DESDALC5LP

1 CHANNEL BIDIRECTIONAL TVS DIODE

Product Summary

$V_{BR\ (min)}$	$I_{PP\ (max)}$	$I_{R\ (max)}$
5.8V and 11V	9A	25nA

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

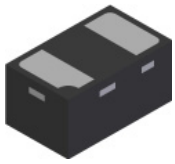
Features

- Low Profile Package (0.53mm max) and Ultra-small PCB Footprint Area (1.08 * 0.68mm max) Suitable for Compact Portable Electronics
- Provides ESD Protection per IEC 61000-4-2 Standard: Air ±30kV, Contact ±30kV
- 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: X1-DFN1006-2
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: NiPdAu over Copper leadframe. Solderable per MIL-STD-202, Method 208 e4
- Weight: 0.001 grams (approximate)

X1-DFN1006-2



Bottom View

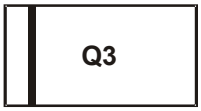
Device Schematic

Ordering Information (Note 4)

Product	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
DESDALC5LP-7B	Standard	Q3	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



Q3 = 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}	150	W	8/20µs
Peak Pulse Current	I_{PP}	9	A	8/20µs
ESD Protection – Contact Discharge	$V_{ESD\_Contact}$	±30	kV	IEC 61000-4-2 Standard
ESD Protection – Air Discharge	V_{ESD_Air}	±30	kV	IEC 61000-4-2 Standard

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 Breakdown Voltage	V_{BR}	11	13	17	V	I_R = 1mA, pin1 to pin2
		5.8	8	11		I_R = 1mA, pin2 to pin1
Reverse Current (Note 6)	I_R	—	—	25	nA	V_R = 5V
Dynamic Resistance, from Pin 1 to Pin 2	R_{DYN}	—	0.19	—	Ω	I_{TLP} = 1A to 20A, t_P = 100ns
Dynamic Resistance, from Pin 2 to Pin 1	R_{DYN}	—	0.19	—	Ω	I_{TLP} = 1A to 20A, t_P = 100ns
Capacitance	C_T	—	26	30	pF	V_R = 0V, f = 1MHz
Clamping Voltage, from Pin 1 to Pin 2	V_{CL}	—	21	—	V	8kV contact discharge after 30ns IEC61000-4-2
Clamping Voltage, from Pin 2 to Pin 1	V_{CL}	—	12	—	V	8kV contact discharge after 30ns IEC61000-4-2

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.
6. Short duration pulse test used to minimize self-heating effect.

