

**4 CHANNEL LOW CAPACITANCE TVS DIODE ARRAY**
**Features**

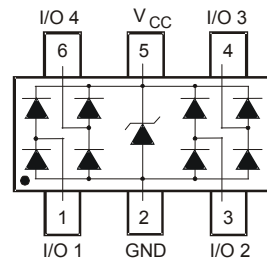
- IEC 61000-4-2 (ESD): Air  $\pm 30\text{kV}$ , Contact  $\pm 25\text{kV}$
- 4 Channels of ESD Protection
- Low Channel Input Capacitance of 1.0pF Typical
- Typically Used at High Speed Ports such as USB 2.0, IEEE1394, Serial ATA, DVI, HDMI, PCI
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

**Mechanical Data**

- Case: TSOT26
- Case 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 Alloy 42 leadframe (Lead Free Plating). Solderable per MIL-STD-202, Method 208 **e3**
- Weight: 0.013 grams (approximate)



Top View

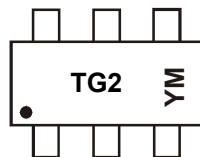


Device Schematic

**Ordering Information** (Note 4)

Product	Compliance	Marking	Reel size(inches)	Tape width(mm)	Quantity per reel
DRTR5V0U4TS-7	AEC-Q101	TG2	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/quality/lead\\_free.html](http://www.diodes.com/quality/lead_free.html) 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/products/packages.html>.

**Marking Information**


TG2 = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year (ex: A = 2013)  
 M = Month (ex: 9 = September)

## Date Code Key

Year	2013	2014	2015	2016	2017	2018	2019
Code	A	B	C	D	E	F	G

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** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

Characteristic	Symbol	Value	Unit	Conditions
Peak Pulse Current	$I_{PP}$	5	A	8/20 $\mu\text{s}$ , Per Figure 3
ESD Protection – Contact Discharge	$V_{ESD\_Contact}$	$\pm 25$	kV	Standard IEC 61000-4-2
ESD Protection – Air Discharge	$V_{ESD\_Air}$	$\pm 30$	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 (Note 5)	$R_{\theta JA}$	417	$^\circ\text{C/W}$
Operating and Storage Temperature Range	$T_J, T_{STG}$	-65 to +150	$^\circ\text{C}$

**Electrical Characteristics** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions
Reverse Standoff Voltage	$V_{RWM}$	—	—	5.5	V	—
Channel Leakage Current (Note 6, 7)	$I_R$	—	1	100	nA	$V_R = 3\text{V}$
Reverse breakdown voltage	$V_{BR}$	6.0	—	9.0	V	$I_R = 1\text{mA}$ , from pin 5 to pin 2
Forward Voltage	$V_F$	—	0.8	—	V	$I_F = 8\text{mA}$
Clamping Voltage, Positive Transients	$V_{CL1}$	—	10.0	—	V	$I_{PP} = 1\text{A}$ , $t_p = 8/20\mu\text{s}$ , I/O to GND
Clamping Voltage, Negative Transients	$V_{CL2}$	—	-1.7	—	V	$I_{PP} = -1\text{A}$ , $t_p = 8/20\mu\text{s}$ , I/O to GND
Clamping Voltage, Positive Transients	$V_{CL1}$	—	14.5	—	V	$I_{PP} = 5\text{A}$ , $t_p = 8/20\mu\text{s}$ , I/O to GND
Clamping Voltage, Negative Transients	$V_{CL2}$	—	-5.0	—	V	$I_{PP} = -5\text{A}$ , $t_p = 8/20\mu\text{s}$ , I/O to GND
Dynamic Resistance	$R_{DYN}$	—	0.9	—	$\Omega$	$I_{PP} = 1\text{A}$ , $t_p = 8/20\mu\text{s}$
I/O to GND Capacitance	$C_{(I/O-GND)}$	—	1.0	1.5	pF	$V_{(I/O-GND)} = 0\text{V}$ , $f = 1\text{MHz}$
I/O to I/O Capacitance	$C_{(I/O-I/O)}$	—	0.6	—	pF	$V_{(I/O-I/O)} = 0\text{V}$ , $f = 1\text{MHz}$

- Notes:
- 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>.
  - Short duration pulse test used to minimize self-heating effect.
  - Measured from pin 1, 3, 4, 5 and 6 to GND.
  - 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](http://www.diodes.com/destools/appnote_dnote.html)

