

**2 CHANNEL LOW CAPACITANCE TVS DIODE ARRAY**
**Product Summary**

VBR (Min)	IPP (Max)	CT (Typ)
6V	6A	1.0pF

**Description**

The low capacitance electrostatic discharge (ESD) protection diode is designed to protect two high-speed data lines and signal lines from the damage caused by ESD and other transients. The DRTR5V0U2SQ incorporates two channels of low capacitance diodes to ensure signal line protection even if no supply voltage is available.

**Applications**

- USB 2.0 ports
- Video interfaces (DVI)
- High-Definition Multimedia Interface (HDMI™)
- Digital cameras



Top View

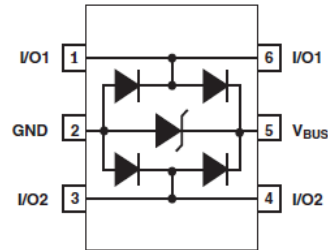
**Features**

- Provides ESD Protection per IEC 61000-4-2 Standard: Air ±25kV, Contact ±25kV
- 2 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)**
- **The DRTR5V0U2SQ is suitable for automotive applications requiring specific change control; this part is AEC-Q101 qualified, PPAP capable, and manufactured in IATF 16949 certified facilities.**

<https://www.diodes.com/quality/product-definitions/>

**Mechanical Data**

- Package: SOT26
- Package Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish Annealed Over Copper Leadframe (Lead Free Plating) Solderable per MIL-STD-202, Method 208 Ⓔ
- Weight: 0.016 grams (Approximate)

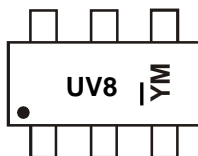


Device Schematic

**Ordering Information** (Note 4)

Orderable Part Number	Package	Marking	Reel Size (inches)	Tape Width (mm)	Packing	
					Qty.	Carrier
DRTR5V0U2SQ-7	SOT26	UV8	7	8	3,000	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**
**SOT26**


UV8 = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year (ex: L = 2024)  
 M = Month (ex: 9 = September)  
 "—" = Made in Chengdu

**Date Code Key**

Year	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Code	L	M	N	P	R	S	T	U	V	W	X	Y

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 Current	I <sub>PP</sub>	6	A	8/20μs (Note 7)
ESD Protection – Contact Discharge	V <sub>ESD_Contact</sub>	±25	kV	Standard IEC 61000-4-2
ESD Protection – Air Discharge	V <sub>ESD_Air</sub>	±25	kV	Standard IEC 61000-4-2
ESD Protection – 1000 Contact Discharges (Open Alliance Spec)	V <sub>ESD_Contact 1k</sub>	±25	kV	Standard IEC 61000-4-2
ESD Protection – Contact Discharge (ISO Spec)	V <sub>ESD_Contact 2</sub>	±25	kV	ISO 10605, 150pF, 330Ω
ESD Protection – Air Discharge (ISO Spec)	V <sub>ESD_Air 2</sub>	±25	kV	ISO 10605, 150pF, 330Ω
ESD Protection – Contact Discharge (ISO Spec)	V <sub>ESD_Contact 3</sub>	±25	kV	ISO 10605, 330pF, 330Ω
ESD Protection – Air Discharge (ISO Spec)	V <sub>ESD_Air 3</sub>	±25	kV	ISO 10605, 330pF, 330Ω

**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>	—	—	5.5	V	—
Channel Leakage Current (Note 6)	I <sub>R</sub>	—	1	100	nA	V <sub>R</sub> = 5V, Any I/O to GND
Reverse Breakdown Voltage	V <sub>BR</sub>	6.0	—	9.0	V	I <sub>R</sub> = 1mA, from pin 5 to pin 2
Clamping Voltage, Positive Transients (Note 7)	V <sub>C</sub>	—	10	12	V	I <sub>PP</sub> = 1A, t <sub>P</sub> = 8/20μs
			16.5	19		I <sub>PP</sub> = 6A, t <sub>P</sub> = 8/20μs
Channel Input Capacitance (Note 8)	C <sub>T</sub>	—	1.0	1.5	pF	V <sub>R</sub> = 0V, f = 1MHz, Any I/O to GND
Dynamic Resistance	R <sub>DYN</sub>	—	0.9	—	Ω	I <sub>PP</sub> = 1A, t <sub>P</sub> = 8/20μs

- 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.
  - For information on the impact of Diodes Incorporated's USB 2.0 compatible ESD protectors on signal integrity including eye diagram plots, please refer to AN77 at the following URL: <https://www.diodes.com/assets/App-Note-Files/AN77.pdf>.

