2 CHANNEL LOW CAPACITANCE TVS DIODE ARRAY

Product Summary

$V_{BR(MIN)}$	$I_{PP(MAX)}$	$C_{T(TYP)}$
6V	1.5A	0.5pF

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 Automotive Infotainment applications.

Features

- Low Profile Package (0.53mm Max) and Ultra-Small PCB Footprint Area (1.08 x 0.68mm Max) Suitable for Compact Portable Electronics
- Provides ESD Protection per IEC 61000-4-2 Standard: Air ±15kV, Contact ±15kV
- 2 Channels of ESD Protection (Note 6)
- Low Channel Input Capacitance
- **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)**

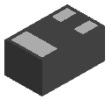
Applications

- USB Modules
- HDMI Inputs
- Infotainment Consoles

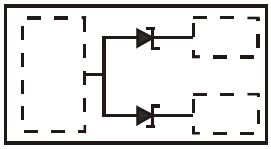
Mechanical Data

- Case: X1-DFN1006-3
- 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-DFN1006-3



Bottom View



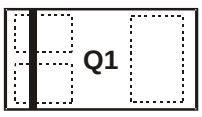
Device Schematic

Ordering Information (Note 5)

Product	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
D5V0F2U3LPQ-7B	Automotive	Q1	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. Automotive products are AEC-Q101 qualified and are PPAP capable. Please refer to http://www.diodes.com/product_compliance_definitions.html.
5. For packaging details, go to our website at https://www.diodes.com/design/support/packaging/diodes-packaging/.
6. 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: https://www.diodes.com/assets/App-Note-Files/AN77.pdf.

Marking Information



Top View
Bar Denotes
Cathode Side

Q1 = Product Type Marking Code

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

Characteristic	Symbol	Value	Unit	Condition
Peak Pulse Current	I_{PP}	1.5	A	8/20µs (Note 7)
ESD Protection – Contact Discharge	$V_{ESD\_CONTACT}$	±15	kV	Standard IEC61000-4-2
ESD Protection – Air Discharge	V_{ESD_AIR}	±15	kV	Standard IEC61000-4-2

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 7)	P_D	300	mW
Thermal Resistance, Junction to Ambient T_A = +25°C	$R_{\theta JA}$	417	°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 Condition
Reverse Standoff Voltage	V_{RWM}	—	—	5.5	V	–
Channel Leakage Current (Note 8)	I_R	—	—	100	nA	V_R = 5V, Any I/O to GND
Reverse Breakdown Voltage	V_{BR}	6.0	—	—	V	I_R = 1mA
Clamping Voltage, Positive Transients (Note 9)	V_C	—	10	12	V	I_{PP} = 1A, t_P = 8/20µs
Channel Input Capacitance (Note 10)	C_T	—	0.5	—	pF	V_R = 0V, f = 1MHz, Any I/O to GND
		—	0.4	0.65		V_R = 2.5V, f = 1MHz, Any I/O to GND
Dynamic Resistance	R_{DYN}	—	0.9	—	Ω	I_{PP} = 1A, t_P = 8/20µs

Notes:
7. 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.
8. Short duration pulse test used to minimize self-heating effect.
9. Clamping voltage value is based on an 8x20µs peak pulse current (I_{PP}) waveform.
10. Measured from any I/O to GND.