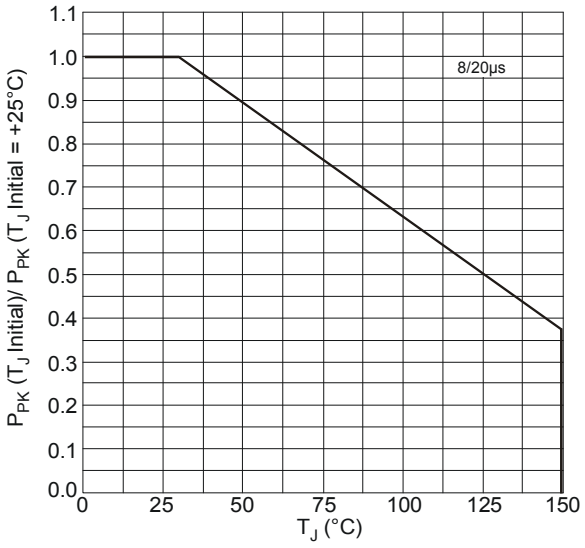


Figure 1 Normalized Peak Pulse Power vs. Initial Junction Temperature

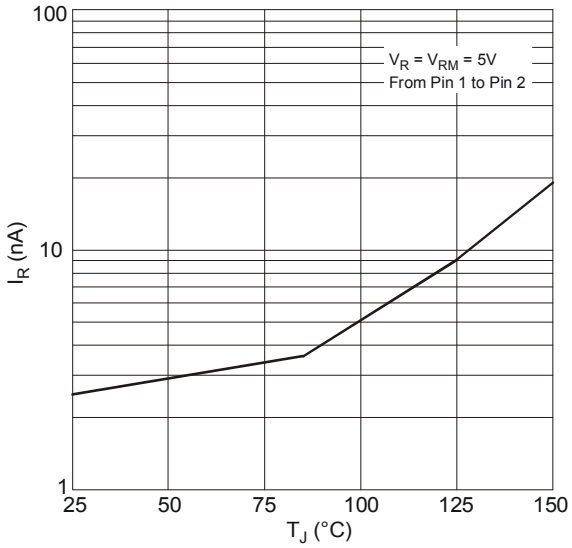


Figure 2 Leakage Current vs. Junction Temperature (Typical Values)

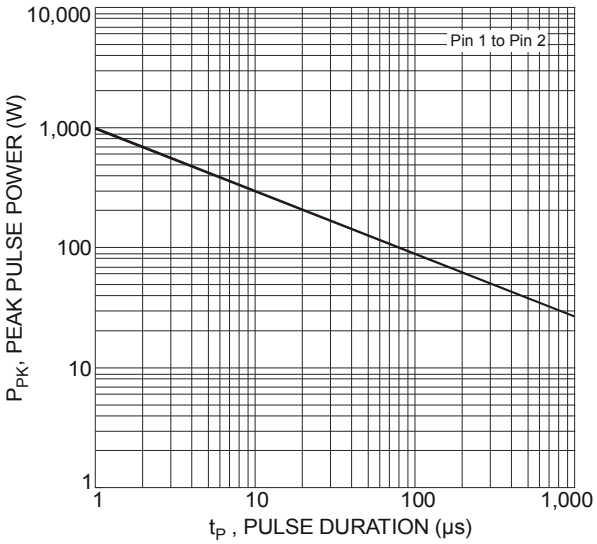


Figure 3 Peak Pulse Power vs. Pulse Duration

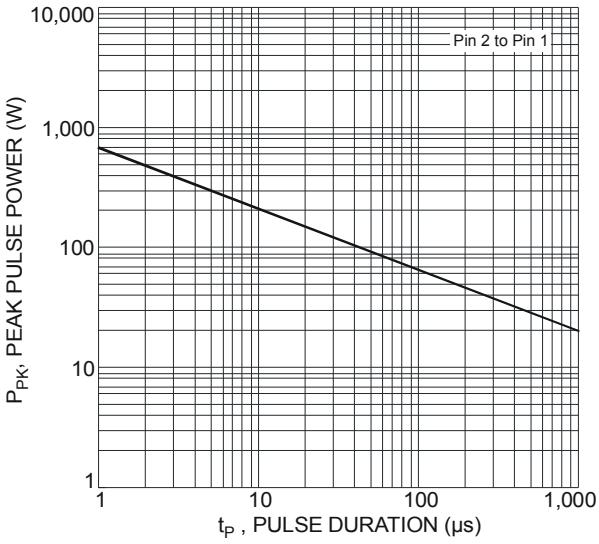


Figure 4 Peak Pulse Power vs. Pulse Duration

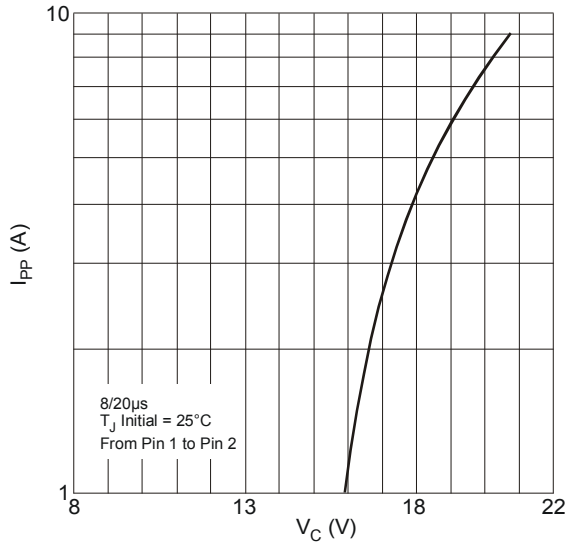


Figure 5 Clamping Voltage vs. Peak Pulse Current
(Typical Values)

