

Description

The DxxV0S1U2LP1610 series are designed to protect sensitive electronic equipment from damage caused by EOS, lightning strikes, and ESD. These devices provide the features required for board-level protection. Their high surge current capability and low clamping voltage make them ideal for use in harsh transient environments.

Applications

- Mobile handsets & accessories
- USB voltage bus
- Battery protection
- Digital lines
- Proximity sensors

Features

- Provides ESD Protection per IEC 61000-4-2 Standard: Air $\pm 30\text{kV}$, Contact $\pm 30\text{kV}$
- 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)**
- **Automotive-compliant parts are available under separate datasheet ([D12V0S1U2LP1610Q](#)), ([D15V0S1U2LP1610Q](#)), ([D20V0S1U2LP1610Q](#)), ([D24V0S1U2LP1610Q](#)), ([D36V0S1U2LP1610Q](#))**

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

U-DFN1610-2 (Type B)



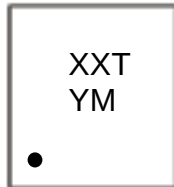
Device Schematic

Ordering Information (Note 4)

Orderable Part Number	Package	Marking	Reel Size (inches)	Tape Width (mm)	Packing	
					Qty.	Carrier
D12V0S1U2LP1610-7	U-DFN1610-2 (Type B)	12T	7	8	10,000	Tape & Reel
D15V0S1U2LP1610-7	U-DFN1610-2 (Type B)	15T	7	8	10,000	Tape & Reel
D18V0S1U2LP1610-7	U-DFN1610-2 (Type B)	18T	7	8	10,000	Tape & Reel
D20V0S1U2LP1610-7	U-DFN1610-2 (Type B)	20T	7	8	10,000	Tape & Reel
D22V0S1U2LP1610-7	U-DFN1610-2 (Type B)	22T	7	8	10,000	Tape & Reel
D24V0S1U2LP1610-7	U-DFN1610-2 (Type B)	24T	7	8	10,000	Tape & Reel
D28V0S1U2LP1610-7	U-DFN1610-2 (Type B)	28T	7	8	10,000	Tape & Reel
D33V0S1U2LP1610-7	U-DFN1610-2 (Type B)	33T	7	8	10,000	Tape & Reel
D36V0S1U2LP1610-7	U-DFN1610-2 (Type B)	36T	7	8	10,000	Tape & Reel
D40V0S1U2LP1610-7	U-DFN1610-2 (Type B)	40T	7	8	10,000	Tape & Reel
D48V0S1U2LP1610-7	U-DFN1610-2 (Type B)	48T	7	8	10,000	Tape & Reel
D50V0S1U2LP1610-7	U-DFN1610-2 (Type B)	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: M = 2025)
 M = Month (ex: 1 = January)
 Dot Denotes Cathode Side

Date Code Key

Year	2019	-	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Code	G	-	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

