D6V3H1U2LP1610Q

ONE CHANNEL HIGH SURGE TVS DIODE

Product Summary

V_{BR} (Min)	I_{PP} (Max)	C_T (Typ)
6.5V	90A	800pF

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 D6V3H1U2LP1610Q is suitable for automotive applications requiring specific change control; this part is AEC-Q101 qualified, PPAP capable, and manufactured in IATF16949 certified facilities.**
  https://www.diodes.com/quality/product-definitions/

Description

The D6V3H1U2LP1610Q is designed for use in harsh transient environments to protect sensitive electronic equipment from EOS, lightning, CDE, and ESD. It offers ideal features for board-level protection, including fast response time and clamping voltage. D6V3H1U2LP1610Q has excellent protection characteristics highlighted by high surge current capability (90A, t_P = 8/20µs), low peak ESD clamping voltage and high ESD withstand voltage (±30kV according to IEC 61000-4-2).

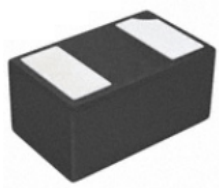
Mechanical Data

- 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. Solderable per MIL-STD-202, Method 208 e4
- Weight: 0.003 grams (Approximate)

Applications

- Power line protections
- Touch panels
- Small panel modules

U-DFN1610-2 (Type B)



Bottom View

Device Schematic

Ordering Information (Note 4)

Part Number	Package	Marking	Reel Size (inches)	Tape Width (mm)	Packing	
					Qty.	Carrier
D6V3H1U2LP1610Q-7	U-DFN1610-2 (Type B)	CE	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

Option A:

CE = Product Type Marking Code
YM = Date Code Marking
Y = Year (ex: K = 2023)
M = Month (ex: 9 = September)

Date Code Key

Year	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Code	K	L	M	N	P	R	S	T	U	V	W	X

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:

CE = Product Type Marking Code
YWX = Date Code Marking
Y = Year (ex: 3 = 2023)
W = Week (ex: a = Week 27; z Represents Week 52 and 53)
X = Internal Code (ex: U = Monday)

Date Code Key

Year	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Code	3	4	5	6	7	8	9	0	1	2	3	4

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

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

Characteristic	Symbol	Value	Unit	Conditions
Peak Pulse Current	I_{PP}	90	A	8/20µs (Note 5)
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
ESD Protection – 1000 Contact Discharges (Open Alliance Spec)	$V_{ESD\_CONTACT1k}$	±30	kV	Standard IEC 61000-4-2
ESD Protection – Contact Discharge (ISO Spec)	$V_{ESD\_CONTACT2}$	±30	kV	ISO 10605, 150pF, 330Ω
ESD Protection – Air Discharge (ISO Spec)	V_{ESD_AIR2}	±30	kV	ISO 10605, 150pF, 330Ω
ESD Protection – Contact Discharge (ISO Spec)	$V_{ESD\_CONTACT3}$	±30	kV	ISO 10605, 330pF, 330Ω
ESD Protection – Air Discharge (ISO Spec)	V_{ESD_AIR3}	±30	kV	IEC 10605, 330pF, 330Ω

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 6)	P_D	500	mW
Thermal Resistance, Junction to Ambient, T_A = +25°C	$R_{\theta JA}$	250	°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}	—	—	6.3	V	—
Channel Leakage Current (Note 7)	I_R	—	—	500	nA	V_R = 6.3V
Reverse Breakdown Voltage	V_{BR}	6.5	—	9	V	I_R = 1mA
Clamping Voltage, Positive Transients (Note 5)	V_C	—	—	10	V	I_{PP} = 10A, t_P = 8/20µs
		—	—	11	V	I_{PP} = 50A, t_P = 8/20µs
		—	—	13	V	I_{PP} = 90A, t_P = 8/20µs
Channel Input Capacitance (Note 8)	C_T	—	800	—	pF	V_R = 0V, f = 1MHz, Any I/O to GND
Dynamic Resistance	R_{DYN}	—	0.05	—	Ω	TLP, 10A, t_P = 100ns

Notes:
5. Clamping voltage value is based on an 8 x 20µs peak pulse current (I_{pp}) waveform.
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. Measured from any I/O to GND.

