

## Product Summary

| $V_{BR}$ (min) | $I_{PP}$ (max) | $I_R$ (max) |
|----------------|----------------|-------------|
| 15.5V          | 90A            | 200nA       |

## 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 Peripheral

## Features

- Provides ESD Protection per IEC 61000-4-2 Standard: Air  $\pm 30kV$ , Contact  $\pm 30kV$
- 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)**

## Mechanical Data

- Case: U-DFN1616-2
- Case 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 <sup>(e4)</sup>
- Weight: 0.004 grams (Approximate)



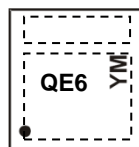
Device Schematic

## Ordering Information (Note 4)

| Part Number     | Compliance | Marking | Reel Size (inches) | Tape Width (mm) | Quantity per Reel |
|-----------------|------------|---------|--------------------|-----------------|-------------------|
| D15V0H1U2LP16-7 | Standard   | QE6     | 7                  | 8               | 3,000/Tape & Reel |

- Notes:
- No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
  - See <http://www.diodes.com> for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
  - Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
  - For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

## Marking Information



Top View

QE6 = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year (ex: E = 2017)  
 M = Month (ex: 9 = September)  
 Dot Denotes Pin#1 or Cathode

### Date Code Key

| Year | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|------|------|------|------|------|------|------|
| Code | E    | F    | G    | H    | I    | J    |

| 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<sub>A</sub> = +25°C, unless otherwise specified.)

| Characteristic                     | Symbol                   | Value | Unit | Conditions             |
|------------------------------------|--------------------------|-------|------|------------------------|
| Peak Pulse Power Dissipation       | P <sub>PP</sub>          | 2,250 | W    | 8/20μs (Note 7)        |
| Peak Pulse Current                 | I <sub>PP</sub>          | 90    | A    | 8/20μs (Note 7)        |
| 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 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.)

| Characteristic                                 | Symbol           | Min  | Typ | Max | Unit | Test Conditions                                |
|--|------------------|------|-----|-----|------|--|
| Reverse Standoff Voltage                       | V <sub>RWM</sub> | —    | —   | 15  | V    | —  |
| Channel Leakage Current (Note 6)               | I <sub>R</sub>   | —    | —   | 200 | nA   | V <sub>R</sub> = 15V                           |
| Forward Voltage                                | V <sub>F</sub>   | 0.6  | 0.8 | 1.2 | V    | I <sub>R</sub> = 10mA                          |
| Reverse Breakdown Voltage                      | V <sub>BR</sub>  | 15.5 | —   | —   | V    | I <sub>R</sub> = 1mA                           |
| Clamping Voltage, Positive Transients (Note 7) | V <sub>C</sub>   | —    | —   | 18  | V    | I <sub>PP</sub> = 1A, t <sub>p</sub> = 8/20μs  |
|  |                  | —    | —   | 20  | V    | I <sub>PP</sub> = 10A, t <sub>p</sub> = 8/20μs |
|  |                  | —    | —   | 25  | V    | I <sub>PP</sub> = 90A, t <sub>p</sub> = 8/20μs |
| Channel Input Capacitance (Note 8)             | C <sub>T</sub>   | —    | 700 | —   | pF   | V <sub>R</sub> = 0V, f = 1MHz                  |

- Notes:
- Device mounted on FR-4 PCB pad layout (2oz copper) as shown in Diodes Incorporated's package outline PDFs, 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.

