Product Summary

V_{BR} (Min)	I_{PP} (Max)	C_T (Typ)
3.8V	8A	18pF

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 SPI/I2C, UART Common I/O Port application protection in Automotive Market.

Applications

- SPI / I2C
- UART
- Automotive common I/O

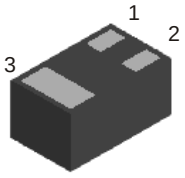
Features

- Two Channels of ESD and Surge Protection
- 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 8A
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **The DIODES™ D3V3L2BS3LPQ is suitable for automotive applications requiring specific change control; this part is AEC-Q101 qualified, PPAP capable, and manufactured in IATF 16949 certified facilities.**
  https://www.diodes.com/quality/product-definitions/

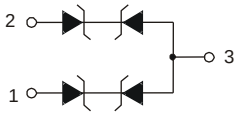
Mechanical Data

- Package: X1-DFN1006-3
- Package 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-DFN1006-3



Bottom View



Device Schematic

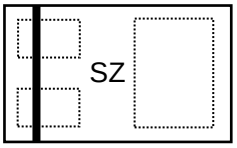
Ordering Information (Note 4)

Part Number	Package	Marking Code	Reel Size (Inches)	Tape Width (mm)	Packing	
					Qty.	Carrier
D3V3L2BS3LPQ-7B	X1-DFN1006-3	SZ	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

X1-DFN1006-3



SZ or $\overline{SZ}$ = Product Type Marking Code

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

Characteristic	Symbol	Value	Unit	Conditions
Peak Pulse Current	I_{PP}	8	A	8/20µs (Note 7)
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}	—	—	3.3	V	—
Reverse Current (Note 6)	I_R	—	—	0.5	µA	$V_R = V_{RWM}$
Reverse Breakdown Voltage	V_{BR}	3.8	—	6.8	V	I_R = 1mA
Reverse Clamping Voltage (Note 7)	V_{CL}	—	4.8	—	V	I_{PP} = 1A, t_P = 8/20µs
		—	7.3	—		I_{PP} = 8A, t_P = 8/20µs
ESD Clamping Voltage (Note 8)	V_C	—	5.0	—	V	I_{PP} = 4A, t_P = 100ns
		—	6.5	—		I_{PP} = 16A, t_P = 100ns
Dynamic Resistance	R_{DYN}	—	0.16	—	Ω	TLP, t_P = 100ns
Capacitance	C_T	—	18	25	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.
7. Clamping voltage value is based on an 8x20µs peak pulse current (I_{PP}) waveform.
8. Transmission Line Pulse Test (TLP) settings: t_P = 100ns, t_R = 1ns, I_{TLP} and V_{TLP} averaging window is from 70ns to 90ns.

