D12V0S1U2LP1610 ~ D50V0S1U2LP1610

ONE CHANNEL HIGH SURGE TVS DIODE

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)**
- **For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please contact us or your local Diodes representative. https://www.diodes.com/quality/product-definitions/**

Mechanical Data

- Case: U-DFN1610-2
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: NiPdAu. 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	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity Per Reel
D12V0S1U2LP1610-7	Commercial	12T	7	8	10,000/Tape & Reel
D15V0S1U2LP1610-7	Commercial	15T	7	8	10,000/Tape & Reel
D18V0S1U2LP1610-7	Commercial	18T	7	8	10,000/Tape & Reel
D20V0S1U2LP1610-7	Commercial	20T	7	8	10,000/Tape & Reel
D22V0S1U2LP1610-7	Commercial	22T	7	8	10,000/Tape & Reel
D24V0S1U2LP1610-7	Commercial	24T	7	8	10,000/Tape & Reel
D33V0S1U2LP1610-7	Commercial	33T	7	8	10,000/Tape & Reel
D36V0S1U2LP1610-7	Commercial	36T	7	8	10,000/Tape & Reel
D40V0S1U2LP1610-7	Commercial	40T	7	8	10,000/Tape & Reel
D50V0S1U2LP1610-7	Commercial	50T	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

XXT = Product Type Marking Code
YM = Date Code Marking
Y = Year (ex: H = 2020)
M = Month (ex: 9 = September)
Dot Denotes Cathode Side

Date Code Key

Year	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Code	G	H	I	J	K	L	M	N	O	P	R	S

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

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

Characteristic	Symbol	Value	Unit	Conditions
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.)

Part Number	Reverse Standoff Voltage	Breakdown Voltage		Test Current	Max. Reverse Leakage Current @ V_{RWM} (Note 6)	Max. Clamping Voltage @ I_{pp} (Note 7)	Max. Peak Pulse Current	Channel Input Capacitance (Note 8) V_R = 0V, f = 1MHz, Any I/O to GND	Marking Code
		V_{BR} @ I_T							
	V_{RWM} (V)	Min (V)	Max (V)	I_T (mA)	I_R (nA)	V_C (V)	I_{pp} (A)	(pF)	
D12V0S1U2LP1610-7	12	13	17	1	200	20	65	400	12T
D15V0S1U2LP1610-7	15	17	23	1	200	30	48	270	15T
D18V0S1U2LP1610-7	18	20	23	1	200	33	45	267	18T
D20V0S1U2LP1610-7	20	22	25	1	200	36	37	242	20T
D22V0S1U2LP1610-7	22	24	28	1	200	38	32	226	22T
D24V0S1U2LP1610-7	24	26	30	1	200	42	31	210	24T
D33V0S1U2LP1610-7	33	36	41	1	200	55	18	165	33T
D36V0S1U2LP1610-7	36	37	44	1	200	59	18	165	36T
D40V0S1U2LP1610-7	40	45	55	1	200	73	13	143	40T
D50V0S1U2LP1610-7	50	56	63	1	200	88	15	132	50T

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.

