

**4 CHANNEL LOW CAPACITANCE TVS DIODE ARRAY**

**Features**

- Low Clamping Voltage
- Typical 9V at 10A 100ns, TLP
- Typical 9V at 10A 8μs/20μs
- IEC 61000-4-2 (ESD): Air – ±30kV, Contact – ±30kV
- IEC 61000-4-4 (EFT): 60A(5/50ns, I/O to V<sub>SS</sub>)
- IEC 61000-4-5 (Lightning): ±10A
- 4 Channels of ESD protection
- Low Channel Input Capacitance of 1.2pF Typical
- TLP Dynamic Resistance: 0.25Ω
- Typically Used for High Speed Ports such as USB 2.0, IEEE1394, VGA, Laptop and Personal Computers, Flat Panel Displays, Video Graphics Displays, SIM Ports
- Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)
- Halogen and Antimony Free. "Green" Device (Note 3)

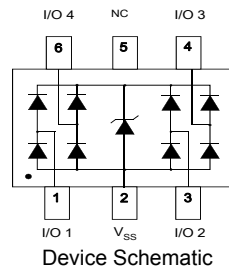
**Mechanical Data**

- Case: SOT26
- 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 Copper leadframe (Lead Free Plating). Solderable per MIL-STD-202, Method 208③
- Weight: 0.016 grams (approximate)

SOT26



Top View

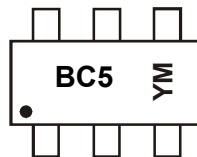


**Ordering Information** (Note 4)

Product	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
DT2042-04SO-7	Standard	BC5	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**



BC5 = 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
Code	A	B	C	D	E	F

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, per IEC 61000-4-5	$I_{PP}$	$\pm 10$	A	I/O to $V_{SS}$ , 8/20 $\mu\text{s}$
Peak Pulse Power, per IEC 61000-4-5	$P_{PP}$	105	W	I/O to $V_{SS}$ , 8/20 $\mu\text{s}$
Operating Voltage (DC)	$V_{DC}$	5.5	V	I/O to $V_{SS}$
ESD Protection – Contact Discharge, per IEC61000-4-2	$V_{ESD\_contact}$	$\pm 30$	kV	I/O to $V_{SS}$
ESD Protection – Air Discharge, per IEC 61000-4-2	$V_{ESD\_air}$	$\pm 30$	kV	I/O to $V_{SS}$
Operating Temperature	$T_{OP}$	-55 to +85	$^\circ\text{C}$	—
Storage Temperature	$T_{STG}$	-55 to +150	$^\circ\text{C}$	—

**Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Power Dissipation Typical (Note 5)	$P_D$	300	mW
Thermal Resistance, Junction to Ambient Typical (Note 5)	$R_{\theta JA}$	417	$^\circ\text{C/W}$

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions
Reverse Working Voltage	$V_{RWM}$	—	—	5.5	V	I/O to $V_{SS}$
Reverse Current(Note6)	$I_R$	—	—	1	$\mu\text{A}$	$V_R = 5\text{V}$ , any I/O to $V_{SS}$
Reverse Breakdown Voltage	$V_{BR}$	6	—	9	V	$I_R = 1\text{mA}$ , I/O to $V_{SS}$
Forward Clamping Voltage	$V_F$	-1.0	-0.8	—	V	$I_F = -15\text{mA}$ , I/O to $V_{SS}$
Holding Voltage	$V_H$	5.5	—	—	V	—
Trigger Voltage	$V_{TRIG}$	—	9	9.5	V	—
Reverse Clamping Voltage (Note 7)	$V_{C\_5A}$	—	7.5	—	V	$I_{PP} = 5\text{A}$ , I/O to $V_{SS}$ , 8/20 $\mu\text{s}$
Reverse Clamping Voltage (Note 7)	$V_{C\_10A}$	—	9	10.5	V	$I_{PP} = 10\text{A}$ , I/O to $V_{SS}$ , 8/20 $\mu\text{s}$
ESD Clamping Voltage	$V_{ESD}$	—	9	—	V	TLP, 10A, $t_p = 100\text{ns}$ , I/O to $V_{SS}$ , per Fig. 7
Dynamic Resistance	$R_{DIF}$	—	0.25	—	$\Omega$	TLP, 10A, $t_p = 100\text{ns}$ , I/O to $V_{SS}$
Channel Input Capacitance	$C_{I/O}$	—	1.2	1.5	pF	$V_R = 2.5\text{V}$ , $f = 1\text{MHz}$
Variation of Channel Input Capacitance	$\Delta C_{I/O}$	—	0.02	—	pF	$V_{SS} = 0\text{V}$ , I/O = 2.5V, $f = 1\text{MHz}$ , $T = 25^\circ\text{C}$ , I/O_x to $V_{SS}$ – I/O_y to $V_{SS}$

- 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.
  - Clamping voltage value is based on an 8x20 $\mu\text{s}$  peak pulse current ( $I_{pp}$ ) waveform.