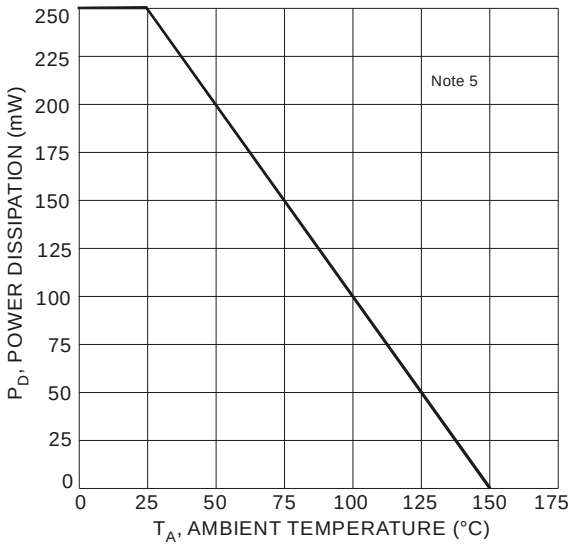


Figure 1 Power Derating Curve

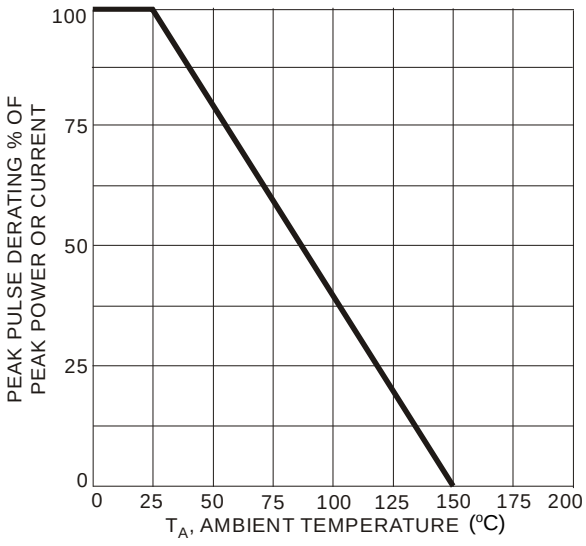


Figure 2 Pulse Derating Curve

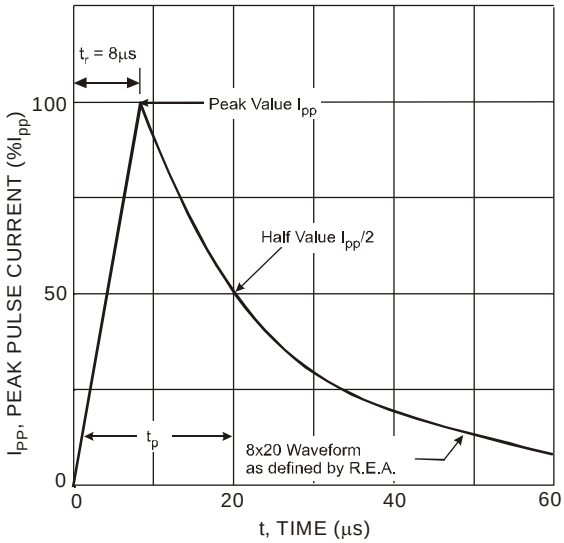


Figure 3 Typical 8 × 20µs Pulse Waveform

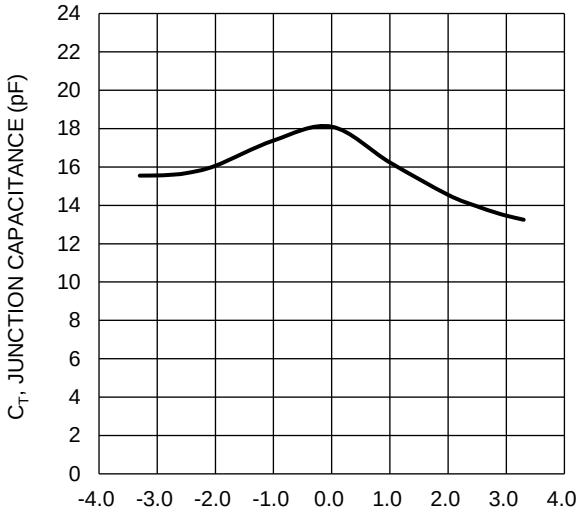


Figure 4 Typical Input Capacitance

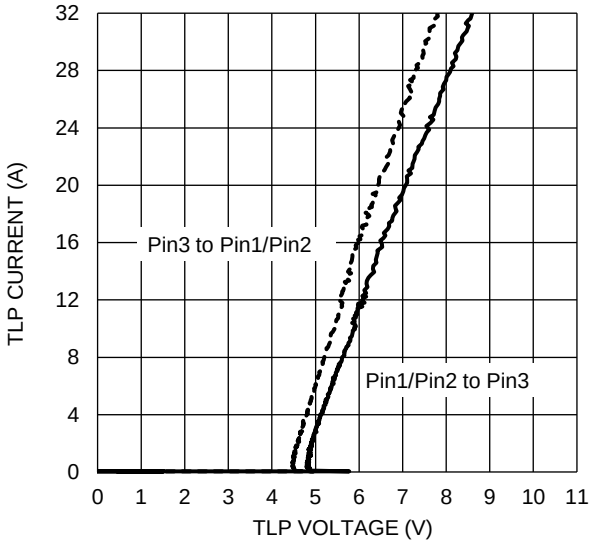


Figure 5 TLP Curve (t_P = 100ns)