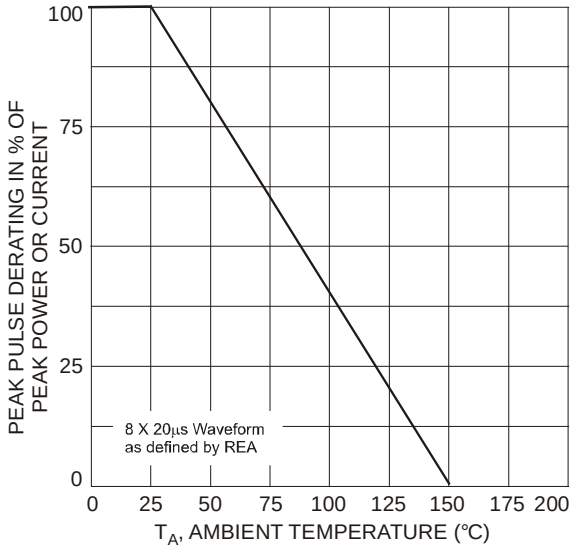


Fig. 1 Pulse Derating Curve

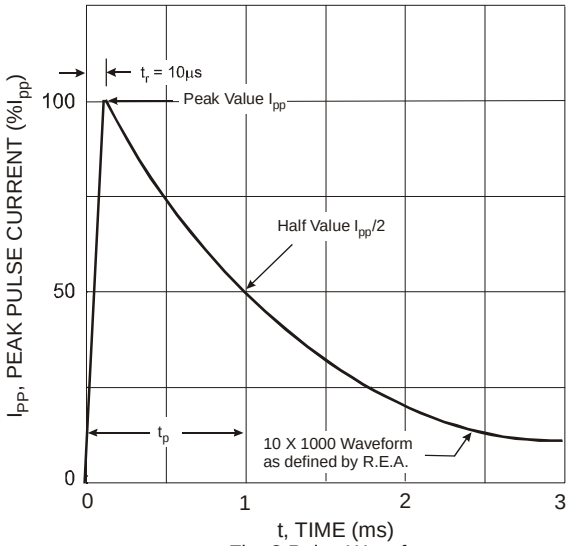


Fig. 2 Pulse Waveform

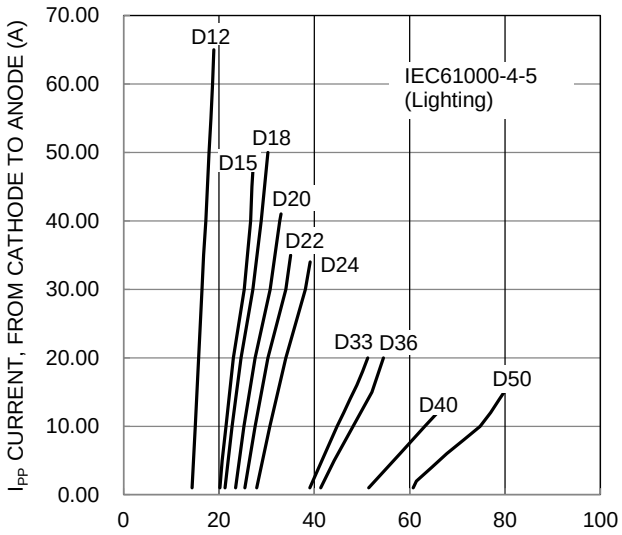
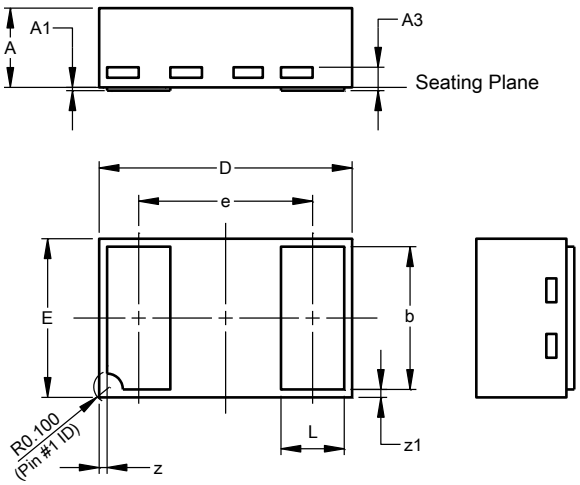


Fig. 3 Clamping Voltage Characteristic

Package Outline Dimensions

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

U-DFN1610-2 (Type B)

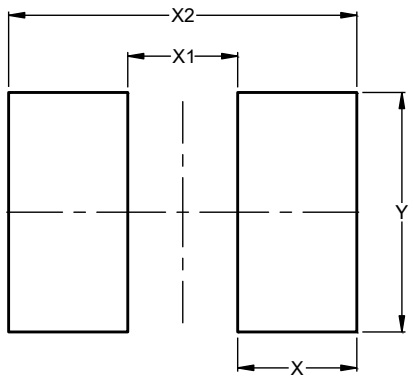


U-DFN1610-2 (Type B)			
Dim	**Min**	**Max**	**Typ**
A	0.45	0.55	0.50
A1	0.00	0.05	0.015
A3	-	-	0.127
b	0.85	0.95	0.90
D	1.55	1.65	1.60
E	0.95	1.05	1.00
e	-	-	1.10
L	0.35	0.45	0.40
z	0.050 REF		
z1	0.050 REF		
All Dimensions in mm			

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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