Product Summary

$V_{BR\ (MIN)}$	$I_{PP\ (MAX)}$	$C_{T\ (TYP)}$
3.8V	180A	1400pF

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 peripherals

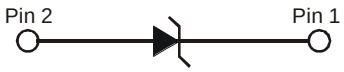
Features

- Provides ESD Protection per IEC 61000-4-2 Standard: Air ±30kV, Contact ±30kV
- One 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)**
- **The DIODES™ D3V3S1U2LP1610Q 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: U-DFN1610-2
- 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 (Lead Free Plating). Solderable per MIL-STD-202, Method 208 e4
- Weight: 0.003 grams (Approximate)

U-DFN1610-2 (Type B)



Device Schematic

Ordering Information (Note 4)

Part Number	Package	Marking	Reel Size (inches)	Tape Width (mm)	Packing	
					Qty.	Carrier
D3V3S1U2LP1610Q-7	U-DFN1610-2 (Type B)	PA2	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/.

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Marking Information

Option A:



PA2 = Product Type Marking Code
YM = Date Code Marking
Y = Year (ex: J = 2022)
M = Month (ex: 9 = September)

Date Code Key

Year	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Code	I	J	K	L	M	N	O	P	R	S	T	U

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

Option B:



PA2 = Product Type Marking Code
YWX = Date Code Marking
Y = Year (ex: 2 = 2022)
W = Week (ex: a = Week 27; z Represents Week 52 and 53)
X = Internal Code (ex: U = Monday)

Date Code Key

Year	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Code	1	2	3	4	5	6	7	8	9	0	1	2

Week	1-26	27-52	53
Code	A-Z	a-z	z

Internal Code	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Code	T	U	V	W	X	Y	Z

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

Characteristic	Symbol	Value	Unit	Conditions
Peak Pulse Current	I_{PP}	180	A	8/20µs (Note 7)
ESD Protection – Contact Discharge	$V_{ESD_CONTACT}$	±30	kV	Standard IEC 61000-4-2
ESD Protection – Air Discharge	V_{ESD_AIR}	±30	kV	Standard IEC 61000-4-2

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	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 Conditions
Reverse Standoff Voltage	V_{RWM}	—	—	3.3	V	—
Channel Leakage Current (Note 6)	I_R	—	—	1	µA	V_R = 3.3V
Reverse Breakdown Voltage	V_{BR}	3.8	—	—	V	I_R = 1mA
Clamping Voltage, Positive Transients (Note 7)	V_C	—	—	7	V	I_{PP} = 10A, t_p = 8/20µs
		—	—	8	V	I_{PP} = 40A, t_p = 8/20µs
		—	—	12	V	I_{PP} = 180A, t_p = 8/20µs
Channel Input Capacitance (Note 8)	C_T	—	1400	—	pF	V_R = 0V, f = 1MHz, Any I/O to GND
Dynamic Resistance	R_{DYN}	—	0.03	—	Ω	TLP, 10A, tp = 100ns

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. Measured from any I/O to GND.

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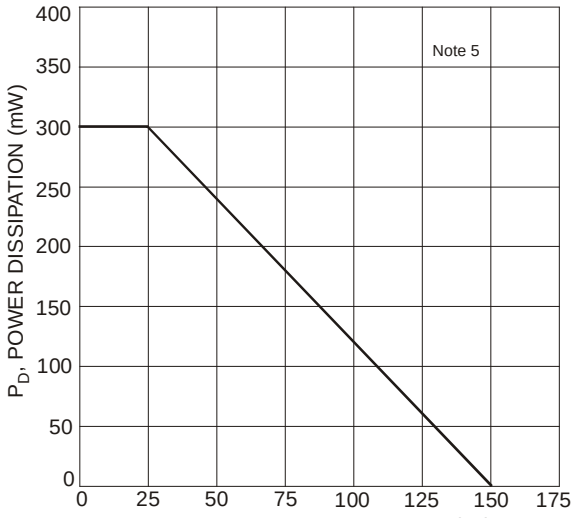


