Product Summary

V_{BR} (Min)	I_{PP} (Max)	C_T (Typ)
5.0V	90A	290pF

Features

- Low Profile Package (0.50mm Max) and Ultra-Small PCB Footprint Area (1.1mm × 0.7mm Max) Suitable for Compact Portable Electronics
- Provides ESD Protection per IEC 61000-4-2 Standard: Air ±30kV, Contact ±30kV
- Provides Surge and Lightning Protection per IEC 61000-4-5 Standard: I_{PP} Max 90A
- One Channel of ESD and Surge Protection
- **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-Q100/101/104/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please contact us or your local Diodes representative. https://www.diodes.com/quality/product-definitions/**

Description

This new generation TVS is designed to protect sensitive electronics from the damage due to ESD and Surge. 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.

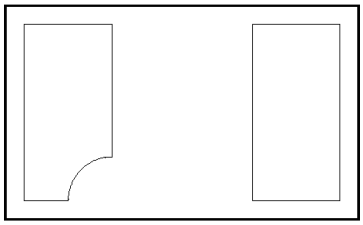
Applications

- Cellular handsets
- Portable electronics
- Computers and peripherals

Mechanical Data

- Package: X1-DFN1006-2
- Package Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin over Copper Leadframe. Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.001 grams (Approximate)

X1-DFN1006-2 (Type SA-2)



Bottom View

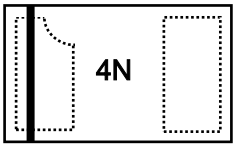
Device Schematic

Ordering Information (Note 4)

Part Number	Compliance	Package	Marking	Reel Size (inches)	Tape Width (mm)	Packing	
						Qty.	Carrier
D4V7S1US2SLP-7B	Standard	X1-DFN1006-2 (Type SA-2)	4N	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



4N = Product Type Marking Code
Bar Denotes Pin1 or Cathode Side

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

Characteristic	Symbol	Value	Unit	Conditions
Peak Pulse Power Dissipation (Pin1 to Pin2)	P_{PP}	657	W	8/20µs, per Figure 3
Peak Pulse Current (Pin1 to Pin2)	I_{PP}	90	A	8/20µs, per Figure 3
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}	-55 to +150	°C

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions
Reverse Working Voltage	V_{RWM}	—	—	4.7	V	—
Reverse Current (Note 6)	I_R	—	0.01	1.0	µA	$V_R = V_{RWM}$
Reverse Breakdown Voltage	V_{BR}	4.8	—	7.0	V	I_R = 1mA
Reverse Clamping Voltage	V_{CL}	—	6.0	—	V	I_{PP} = 30A, t_P = 8/20µs
		—	6.6	—		I_{PP} = 60A, t_P = 8/20µs
		—	7.3	—		I_{PP} = 90A, t_P = 8/20µs
Capacitance	C_T	—	290	—	pF	V_R = 0V, f = 1MHz

Notes: 5. 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.
6. Short duration pulse test used to minimize self-heating effect.

