

## Product Summary

<b>V<sub>BR</sub> (Min)</b>	<b>IPP (Max)</b>	<b>C<sub>T</sub> (Typ)</b>
6V	6A	15pF

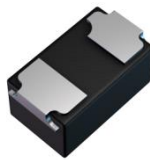
## Description

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. The sidewall plating option of this package allows optical inspection after soldering reflow for easy and reliable quality control.

## Applications

- Cellular handsets
- Portable electronics
- Computers and peripherals

U-DFN1006-2/SWP



Bottom View

## Features

- Low Profile Package (0.53mm max) and Ultra-Small PCB Footprint Area (1.08mm x 0.68mm max) Suitable for Compact Portable Electronics
- Provides ESD Protection per IEC 61000-4-2 Standard: Air ±30kV, Contact ±30kV
- One 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)**
- The D5V0L1B2LPSQ is suitable for automotive applications requiring specific change control; this part is AEC-Q101 qualified, PPAP capable, and manufactured in IATF16949 certified facilities.**

<https://www.diodes.com/quality/product-definitions/>

## Mechanical Data

- Package: U-DFN1006-2 with Sidewall Plating
- Package Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: 100% Sn (Tin)  
Solderable per MIL-STD-202, Method 208 (E3)
- Weight: 0.001 grams (Approximate)



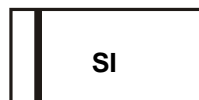
Device Schematic

## Ordering Information (Note 4)

Part Number	Package	Marking	Reel Size (inches)	Tape Width (mm)	Packing	
					Qty.	Carrier
D5V0L1B2LPS-7B	U-DFN1006-2/SWP	SI	7	8	10,000	Tape & Reel
D5V0L1B2LPSQ-7B	U-DFN1006-2/SWP	SI	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



SI = 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	84	W	8/20μs, Per Figure 1
Peak Pulse Current	I <sub>PP</sub>	6	A	8/20μs, Per Figure 1
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>	—	—	5	V	—
Channel Leakage Current (Note 6)	I <sub>RM</sub>	—	10	100	nA	V <sub>RWM</sub> = 5V
Clamping Voltage, Positive Transients	V <sub>CL</sub>	—	7.0	9.0	V	I <sub>PP</sub> = 1A, t <sub>P</sub> = 8/20μs
		—	8.7	10.7		I <sub>PP</sub> = 3A, t <sub>P</sub> = 8/20μs
		—	10.5	12.0		I <sub>PP</sub> = 5A, t <sub>P</sub> = 8/20μs
		—	11.5	14.0		I <sub>PP</sub> = 6A, t <sub>P</sub> = 8/20μs
Breakdown Voltage	V <sub>BR</sub>	6	7	8	V	I <sub>R</sub> = 1mA
Differential Resistance	R <sub>DIF</sub>	—	0.2	—	Ω	I <sub>R</sub> = 1A, t <sub>P</sub> = 8/20μs
Channel Input Capacitance	C <sub>IN</sub>	—	15	20	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.

