THE DATASHEET OF

D1213A-01LPQ-7B

1 CHANNEL LOW CAPACITANCE TVS DIODE ARRAY

Product Summary

V_{RWM}	V_{BR} Min	I_{PP} Max
3.3V	6.0V	5A

Features and Benefits

- IEC 61000-4-2 (ESD): Air ±15kV, Contact ±8kV
- 1 Channel of ESD Protection
- Low Channel Input Capacitance of 0.85pF Typical
- Low Profile Package (0.53mm Max) and Ultra-Small PCB Footprint Area (1.08mm * 0.68mm Max) Suitable for Compact Portable Electronics
- Typically Used at High Speed Ports such as USB 2.0, IEEE1394, Serial ATA, DVI, HDMI, PCI
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **PPAP Capable (Note 4)**

Description and Applications

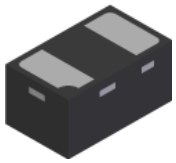
This new generation TVS is designed to protect sensitive electronics from the damage due to ESD and to meet the stringent requirements of Automotive Applications. The combination of small size and high ESD surge capability makes it ideal for use in portable applications:

- Cellular Handsets
- Portable Electronics
- Computers and Peripheral

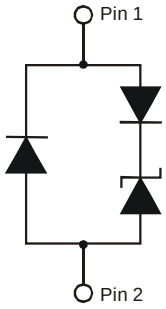
Mechanical Data

- 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



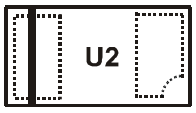
Device Schematic

Ordering Information (Note 5)

Part Number	Compliance	Marking	Reel Size (Inches)	Tape Width (mm)	Case	Packaging
D1213A-01LPQ-7B	Automotive	U2	7	8	X1-DFN1006-2	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. Automotive products are AEC-Q101 qualified and are PPAP capable. Refer to http://www.diodes.com/product_compliance_definitions.html.
5. For packaging details, go to our website at http://www.diodes.com/products/packages.html.

Marking Information



Top View

U2 = Product Type Marking Code
Bar Denotes Pin 1 or Cathode Side

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

Characteristic	Symbol	Value	Unit	Conditions
Peak Pulse Current	I_{PP}	5	A	8/20µs, Per Figure 3
ESD Protection – Contact Discharge	$V_{ESD\_CONTACT}$	±8	kV	Standard IEC 61000-4-2
ESD Protection – Air Discharge	V_{ESD_AIR}	±15	kV	Standard IEC 61000-4-2

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Package Power Dissipation (Note 6)	P_D	250	mW
Thermal Resistance, Junction to Ambient (Note 6)	$R_{\theta JA}$	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 7)	I_R	—	0.1	1.0	µA	$V_R = V_{RWM}$ = 3.3V
Reverse Breakdown Voltage	V_{BR}	6.0	—	—	V	I_R = 1mA
Forward Voltage	V_F	0.6	0.8	0.95	V	I_F = 8mA
Reverse Clamping Voltage, Positive Transients	V_{CL1}	—	10.0	—	V	I_{PP} = 1A, t_p = 8/20µs
Reverse Clamping Voltage, Negative Transients	V_{CL2}	—	-1.7	—	V	I_{PP} = -1A, t_p = 8/20µs
Dynamic Resistance	R_{DYN}	—	0.9	—	Ω	I_R = 1A, t_p = 8/20µs
Capacitance	C_T	—	0.85	1.2	pF	V_R = 1.65V, f = 1MHz

Notes:
6. 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.
7. Short duration pulse test used to minimize self-heating effect.
8. For information on the impact of Diodes Incorporated's USB 2.0 compatible ESD protectors on signal integrity including eye diagram plots, please refer to AN77 at the following URL: http://www.diodes.com/destools/appnote_dnote.html.