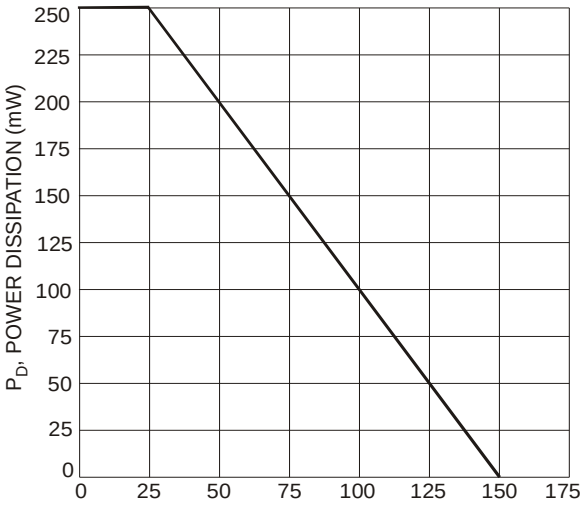


Figure 1 Power Derating Curve

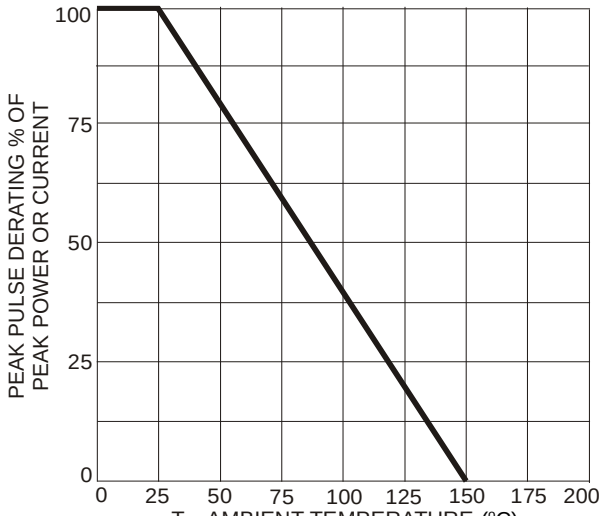


Figure 2 Pulse Derating Curve

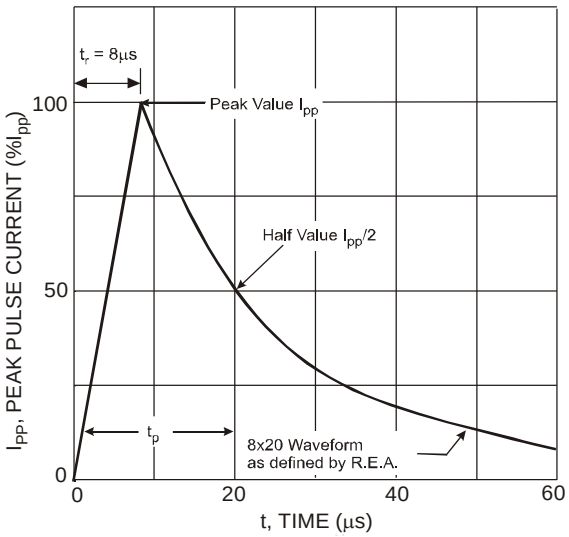


Figure 3 Typical 8 × 20µs Pulse Waveform

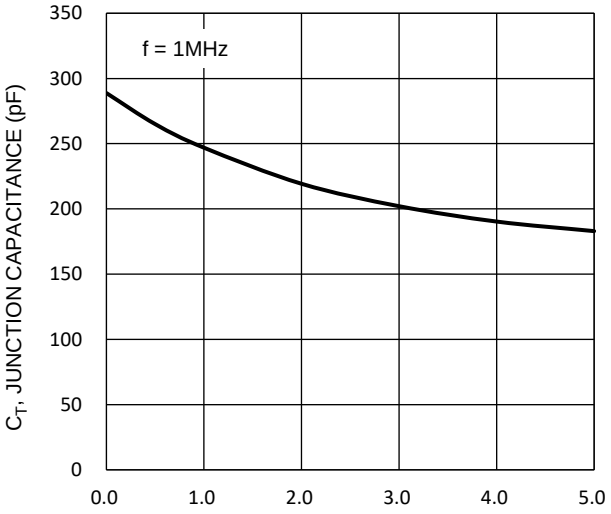


Figure 4 Typical Total Capacitance

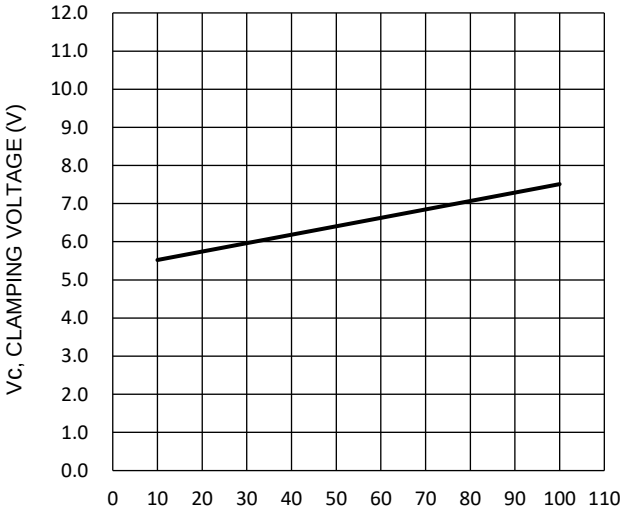


Figure 5 Clamping Voltage Characteristic (t_P=8/20µs)

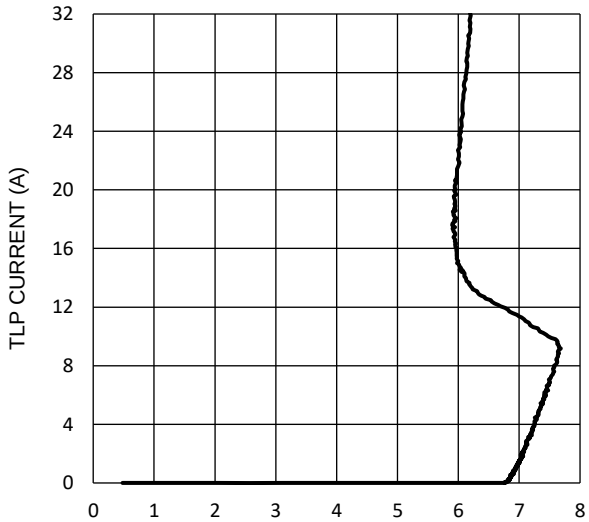
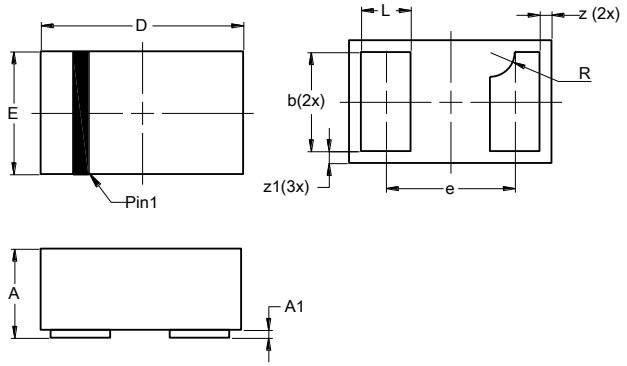


Figure 6 Positive TLP Curve (t_P=100ns)

Package Outline Dimensions

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

X1-DFN1006-2 (Type SA-2)

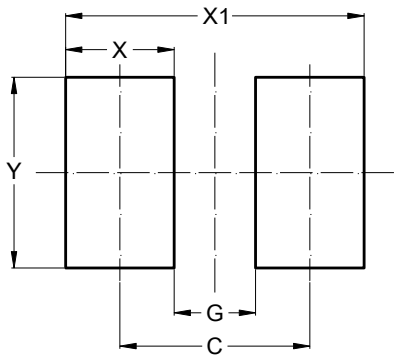


X1-DFN1006-2 (Type SA-2)			
Dim	**Min**	**Max**	**Typ**
A	0.400	0.500	--
A1	--	0.050	--
b	0.450	0.550	0.500
D	0.990	1.050	1.020
E	0.590	0.650	0.620
e	0.650 BSC		
L	0.200	0.300	0.250
R	0.075	0.175	0.125
z	0.020	0.100	0.060
z1	0.020	0.100	0.060
All Dimensions in mm			

Suggested Pad Layout

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

X1-DFN1006-2 (Type SA-2)



Dimensions	Value (in mm)
C	0.700
G	0.300
X	0.400
X1	1.100
Y	0.700

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