# 4 CHANNEL LOW CAPACITANCE TVS DIODE ARRAY

## Product Summary

| $V_{BR\ (min)}$ | $I_{PP\ (max)}$ | $C_{T\ (typ)}$ |
|---|---|---|
| 6V | 6A | 1.0pF |

## 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

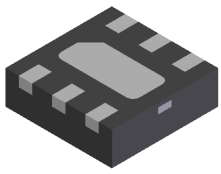
## Features

- Provides ESD Protection per IEC 61000-4-2 Standard: Air ±30kV, Contact ±30kV
- 4 Channels of ESD Protection
- Low Channel Input Capacitance
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

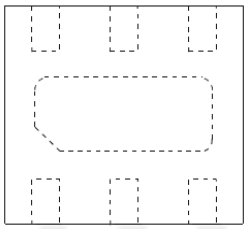
## Mechanical Data

- Case: U-DFN1616-6
- 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 e4
- Weight: 0.002 grams (Approximate)

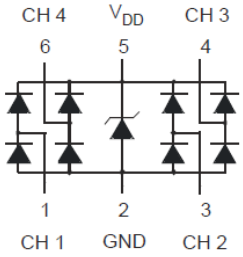
U-DFN1616-6



Bottom View



Top View



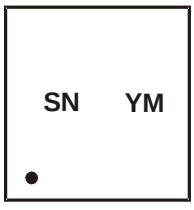

Device Schematic

## Ordering Information (Note 4)

| Product | Compliance | Marking | Reel Size (inches) | Tape Width (mm) | Quantity per Reel |
|---|---|---|---|---|---|
| DRTR5V0U4LP16-7 | Standard | SN | 7 | 8 | 3,000/Tape & Reel |

Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
2. See http://www.diodes.com 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 http://www.diodes.com.

## Marking Information




SN = Product Type Marking Code
YM = Date Code Marking
Y = Year (ex: B = 2014)
M = Month (ex: 9 = September)

Date Code Key

| Year | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|---|---|
| Code | B | C | D | E | F | G | H |

| 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 |
|---|---|---|---|---|
| Peak Pulse Current | $I_{PP}$ | 6 | A | 8/20µs (Note 7) |
| 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.)

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Conditions |
|---|---|---|---|---|---|---|
| Reverse Standoff Voltage | $V_{RWM}$ | — | — | 5.5 | V | – |
| Channel Leakage Current (Note 6) | $I_R$ | — | — | 100 | nA | $V_R$ = 5V, Any I/O to GND |
| Reverse breakdown voltage | $V_{BR}$ | 6.0 | — | — | V | IR = 1mA, from pin 5 to pin 2 |
| Clamping Voltage, Positive Transients (Note 7) | $V_C$ | — | 10 | 12 | V | $I_{PP}$ = 1A, $t_p$ = 8/20µs |
| Channel Input Capacitance (Note 8) | $C_T$ | — | 1.0 | 1.5 | pF | $V_R$ = 0V, f = 1MHz, Any I/O to GND |
| Dynamic Resistance | $R_{DYN}$ | — | 0.9 | — | Ω | $I_{PP}$ = 1A, $t_p$ = 8/20µs |

Notes:
5. Device mounted on FR-4 PCB pad layout (2oz copper) as shown on Diodes, Inc. suggested pad layout AP02001, which can be found on our website at http://www.diodes.com.
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.
9. For information on the impact of Diodes' USB 2.0 compatible ESD protectors on signal integrity including eye diagram plots, please refer to AN77 at the following URL: http://www.diodes.com/destools/appnote_dnote.html.