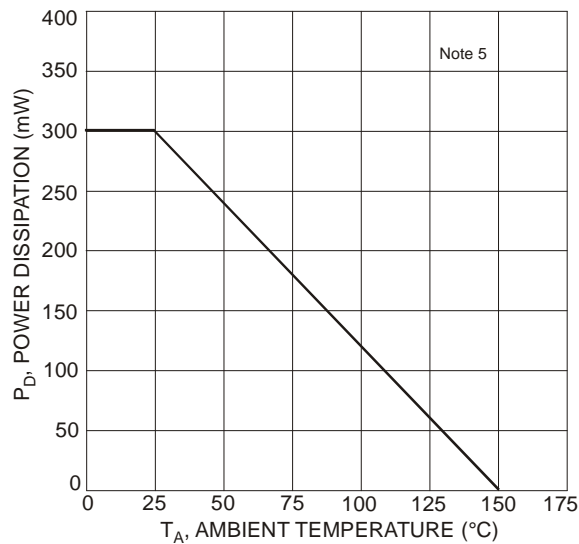


Figure 1 Power Derating Curve

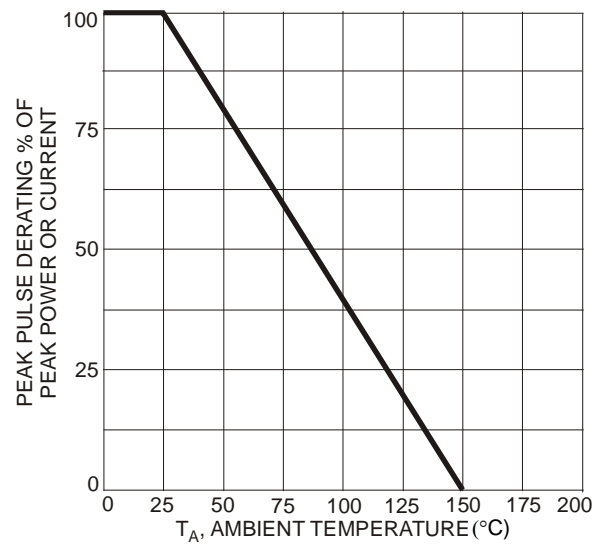
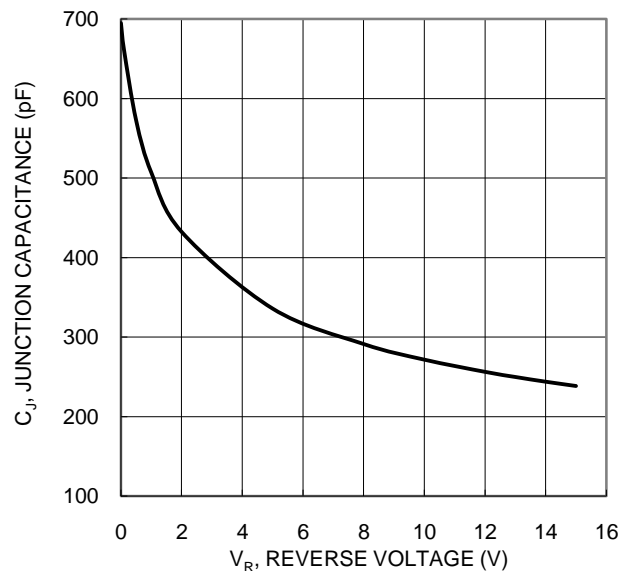
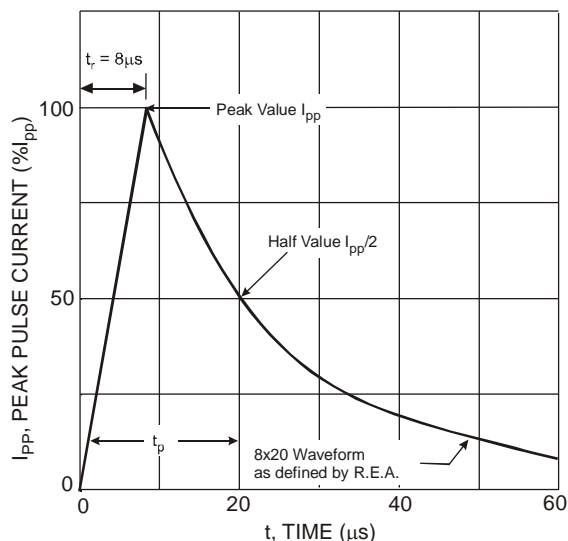


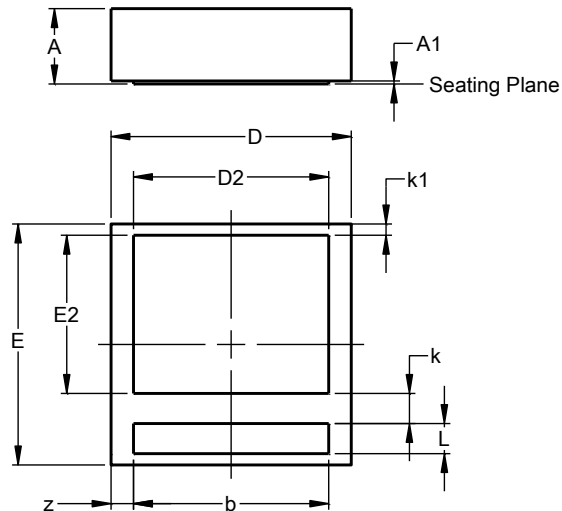
Figure 2 Pulse Derating Curve



## Package Outline Dimensions

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

### U-DFN1616-2

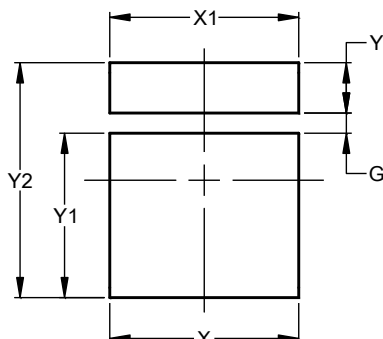


| U-DFN1616-2          |           |      |      |
|----------------------|-----------|------|------|
| Dim                  | Min       | Max  | Typ  |
| A                    | 0.47      | 0.53 | 0.50 |
| A1                   | 0.00      | 0.05 | 0.02 |
| b                    | 1.25      | 1.35 | 1.30 |
| D                    | 1.55      | 1.65 | 1.60 |
| D2                   | 1.20      | 1.40 | 1.30 |
| E                    | 1.55      | 1.65 | 1.60 |
| E2                   | 0.95      | 1.15 | 1.05 |
| k                    | 0.20 BSC  |      |      |
| k1                   | 0.075 BSC |      |      |
| L                    | 0.15      | 0.25 | 0.20 |
| z                    | 0.15 BSC  |      |      |
| All Dimensions in mm |           |      |      |

## Suggested Pad Layout

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

### U-DFN1616-2



| Dimensions | Value<br>(in mm) |
|------------|------------------|
| <b>G</b>   | 0.150            |
| <b>X</b>   | 1.400            |
| <b>X1</b>  | 1.400            |
| <b>Y</b>   | 0.375            |
| <b>Y1</b>  | 1.225            |
| <b>Y2</b>  | 1.750            |

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