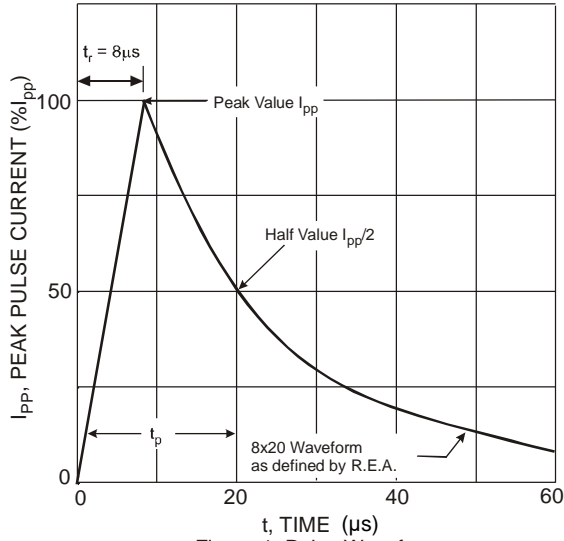


Figure 1 Pulse Waveform

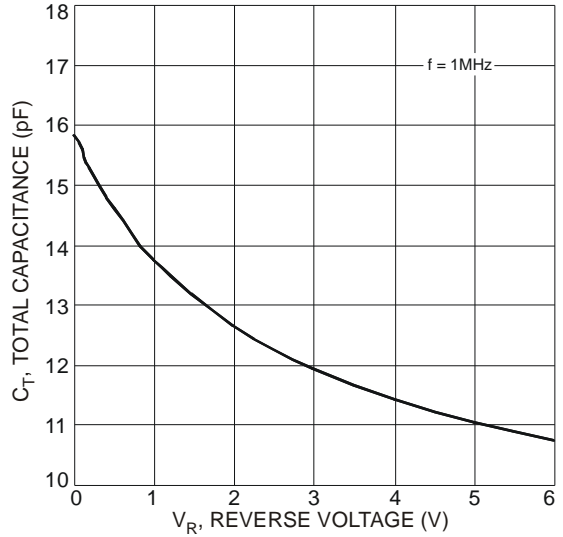


Figure 2 Typical Total Capacitance vs. Reverse Voltage

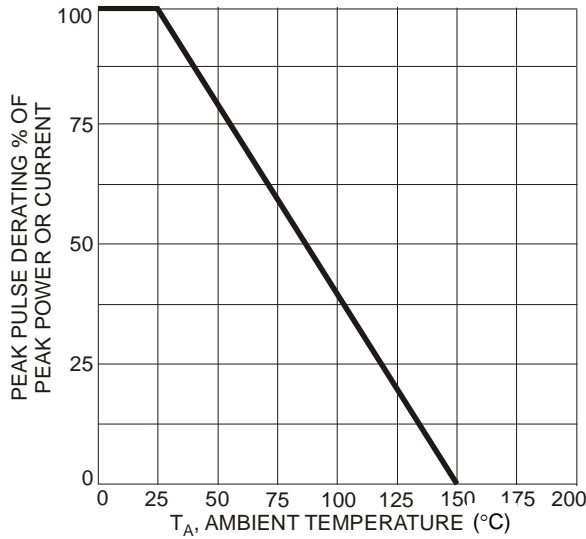


Figure 3 Pulse Derating Curve

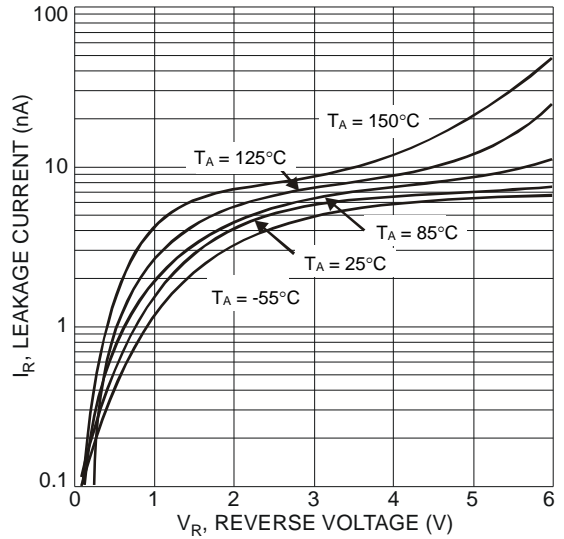


Figure 4 Typical Reverse Characteristics

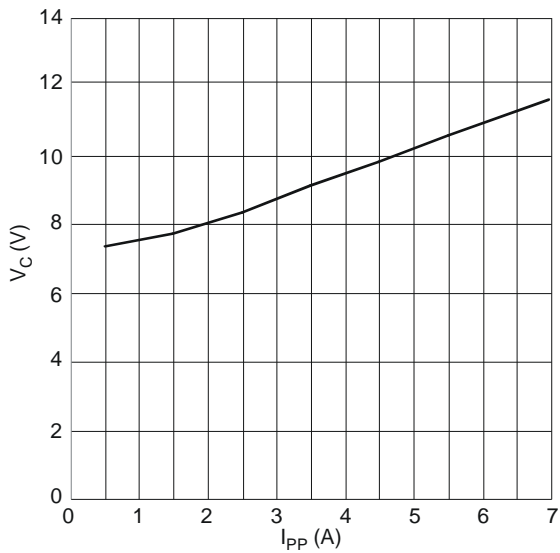


Figure 5 Typical Peak Clamping Voltage  $V_C$  vs. Peak Pulse Current  $I_{PP}$

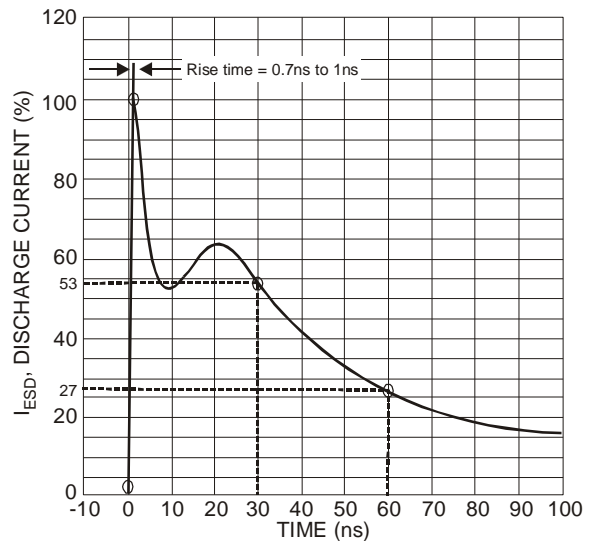


Figure 6 ESD Discharge Current Wave Form IEC 6100-4-2 (330 $\Omega$ /150pF)