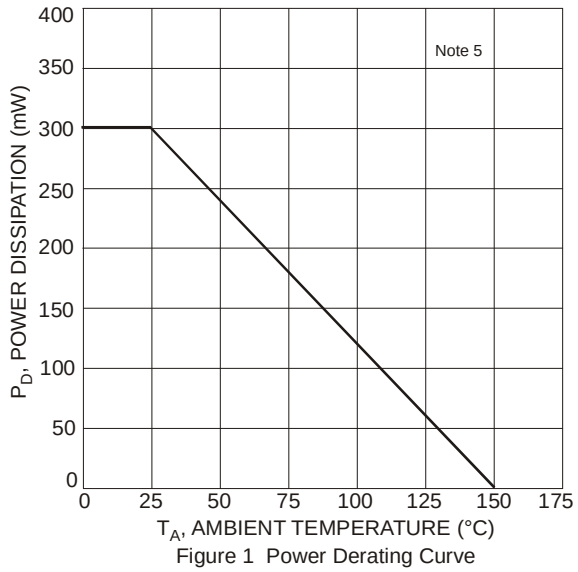


Figure 1 Power Derating Curve

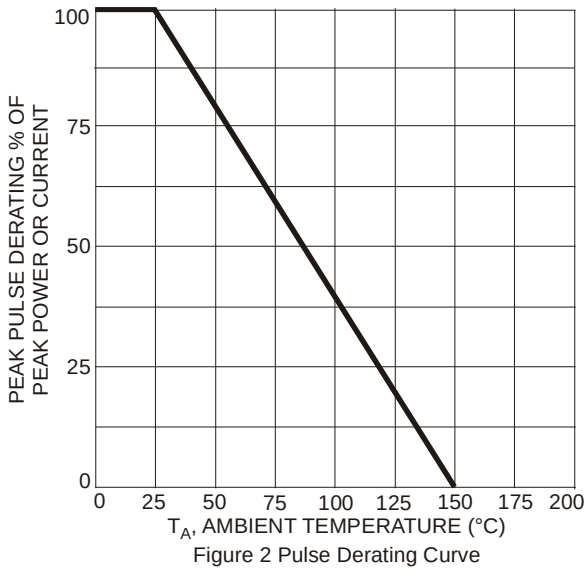


Figure 2 Pulse Derating Curve

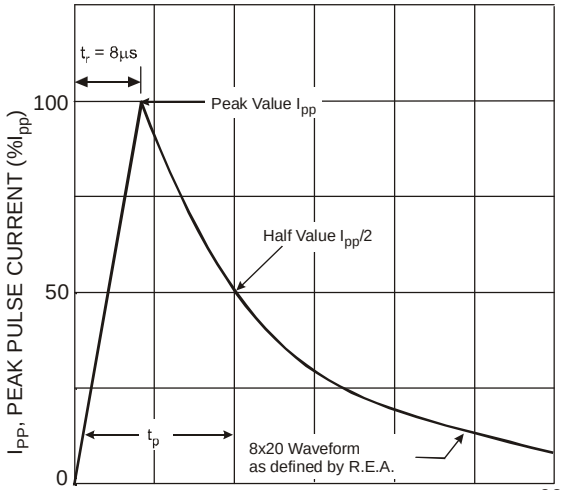


Figure 3 Pulse Waveform

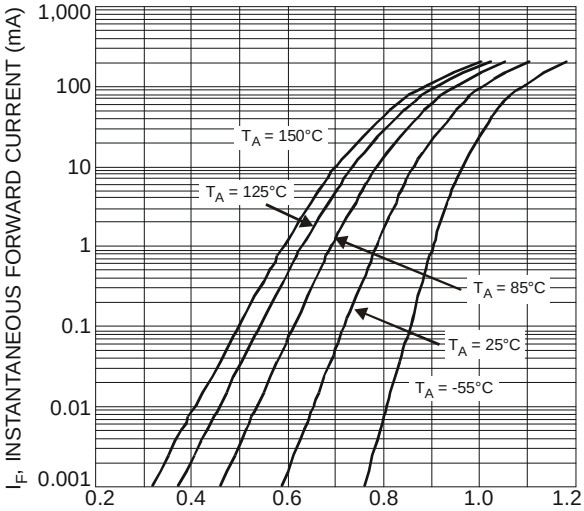


Figure 4 Typical Forward Characteristics

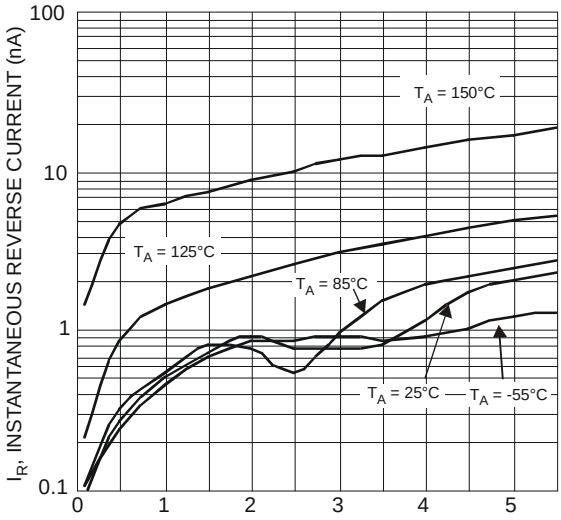


Figure 5 Typical Reverse Characteristics

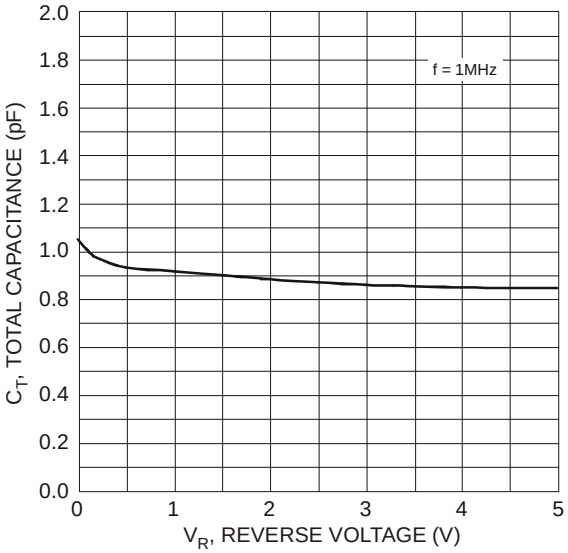
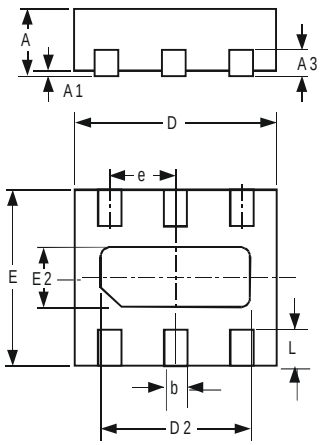


Figure 6 Typical Total Capacitance vs. Reverse Voltage

## Package Outline Dimensions

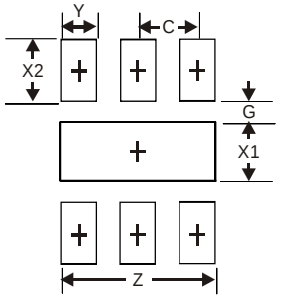
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for the latest version.




| U-DFN1616-6 | | | |
|---|---|---|---|
| **Dim** | **Min** | **Max** | **Typ** |
| **A** | 0.545 | 0.605 | 0.575 |
| **A1** | 0 | 0.05 | 0.02 |
| **A3** | — | — | 0.13 |
| **b** | 0.20 | 0.30 | 0.25 |
| **D** | 1.55 | 1.675 | 1.60 |
| **D2** | 1.10 | 1.30 | 1.20 |
| **E** | 1.55 | 1.675 | 1.60 |
| **e** | — | — | 0.50 |
| **E2** | 0.30 | 0.50 | 0.40 |
| **L** | 0.275 | 0.375 | 0.325 |
| **All Dimensions in mm** | | | |

## Suggested Pad Layout

Please see AP02001 at http://www.diodes.com/datasheets/ap02001.pdf for the latest version.




| Dimensions | Value (in mm) |
|---|---|
| **Z** | 1.3 |
| **G** | 0.175 |
| **X1** | 0.50 |
| **X2** | 0.525 |
| **Y** | 0.30 |
| **C** | 0.50 |