Figure 1 Power Derating Curve

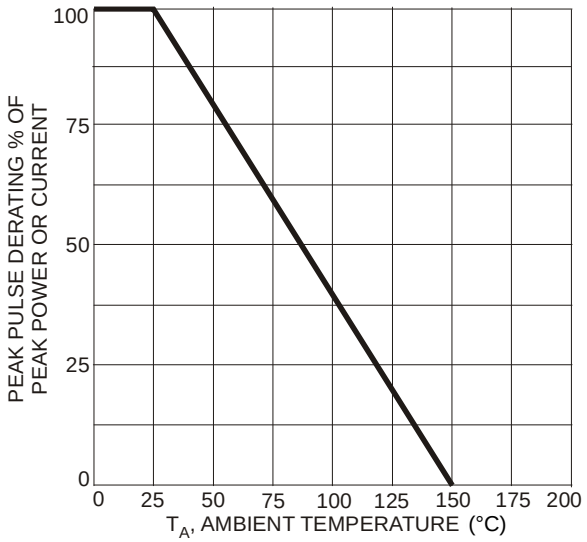


Figure 2 Pulse Derating Curve

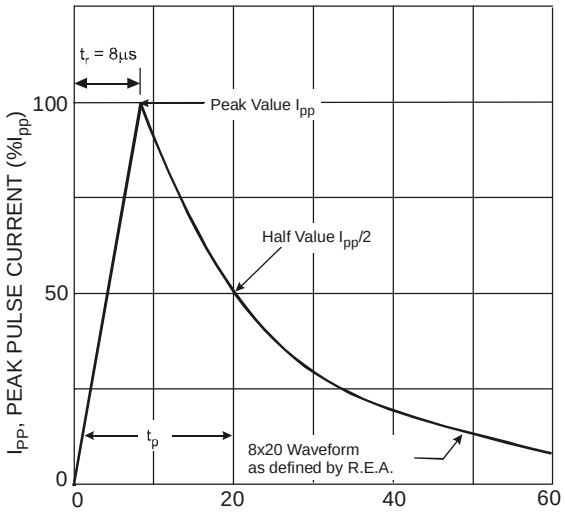


Figure 3 Pulse Waveform

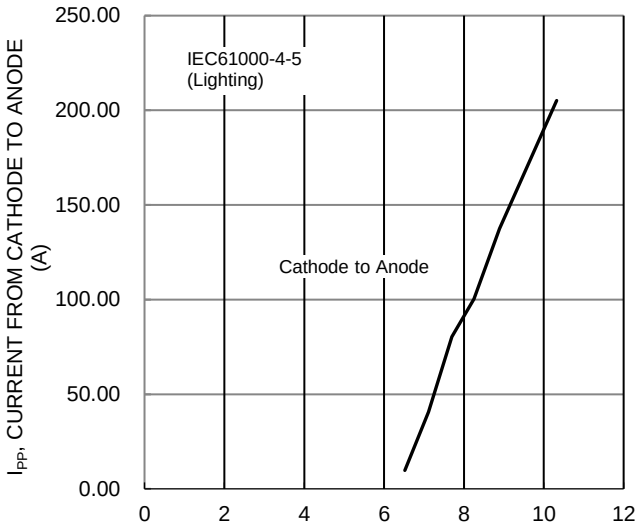


Figure 4 Clamping Voltage Characteristic

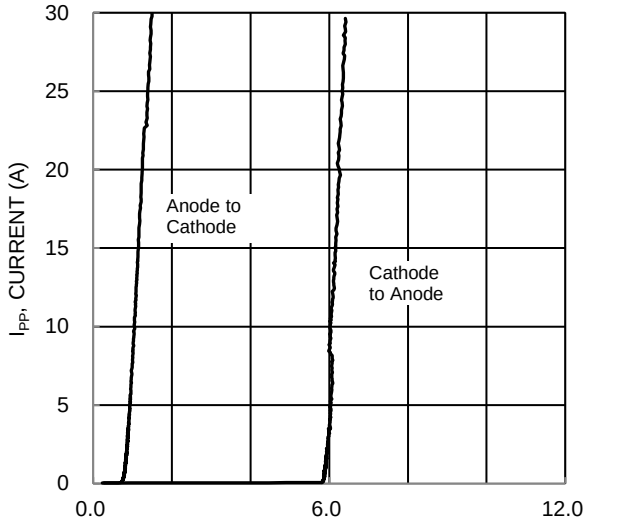


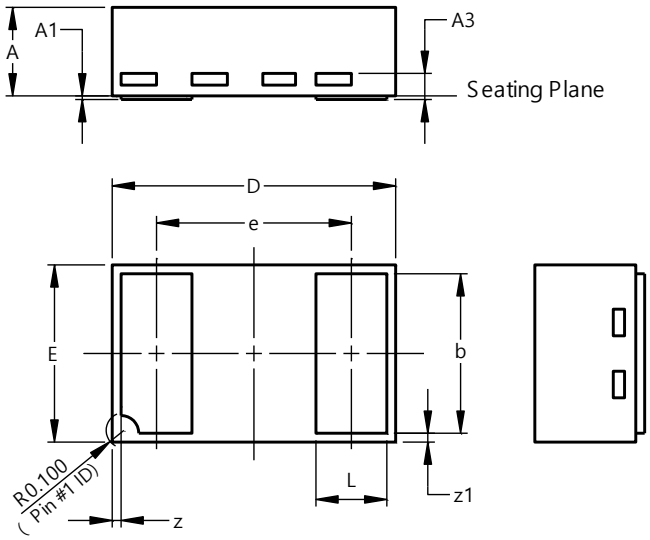
Figure 5 Current vs. Voltage TLP

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Package Outline Dimensions

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

U-DFN1610-2 (Type B)

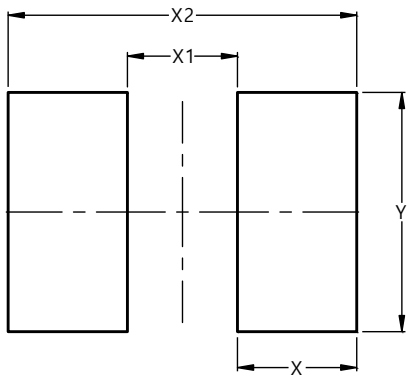


U-DFN1610-2 (Type B)			
Dim	**Min**	**Max**	**Typ**
A	0.45	0.55	0.50
A1	0.00	0.05	0.015
A3	-	-	0.127
b	0.85	0.95	0.90
D	1.55	1.65	1.60
E	0.95	1.05	1.00
e	-	-	1.10
L	0.35	0.45	0.40
z	0.050 REF		
z1	0.050 REF		
All Dimensions in mm			

Suggested Pad Layout

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

U-DFN1610-2 (Type B)



Dimensions	Value (in mm)
X	0.650
X1	0.600
X2	1.900
Y	1.300

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