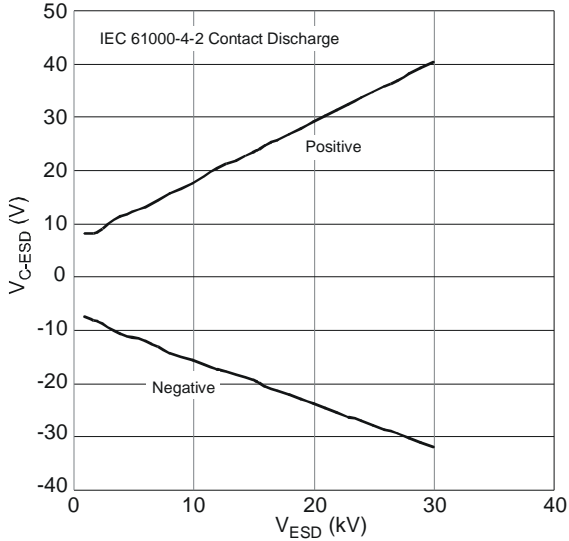


Figure 7 Typical Clamping Voltage vs. Contact Discharge Voltage

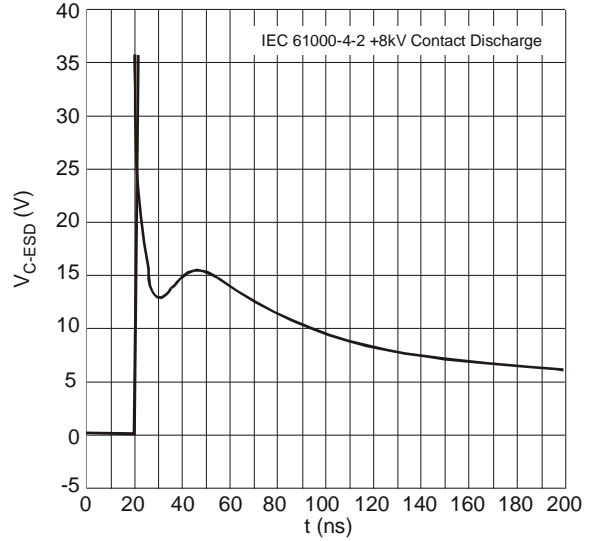


Figure 8 Typical Clamping Performance @ 8kV Contact Discharge

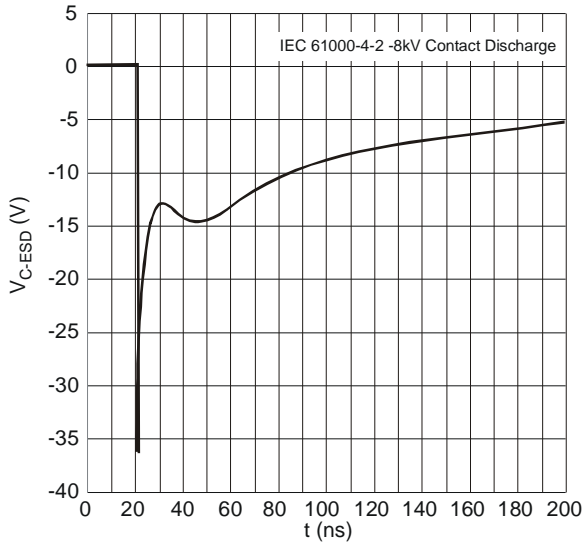
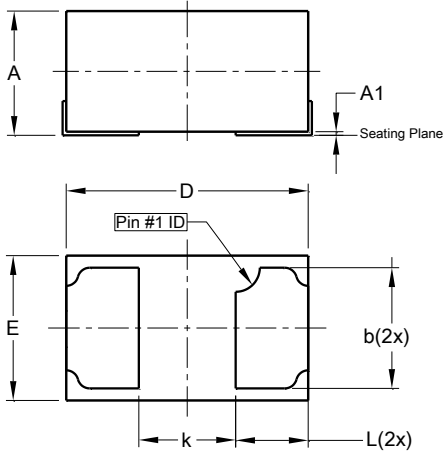


Figure 9 Typical Clamping Performance @ -8kV Contact Discharge

**Package Outline Dimensions**

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

**U-DFN1006-2/SWP**

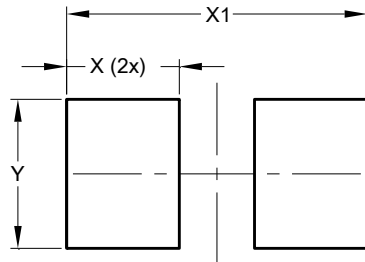


U-DFN1006-2/SWP			
Dim	Min	Max	Typ
A	0.47	0.53	0.50
A1	0.0	0.05	0.03
b	0.45	0.55	0.50
c	0.55 REF		
D	0.95	1.05	1.00
E	0.55	0.65	0.60
h	0.17 REF		
k	0.37 REF		
L	0.25	0.35	0.30
All Dimensions in mm			

**Suggested Pad Layout**

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

**U-DFN1006-2/SWP**



Dimensions	Value (in mm)
X	0.45
X1	1.20
Y	0.60

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