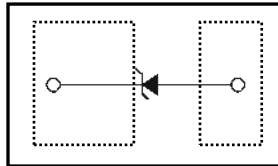


## Features

- 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](mailto:contact@diodes.com) or your local Diodes representative. <https://www.diodes.com/quality/product-definitions/>**



Top View

## Mechanical Data

- Case: U-DFN1608-2
- 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 ④
- Weight: 0.003 grams (Approximate)

U-DFN1608-2



Device Schematic

## Ordering Information (Note 4)

| Part Number       | Compliance | Marking Code | Reel Size (inches) | Tape Width (mm) | Quantity Per Reel  |
|-------------------|------------|--------------|--------------------|-----------------|--------------------|
| D12V0S1U2LP1608-7 | Commercial | 12E          | 7                  | 8               | 10,000/Tape & Reel |
| D15V0S1U2LP1608-7 | Commercial | 15E          | 7                  | 8               | 10,000/Tape & Reel |
| D33V0S1U2LP1608-7 | Commercial | 33E          | 7                  | 8               | 10,000/Tape & Reel |
| D40V0S1U2LP1608-7 | Commercial | 40E          | 7                  | 8               | 10,000/Tape & Reel |
| D50V0S1U2LP1608-7 | Commercial | 50E          | 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



XXE = Product Type Marking Code  
Dot Denotes Cathode Side

**Maximum Ratings** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

| Characteristic                     | Symbol                   | Value | Unit | Conditions             |
|------------------------------------|--------------------------|-------|------|------------------------|
| ESD Protection – Contact Discharge | V <sub>ESD_CONTACT</sub> | ±30   | kV   | Standard IEC 61000-4-2 |
| ESD Protection – Air Discharge     | V <sub>ESD_AIR</sub>     | ±30   | kV   | Standard IEC 61000-4-2 |

**Thermal Characteristics**

| Characteristic  | Symbol                            | Value       | Unit |
|---|-----------------------------------|-------------|------|
| Power Dissipation (Note 5)  | P <sub>D</sub>                    | 300         | mW   |
| Thermal Resistance, Junction to Ambient<br>T <sub>A</sub> = +25°C | R <sub>θJA</sub>                  | 417         | °C/W |
| Operating and Storage Temperature Range                           | T <sub>J</sub> , T <sub>STG</sub> | -55 to +150 | °C   |

**Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

| Part Number       | Reverse Standoff Voltage | Breakdown Voltage                |         | Test Current        | Maximum Reverse Leakage Current<br>@ V <sub>RWM</sub><br>(Note 6) | Maximum Clamping Voltage<br>@ I <sub>PP</sub><br>(Note 7) | Maximum Peak Pulse Current | Channel Input Capacitance<br>(Note 8)<br>V <sub>R</sub> = 0V,<br>f = 1MHz,<br>Any I/O to GND | Marking Code |
|-------------------|--------------------------|----------------------------------|---------|---------------------|---|---|----------------------------|--|--------------|
|                   |                          | V <sub>BR</sub> @ I <sub>T</sub> |         |                     |   |   |                            |  |              |
|                   | V <sub>RWM</sub> (V)     | Min (V)                          | Max (V) | I <sub>T</sub> (mA) | I <sub>R</sub> (μA)   | V <sub>C</sub> (V)  | I <sub>PP</sub> (A)        | (pF)   |              |
| D12V0S1U2LP1608-7 | 12                       | 13                               | 17      | 1                   | 1   | 22  | 55                         | 380  | 12E          |
| D15V0S1U2LP1608-7 | 15                       | 17                               | 23      | 1                   | 1   | 30  | 35                         | 264  | 15E          |
| D33V0S1U2LP1608-7 | 33                       | 36                               | 40      | 1                   | 1   | 55  | 19                         | 156  | 33E          |
| D40V0S1U2LP1608-7 | 40                       | 45                               | 55      | 1                   | 1   | 75  | 14                         | 138  | 40E          |
| D50V0S1U2LP1608-7 | 50                       | 56                               | 63      | 1                   | 1   | 90  | 15                         | 126  | 50E          |