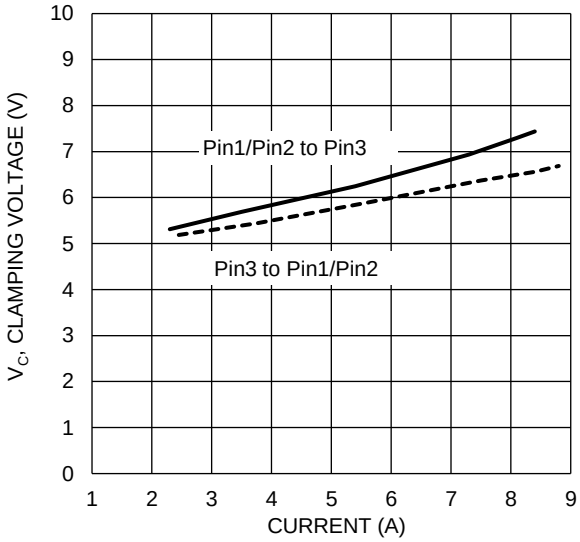
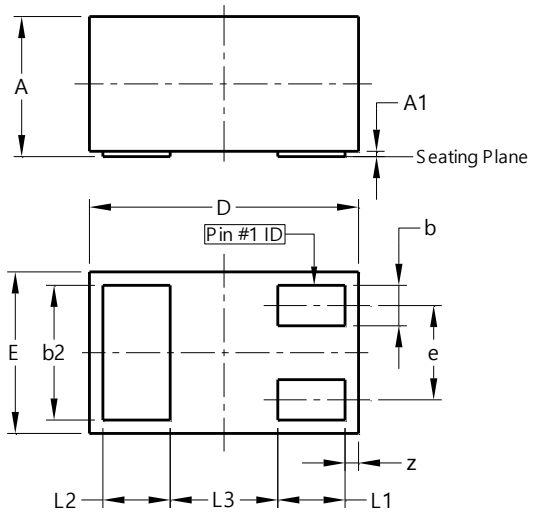


Figure 6 Clamping Voltage Characteristic (t_P = 8/20µs)

Package Outline Dimensions

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

X1-DFN1006-3

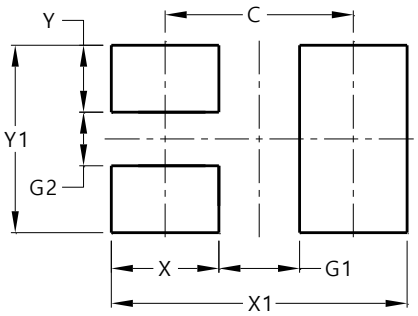


X1-DFN1006-3			
Dim	**Min**	**Max**	**Typ**
A	0.47	0.53	0.50
A1	0.00	0.05	0.03
b1	0.10	0.20	0.15
b2	0.45	0.55	0.50
D	0.95	1.075	1.00
E	0.55	0.675	0.60
e	—	—	0.35
L1	0.20	0.30	0.25
L2	0.20	0.30	0.25
L3	—	—	0.40
z	0.02	0.08	0.05
All Dimensions in mm			

Suggested Pad Layout

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

X1-DFN1006-3



Dimensions	Value (in mm)
C	0.70
G1	0.30
G2	0.20
X	0.40
X1	1.10
Y	0.25
Y1	0.70

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