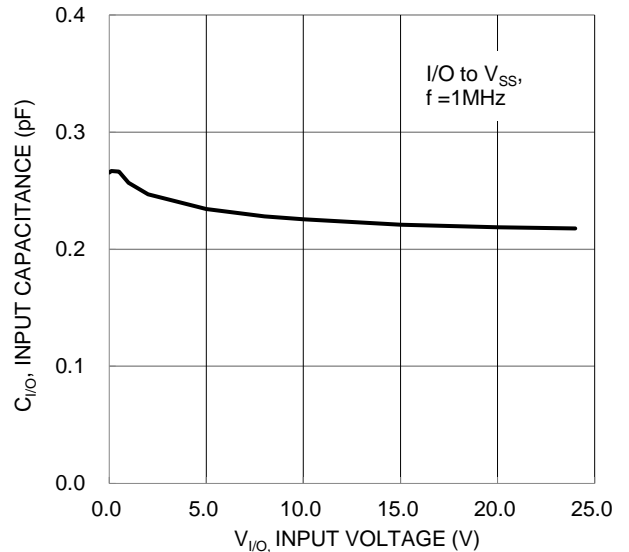


Figure 4 Input Capacitance vs. Input Voltage

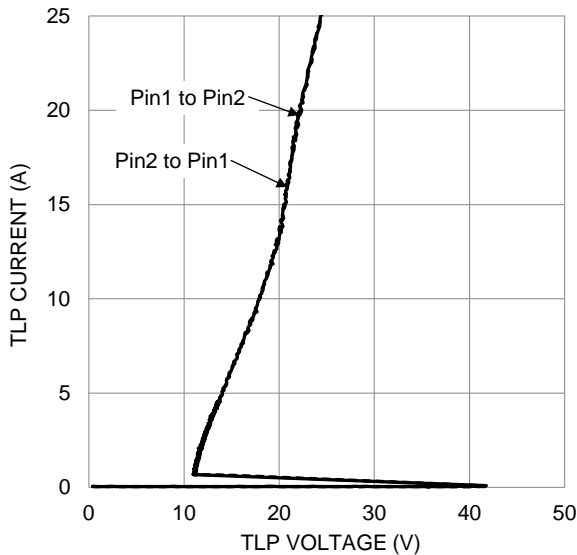


Figure 5 Current vs. Voltage ( $t_p=100ns$ )