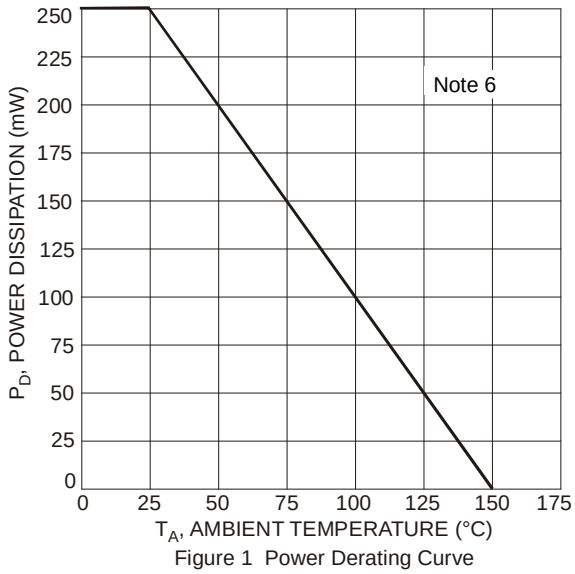


Figure 1 Power Derating Curve

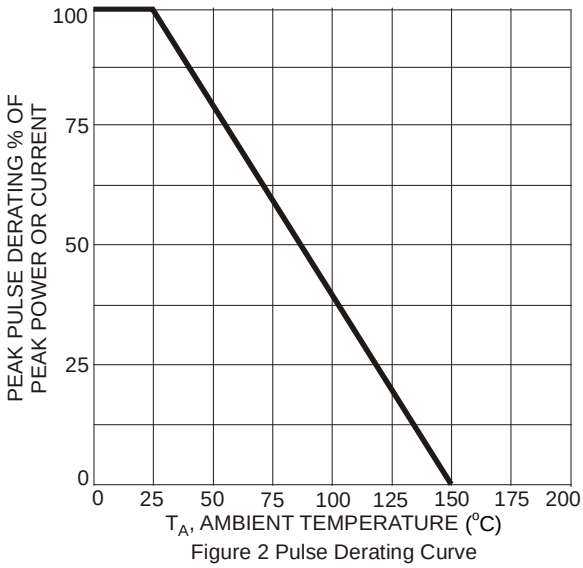


Figure 2 Pulse Derating Curve

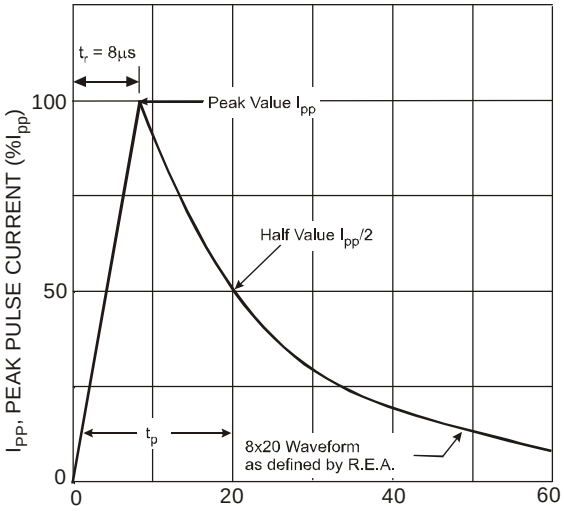


Figure 3 Pulse Waveform

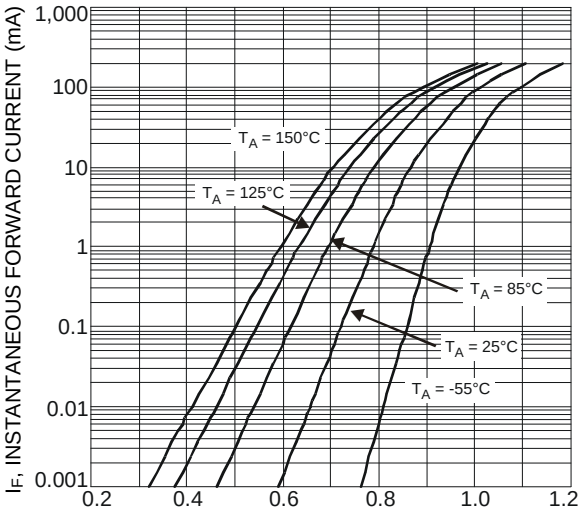


Figure 4 Typical Forward Characteristics

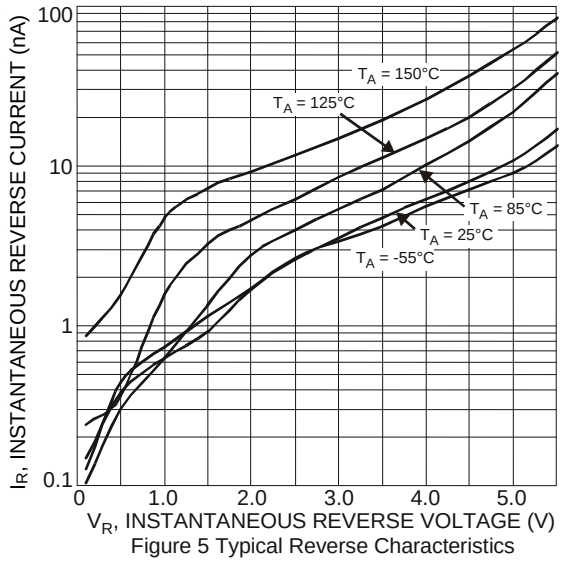


Figure 5 Typical Reverse Characteristics

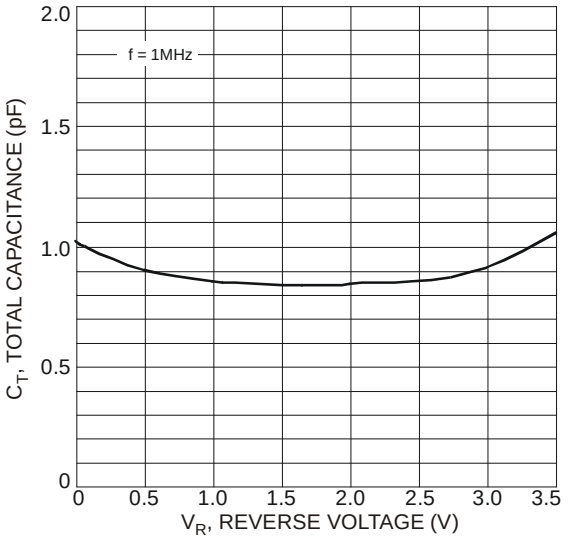
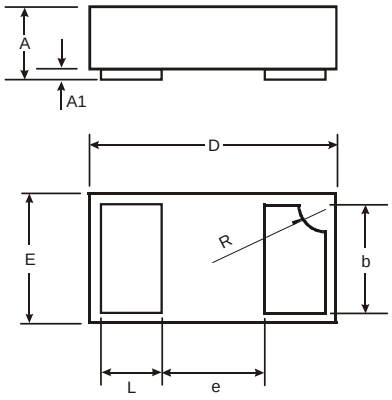


Figure 6 Typical Total Capacitance vs. Reverse Voltage

Package Outline Dimensions

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

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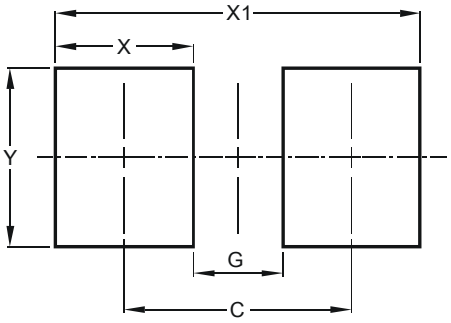

Dimensions	Value (in mm)
C	0.70
G	0.30
X	0.40
X1	1.10
Y	0.70

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