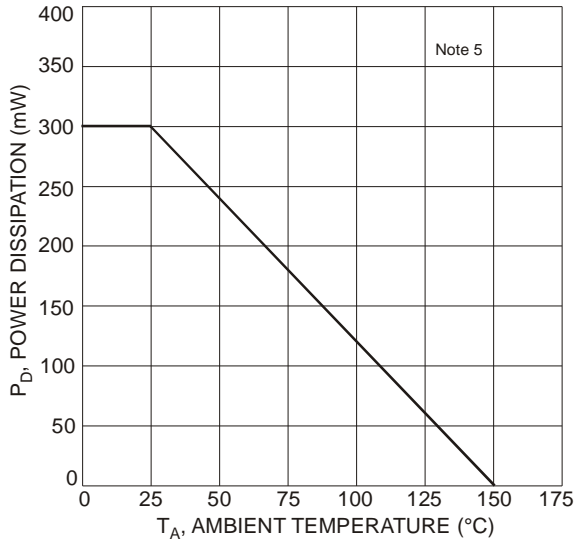


Figure 1 Power Derating Curve

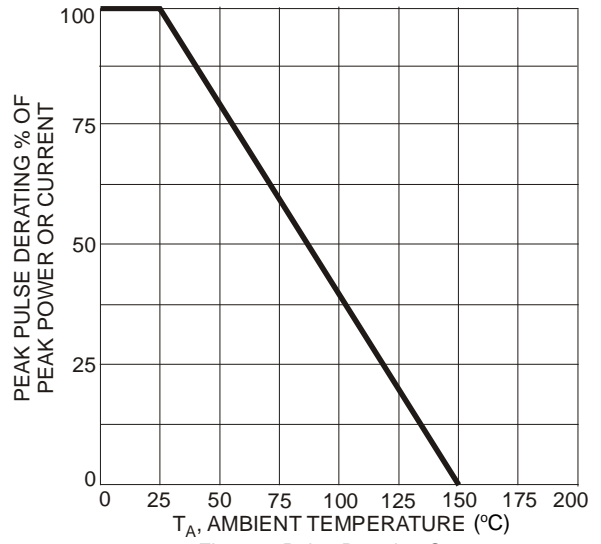


Figure 2 Pulse Derating Curve

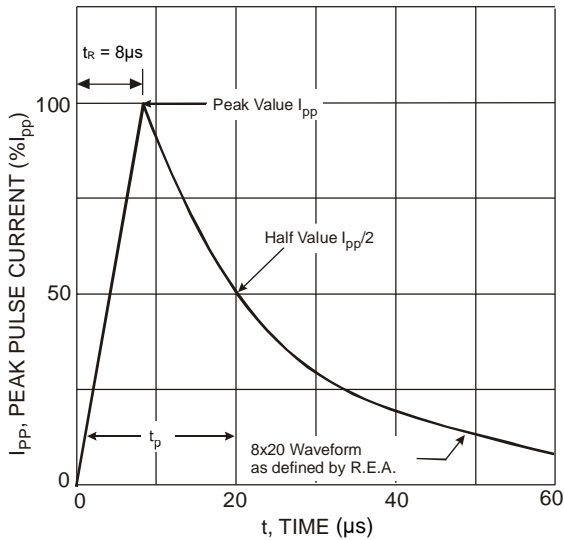


Figure 3 Pulse Waveform

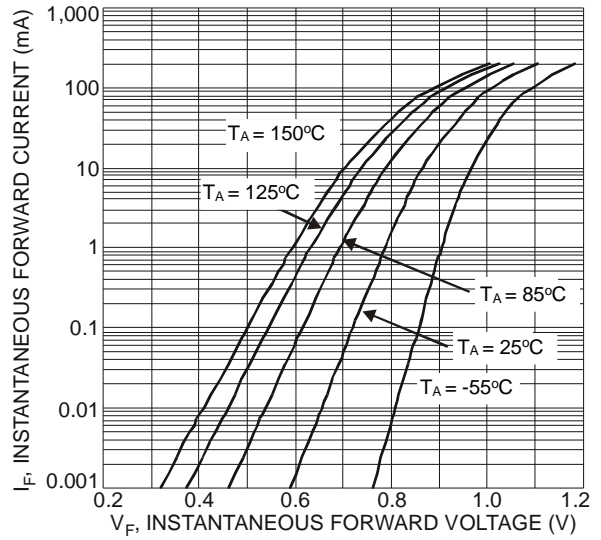


Figure 4 Typical Forward Characteristics

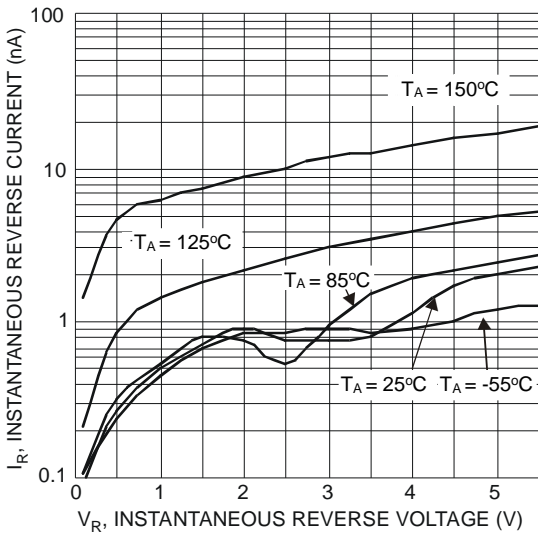


Figure 5 Typical Reverse Characteristics

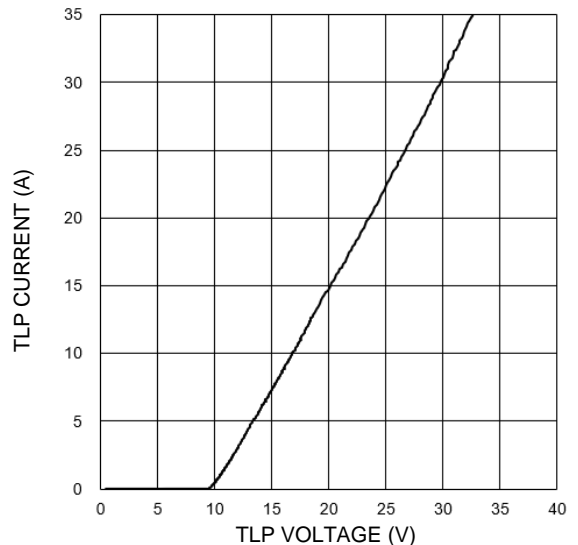
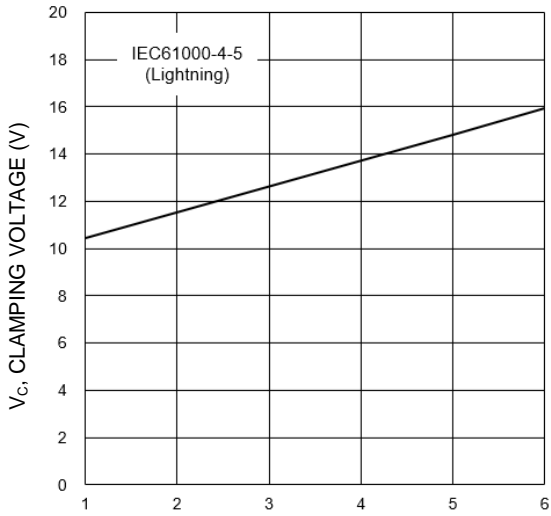


Figure 6 TLP Curve, Pin5 to Pin2 ( $t_p = 100\text{ns}$ )

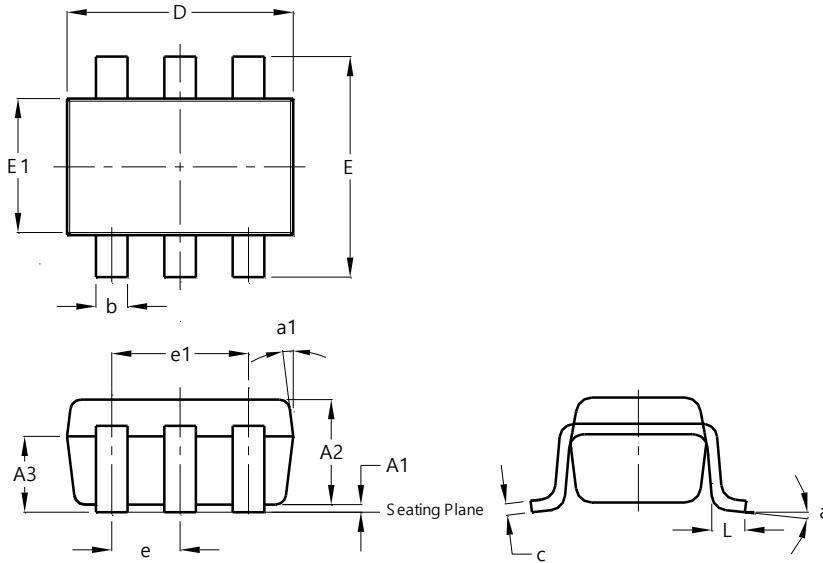


CURRENT FROM PIN I/O to GND (A)  
Figure 7 Clamping Voltage Characteristic ( $t_p = 8/20\mu s$ )

**Package Outline Dimensions**

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

**SOT26**

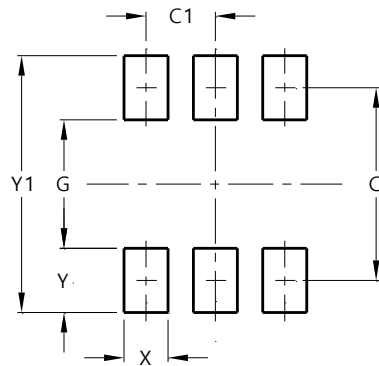


SOT26			
Dim	Min	Max	Typ
A1	0.013	0.10	0.05
A2	1.00	1.30	1.10
A3	0.70	0.80	0.75
b	0.35	0.50	0.38
c	0.10	0.20	0.15
D	2.90	3.10	3.00
e	-	-	0.95
e1	-	-	1.90
E	2.70	3.00	2.80
E1	1.50	1.70	1.60
L	0.35	0.55	0.40
a	-	-	8°
a1	-	-	7°
<b>All Dimensions in mm</b>			

**Suggested Pad Layout**

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

**SOT26**



Dimensions	Value (in mm)
C	2.40
C1	0.95
G	1.60
X	0.55
Y	0.80
Y1	3.20

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