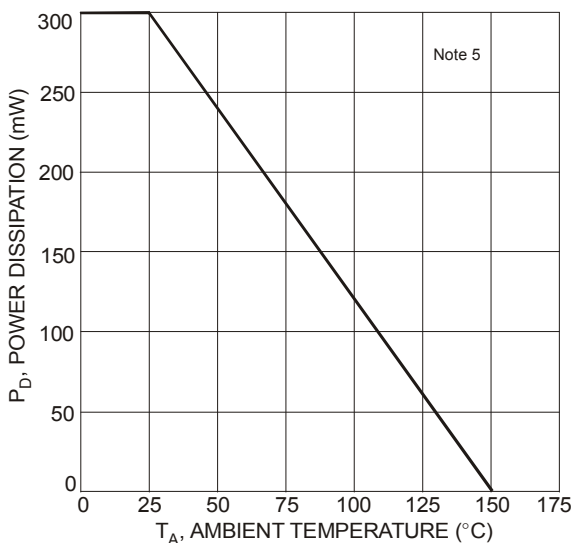


Figure 1 Power Derating Curve

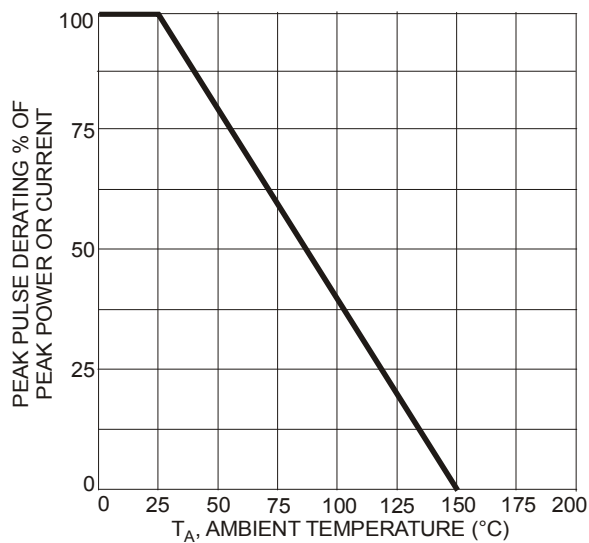


Figure 2 Pulse Derating Curve

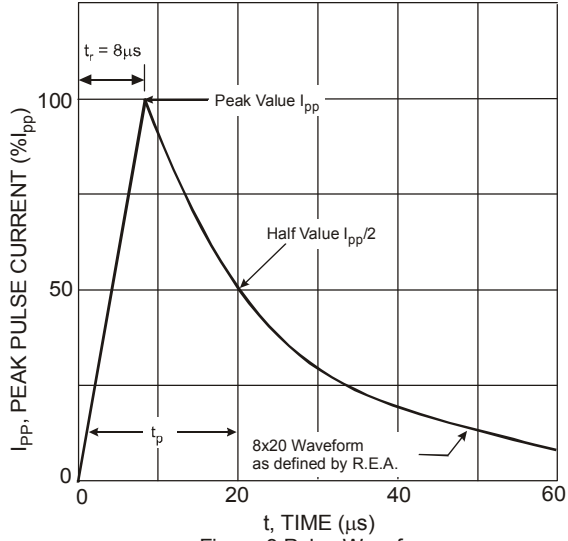


Figure 3 Pulse Waveform

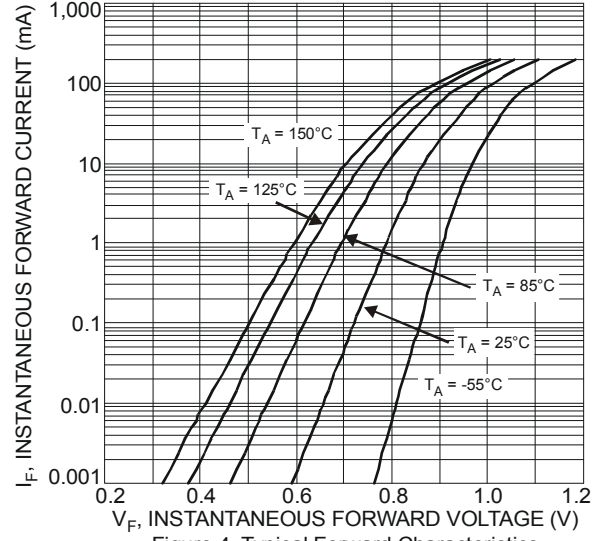


Figure 4 Typical Forward Characteristics

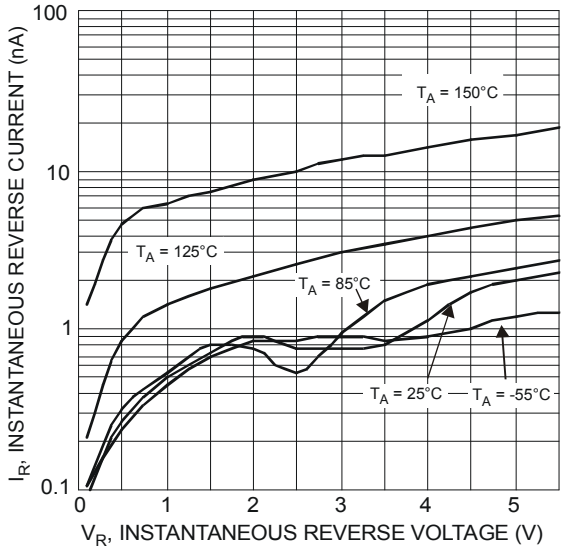


Figure 5 Typical Reverse Characteristics

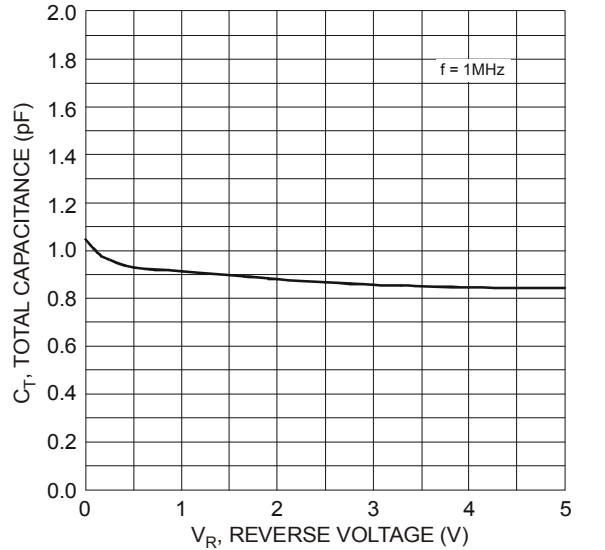


Figure 6 Typical Total Capacitance vs. Reverse Voltage

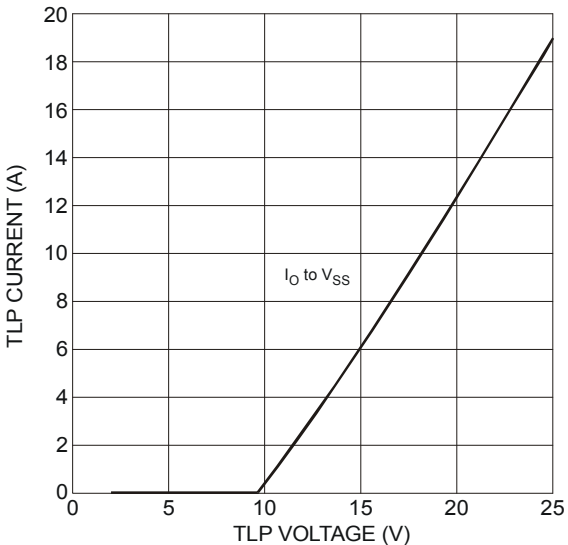
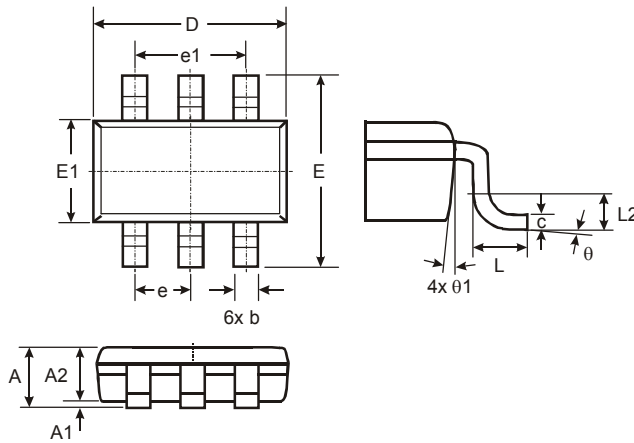


Figure 7 Transmission Line Pulsing (TLP) Current vs. Voltage

## Package Outline Dimensions

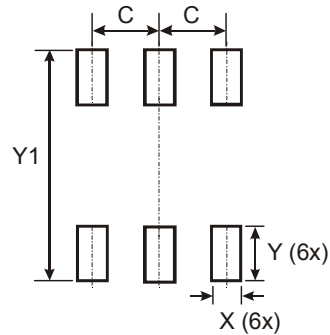
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.



TSOT26			
Dim	Min	Max	Typ
A	–	1.00	–
A1	0.01	0.10	–
A2	0.84	0.90	–
D	–	–	2.90
E	–	–	2.80
E1	–	–	1.60
b	0.30	0.45	–
c	0.12	0.20	–
e	–	–	0.95
e1	–	–	1.90
L	0.30	0.50	–
L2	–	–	0.25
θ	0°	8°	4°
θ1	4°	12°	–
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)
C	0.950
X	0.700
Y	1.000
Y1	3.199

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