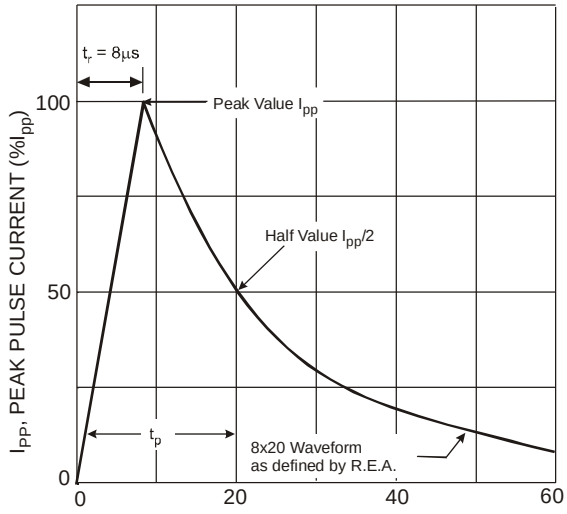


Figure 1 Pulse Waveform

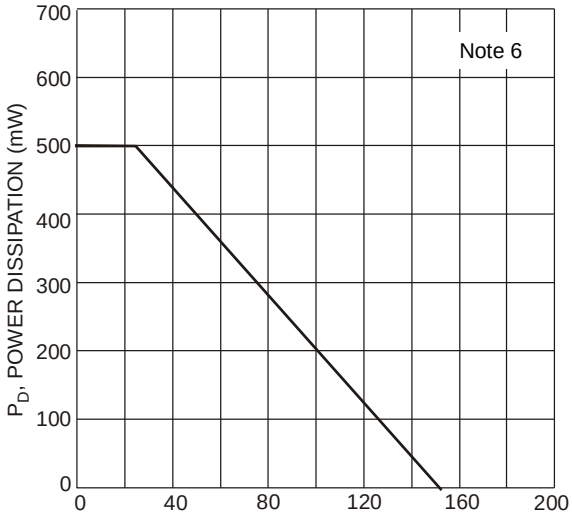


Figure 2 Power Derating Curve

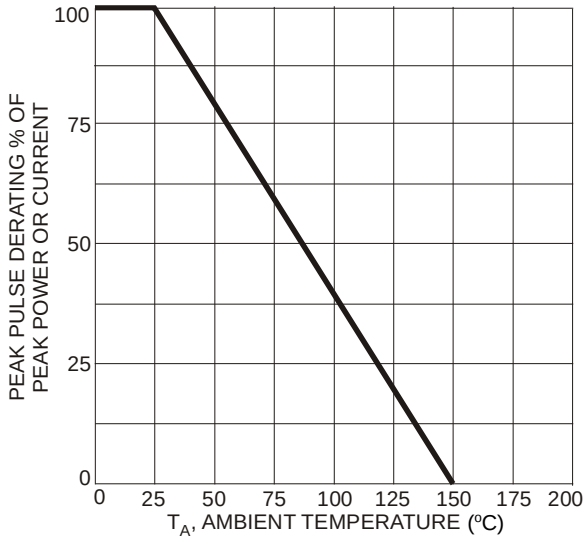


Figure 3 Power Dissipation vs. Ambient Temperature

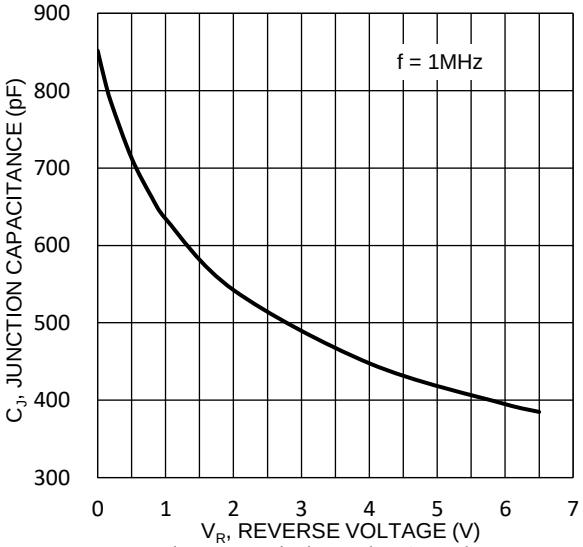


Figure 4 Typical Junction Capacitance

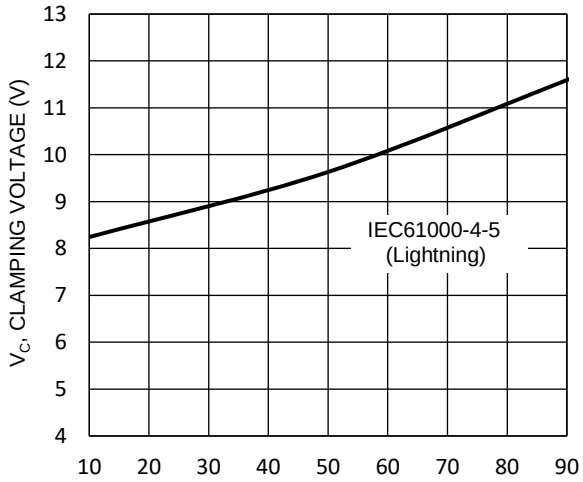


Figure 5 Clamping Voltage Characteristic

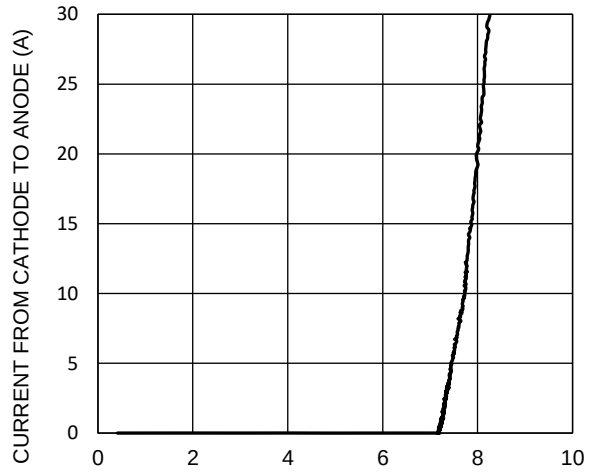
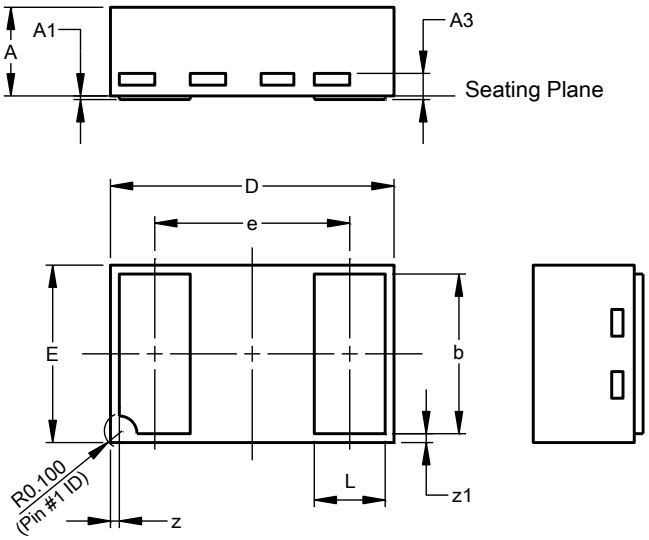


Figure 6 Current vs. Voltage (TLP, t_P = 100ns)

Package Outline Dimensions

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

U-DFN1610-2 (Type B)

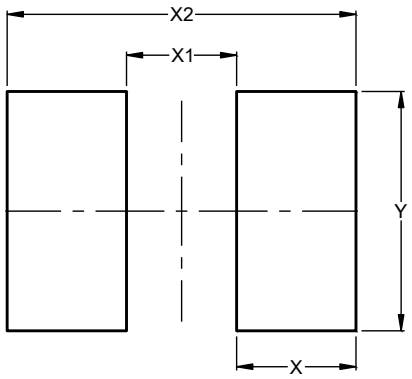


U-DFN1610-2 (Type B)			
Dim	**Min**	**Max**	**Typ**
A	0.45	0.55	0.50
A1	0.00	0.05	0.015
A3	-	-	0.127
b	0.85	0.95	0.90
D	1.55	1.65	1.60
E	0.95	1.05	1.00
e	-	-	1.10
L	0.35	0.45	0.40
z	0.050 REF		
z1	0.050 REF		
All Dimensions in mm			

Suggested Pad Layout

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

U-DFN1610-2 (Type B)



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