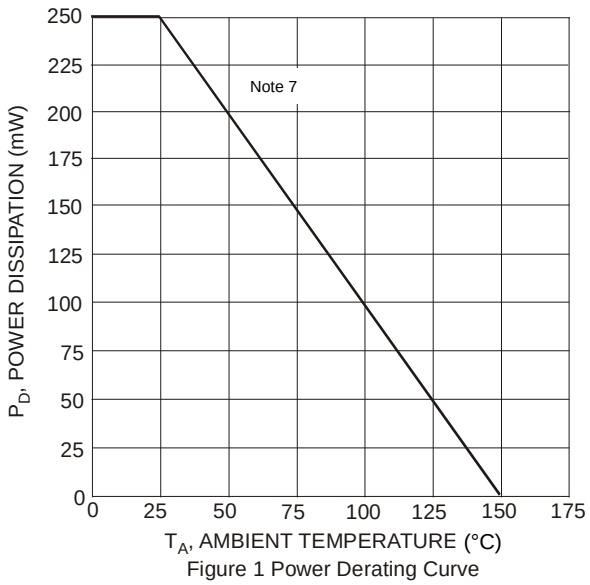


Figure 1 Power Derating Curve

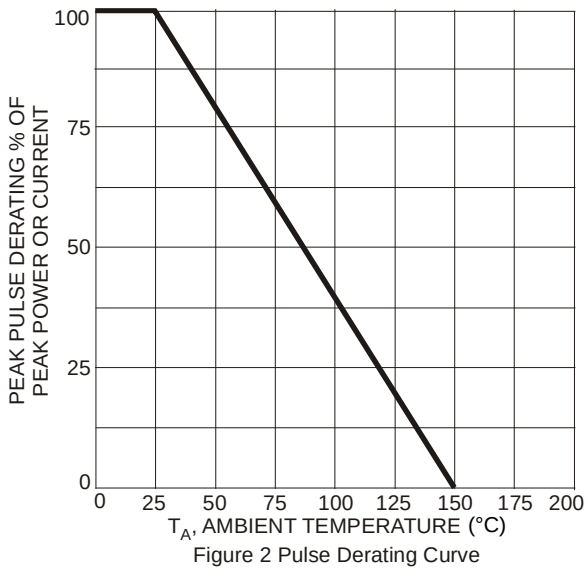


Figure 2 Pulse Derating Curve

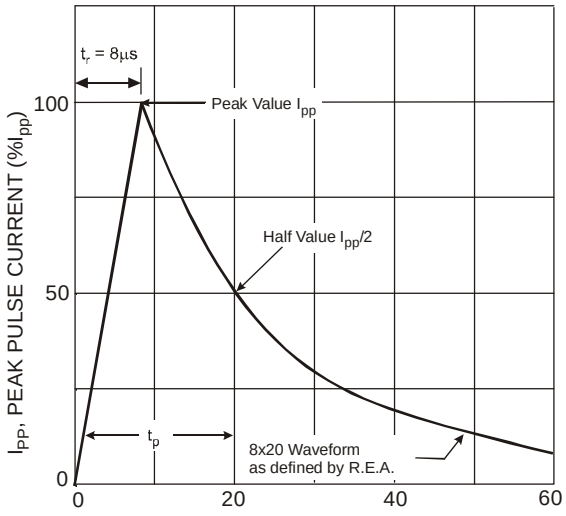


Figure 3 Pulse Waveform

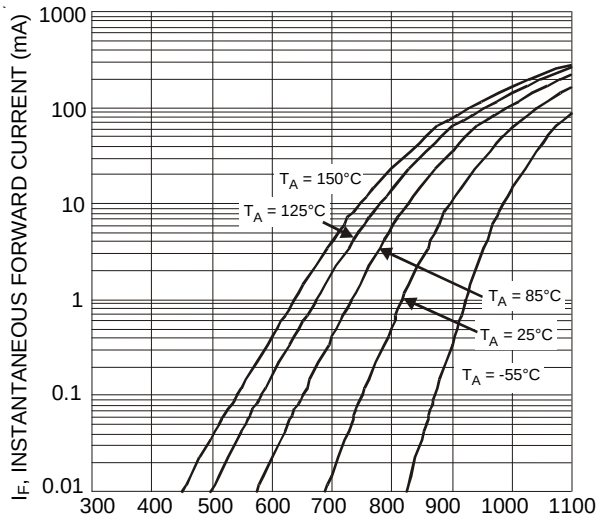


Figure 4 Typical Forward Characteristics

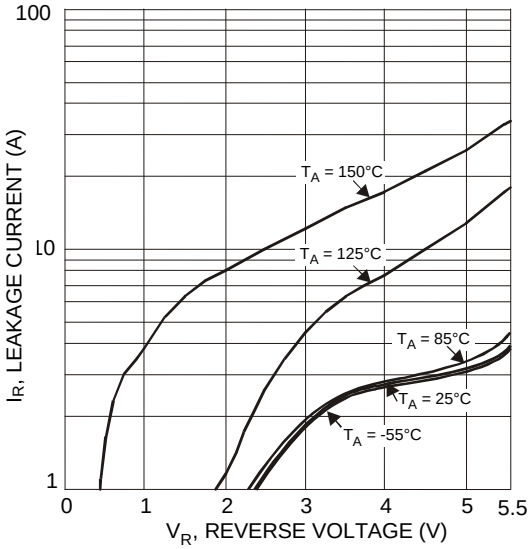


Figure 5 Typical Reverse Characteristics

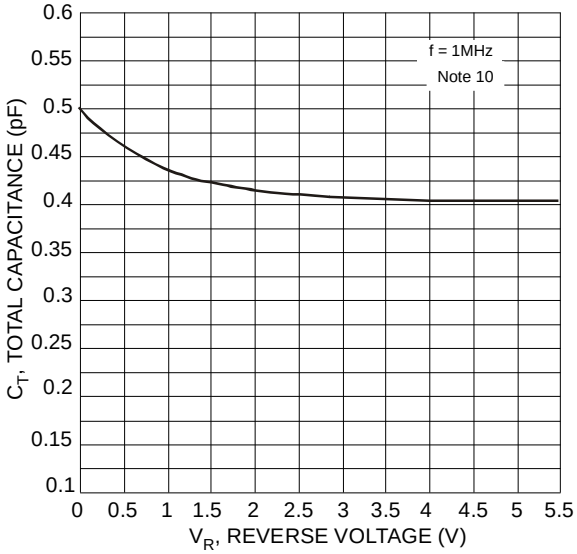
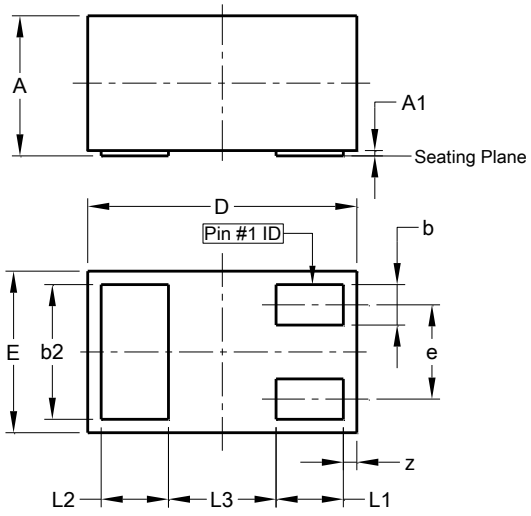


Figure 6 Total Capacitance vs. Reverse Voltage

Package Outline Dimensions

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

X1-DFN1006-3

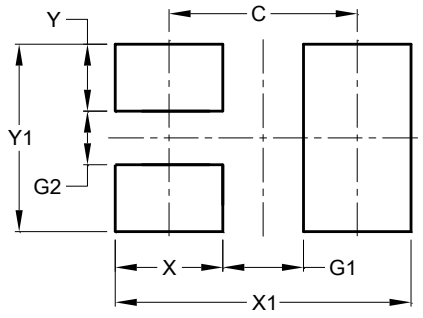


X1-DFN1006-3			
Dim	**Min**	**Max**	**Typ**
A	0.47	0.53	0.50
A1	0.00	0.05	0.03
b	0.10	0.20	0.15
b2	0.45	0.55	0.50
D	0.95	1.075	1.00
E	0.55	0.675	0.60
e	-	-	0.35
L1	0.20	0.30	0.25
L2	0.20	0.30	0.25
L3	-	-	0.40
z	0.02	0.08	0.05
All Dimensions in mm			

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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