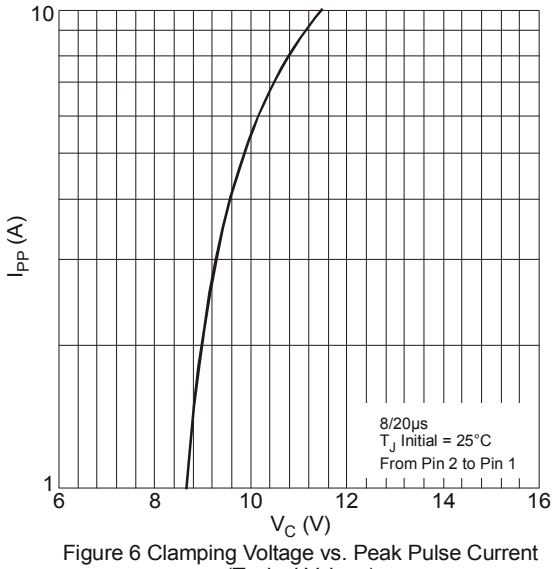


Figure 6 Clamping Voltage vs. Peak Pulse Current
(Typical Values)

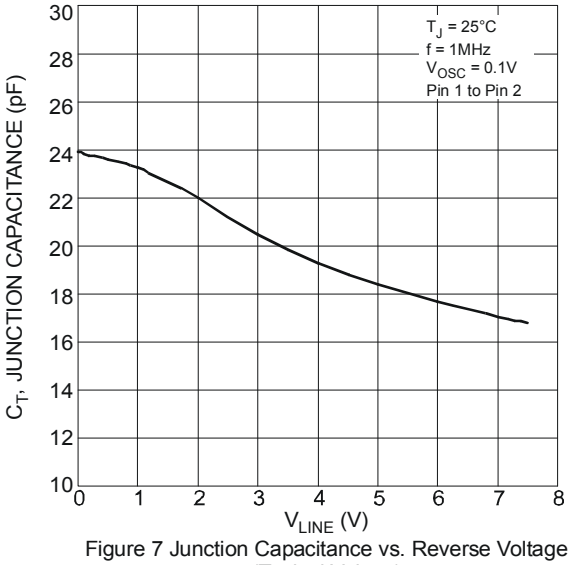


Figure 7 Junction Capacitance vs. Reverse Voltage
(Typical Values)

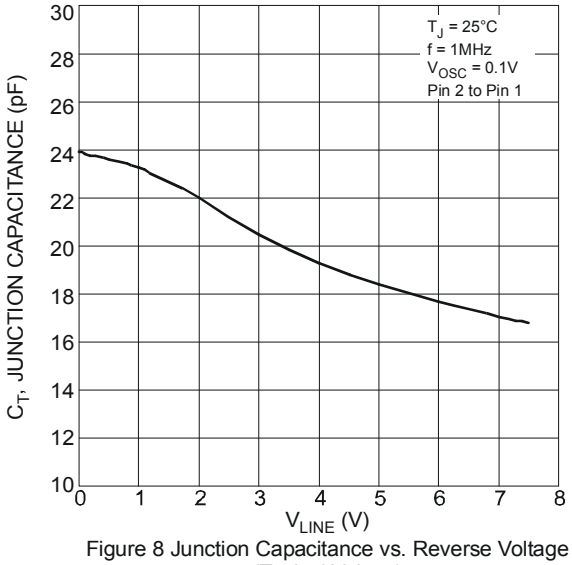


Figure 8 Junction Capacitance vs. Reverse Voltage
(Typical Values)