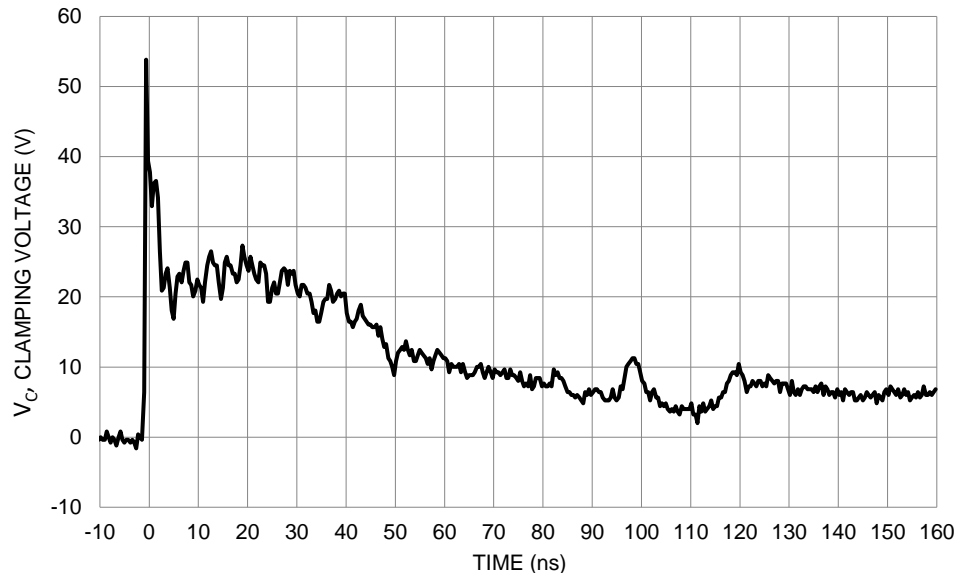


Figure 6 ESD Clamping Voltage of IEC61000-4-2 +8kV Contact Mode

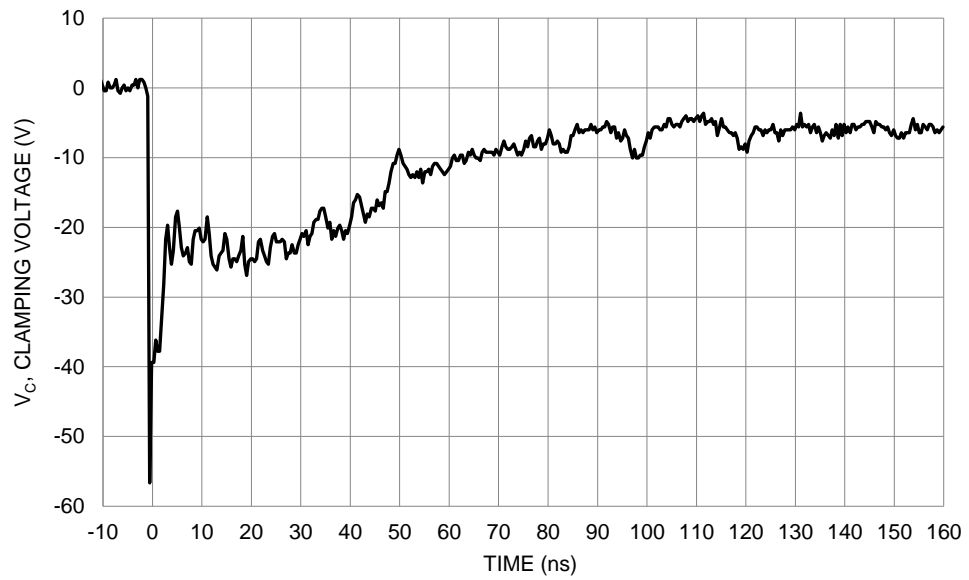
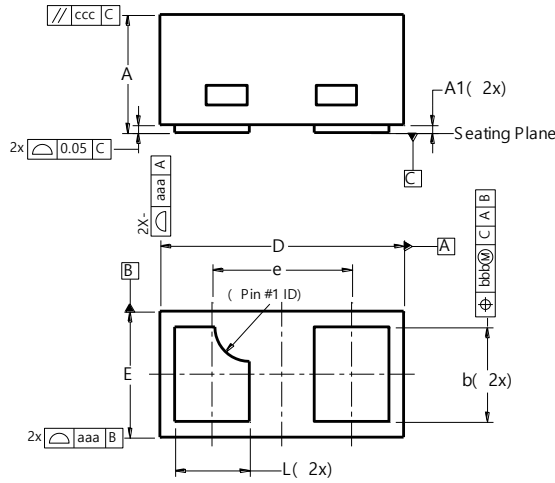


Figure 7 ESD Clamping Voltage of IEC61000-4-2 -8kV Contact Mode

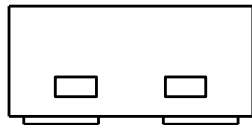
**Package Outline Dimensions**

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

**X2-DFN0603-2**



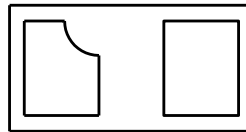
X2-DFN0603-2			
Dim	Min	Max	Typ
A	0.27	0.35	0.30
A1	0.00	0.03	0.02
b	0.19	0.29	0.24
D	0.595	0.645	0.620
E	0.295	0.345	0.320
e	--	--	0.355
L3	0.14	0.24	0.19
aaa	0.08		
bbb	0.07		
ccc	0.05		
All Dimensions in mm			



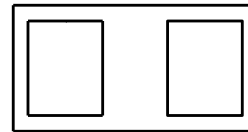
OPTION A  
( SIDE VIEW)



OPTION B  
( SIDE VIEW)



OPTION A  
( BOTTOM VIEW)

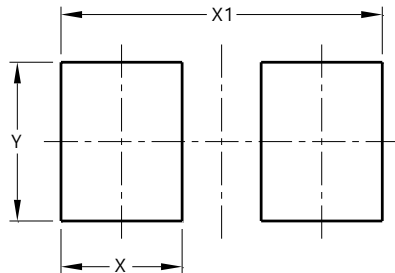


OPTION B  
( BOTTOM VIEW)

**Suggested Pad Layout**

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

**X2-DFN0603-2**



Dimensions	Value (in mm)
X	0.230
X1	0.610
Y	0.300

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