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

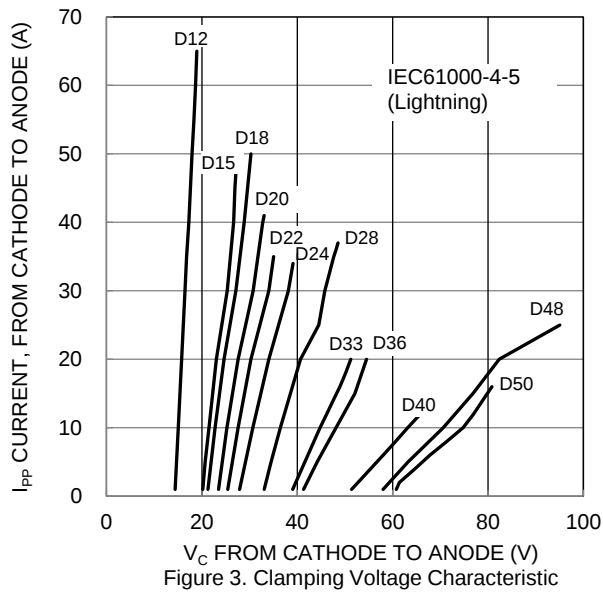
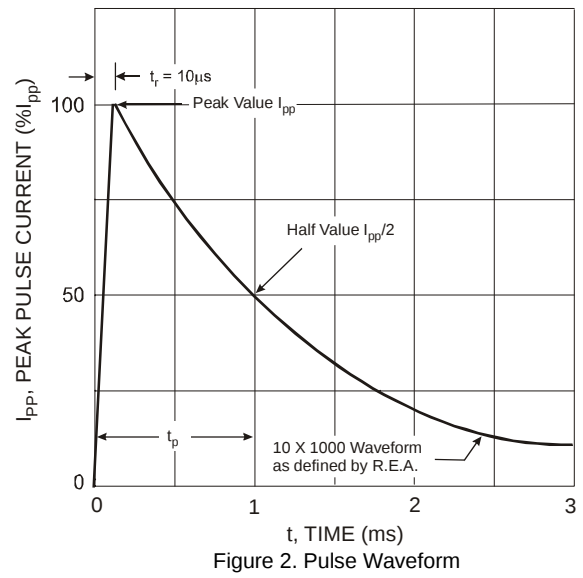
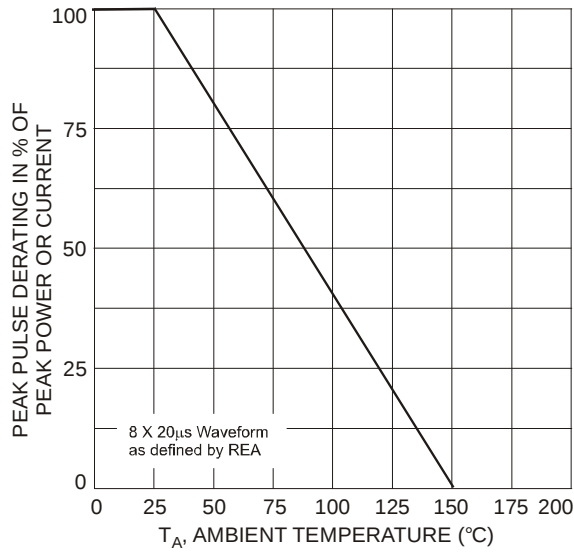
Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P _D	300	mW
Thermal Resistance, Junction to Ambient T _A = +25°C	R _{θJA}	417	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

Note: 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>.

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Orderable 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
D28V0S1U2LP1610-7	28	31	36	1	200	50	25	190	28T
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
D48V0S1U2LP1610-7	48	53	59	1	200	84	15	140	48T
D50V0S1U2LP1610-7	50	56	63	1	200	88	15	132	50T

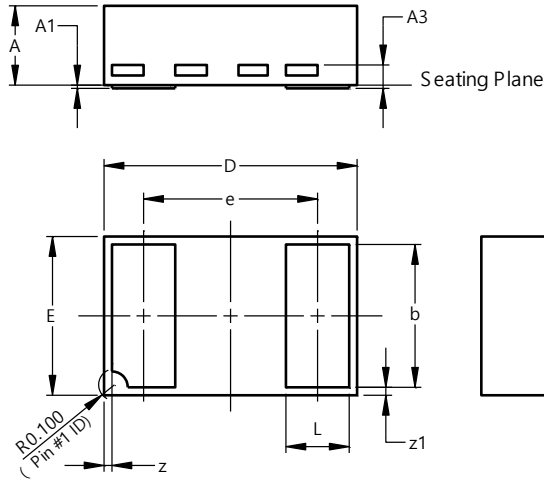
Notes: 6. Short duration pulse test used to minimize self-heating effect.
7. Clamping voltage value is based on an 8 × 20μs peak pulse current (I_{pp}) waveform.
8. Measured from any I/O to GND.



Package Outline Dimensions

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

U-DFN1610-2 (Type B)

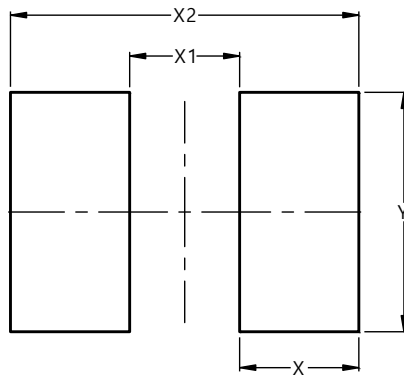


U-DFN1610-2 (Type B)			
Dim	Min	Max	Typ
A	0.45	0.55	0.50
A1	0.00	0.05	0.015
A3	-	-	0.127
b	0.85	0.95	0.90
D	1.55	1.65	1.60
E	0.95	1.05	1.00
e	-	-	1.10
L	0.35	0.45	0.40
z	0.050 REF		
z1	0.050 REF		
All Dimensions in mm			

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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