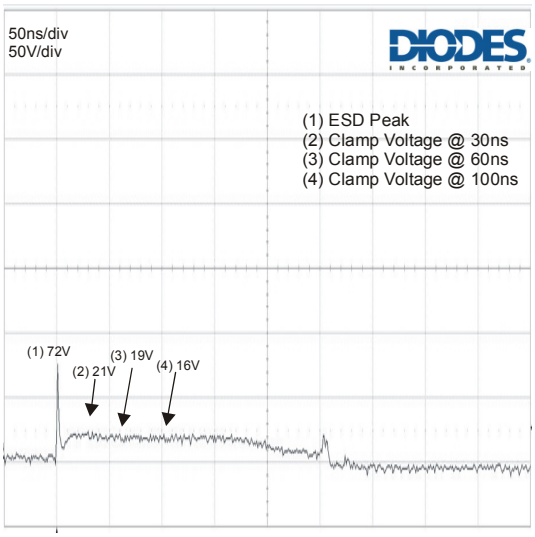


Figure 9 ESD Response to IEC 6100-4-2
(+8kV Contact Discharge)

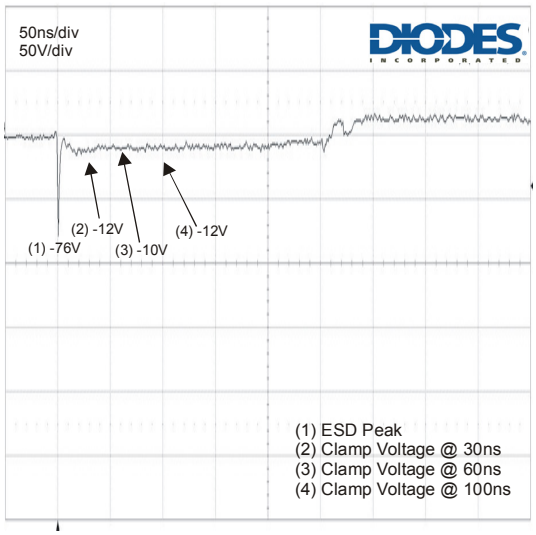


Figure 10 ESD Response to IEC 6100-4-2
(-8kV Contact Discharge)

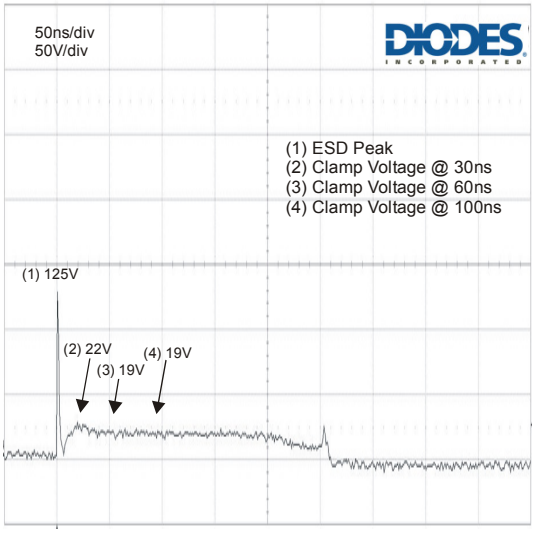


Figure 11 ESD Response to IEC 6100-4-2
(+15kV Contact Discharge)

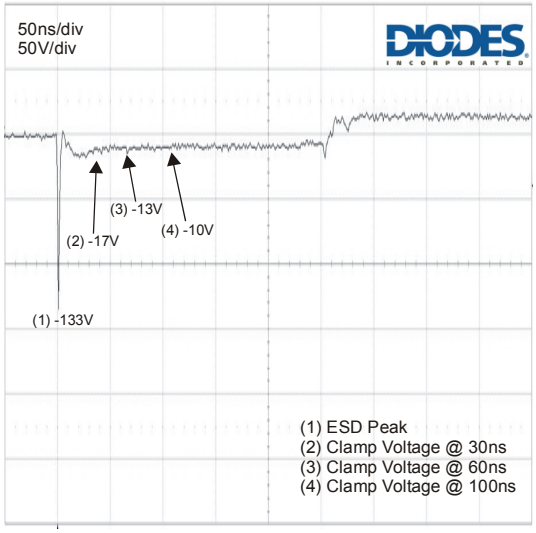


Figure 12 ESD Response to IEC 6100-4-2
(-15kV Contact Discharge)