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

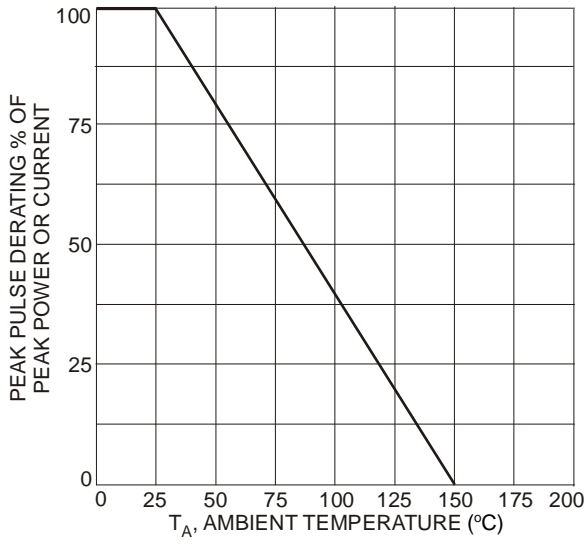


Fig. 1 Pulse Derating Curve

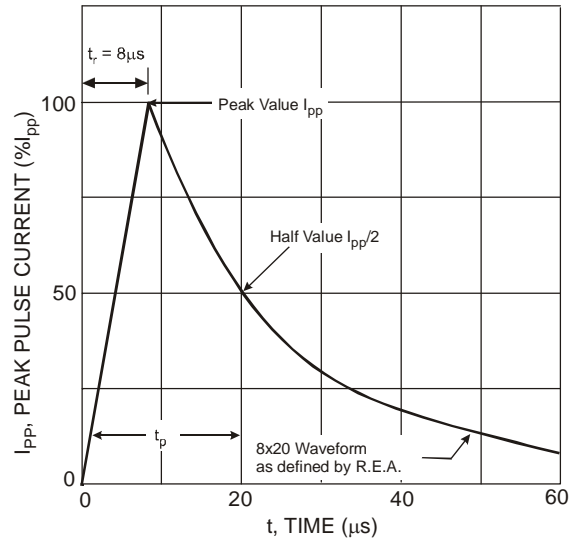


Fig. 2 Pulse Waveform

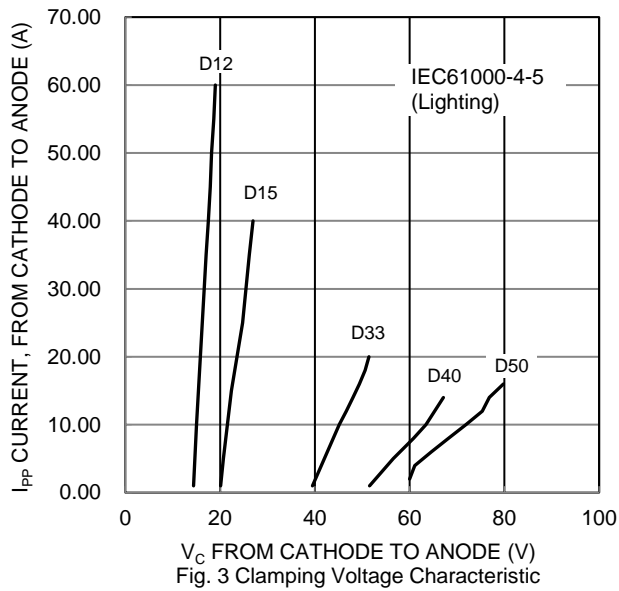
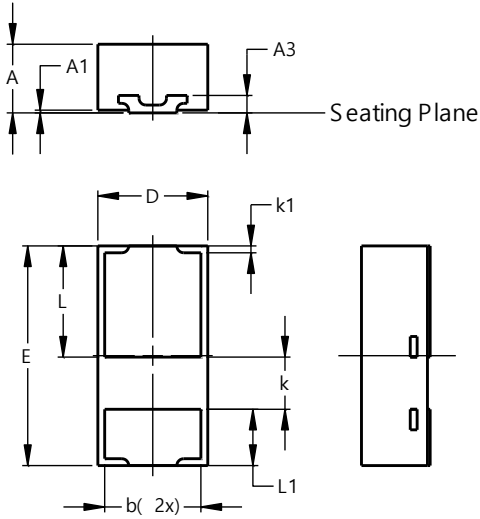


Fig. 3 Clamping Voltage Characteristic

**Package Outline Dimensions**

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

**U-DFN1608-2**

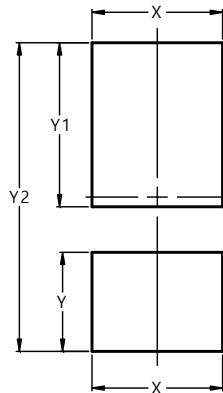


| U-DFN1608-2          |          |      |       |
|----------------------|----------|------|-------|
| Dim                  | Min      | Max  | Typ   |
| A                    | 0.47     | 0.53 | 0.50  |
| A1                   | 0.00     | 0.05 | 0.02  |
| A3                   | -        | -    | 0.127 |
| b                    | 0.65     | 0.75 | 0.70  |
| D                    | 0.75     | 0.85 | 0.80  |
| E                    | 1.55     | 1.65 | 1.60  |
| k                    | 0.38 BSC |      |       |
| k1                   | 0.05 BSC |      |       |
| L                    | 0.76     | 0.86 | 0.81  |
| L1                   | 0.36     | 0.46 | 0.41  |
| All Dimensions in mm |          |      |       |

**Suggested Pad Layout**

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

**U-DFN1608-2**



| Dimensions | Value (in mm) |
|------------|---------------|
| X          | 0.800         |
| Y          | 0.610         |
| Y1         | 1.010         |
| Y2         | 1.900         |

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