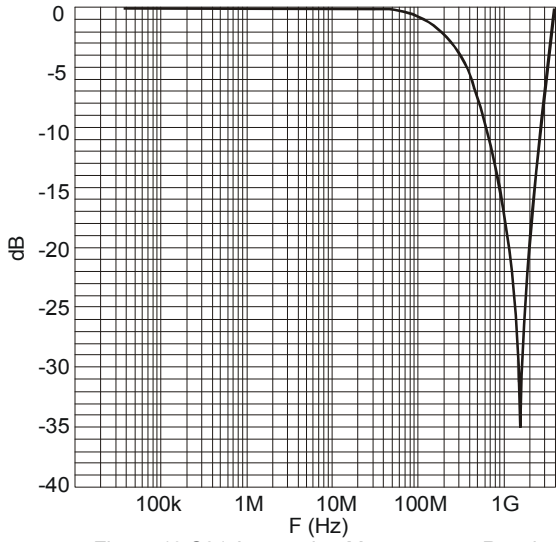


Figure 13 S21 Attenuation Measurement Result

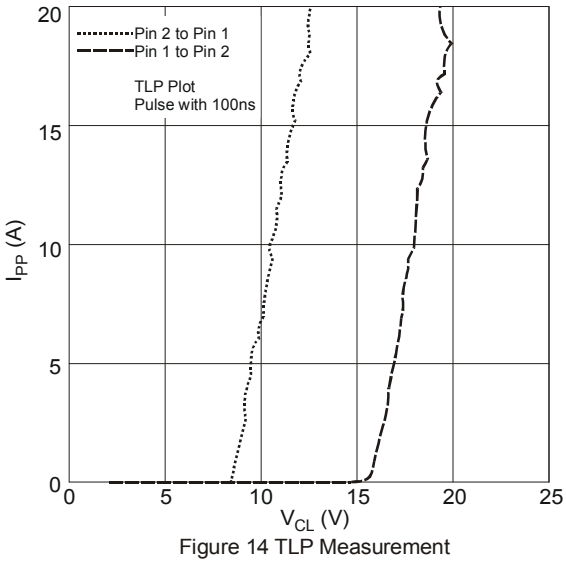
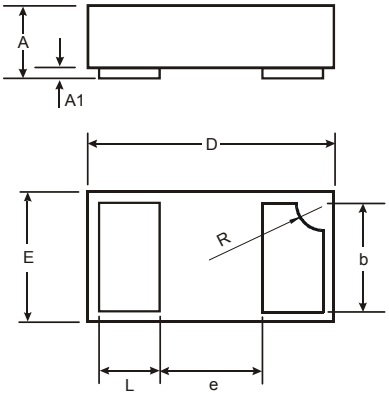


Figure 14 TLP Measurement

Package Outline Dimensions

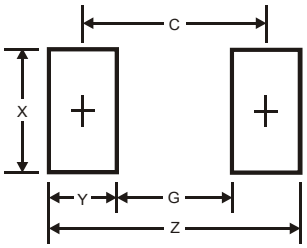
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for latest version.



X1-DFN1006-2			
Dim	**Min**	**Max**	**Typ**
A	0.47	0.53	0.50
A1	0	0.05	0.03
b	0.45	0.55	0.50
D	0.95	1.075	1.00
E	0.55	0.675	0.60
e	-	-	0.40
L	0.20	0.30	0.25
R	0.05	0.15	0.10
All Dimensions in mm			

Suggested Pad Layout

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



Dimensions	Value (in mm)
Z	1.1
G	0.3
X	0.7
Y	0.4
C	0.7

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