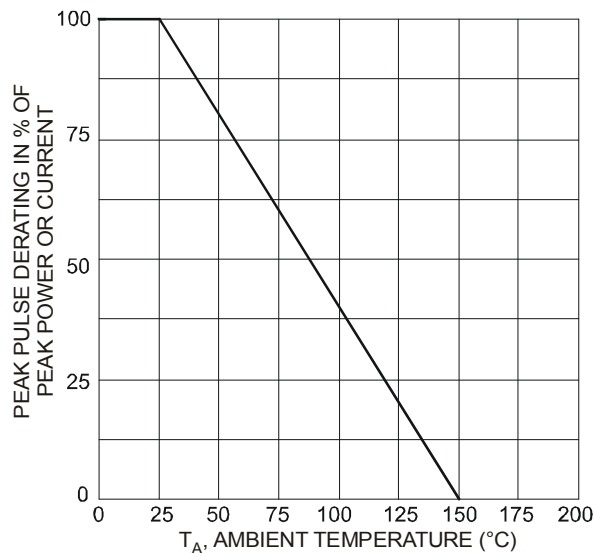


Figure 1 Pulse Derating Curve

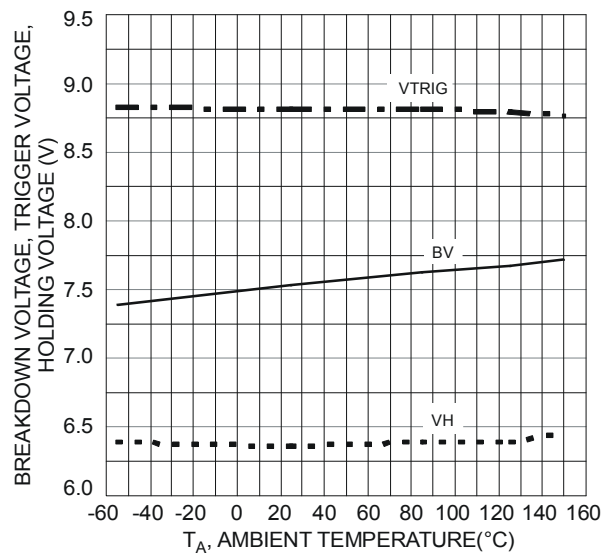


Figure 2 BV, Trigger Voltage, Holding Voltage vs. Ambient Temperature

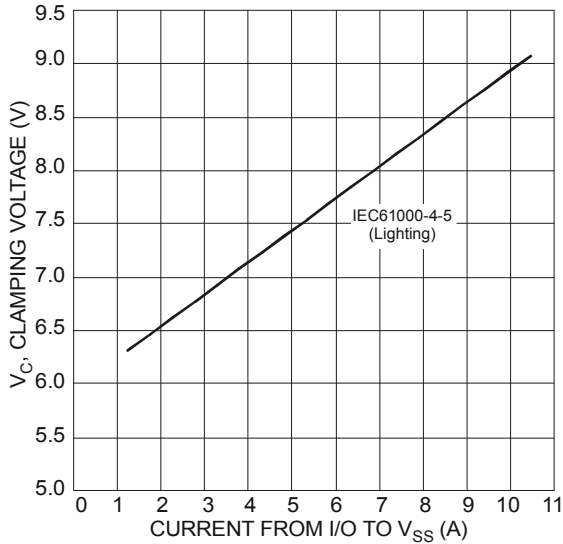


Figure 3 Clamping Voltage Characteristic

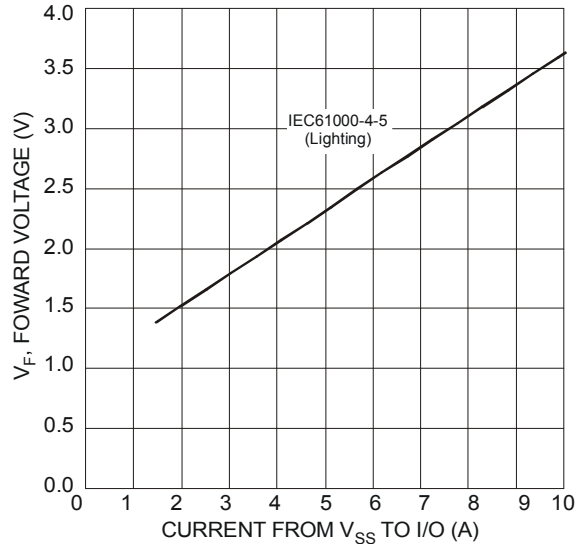


Figure 4 Forward Voltage Characteristic

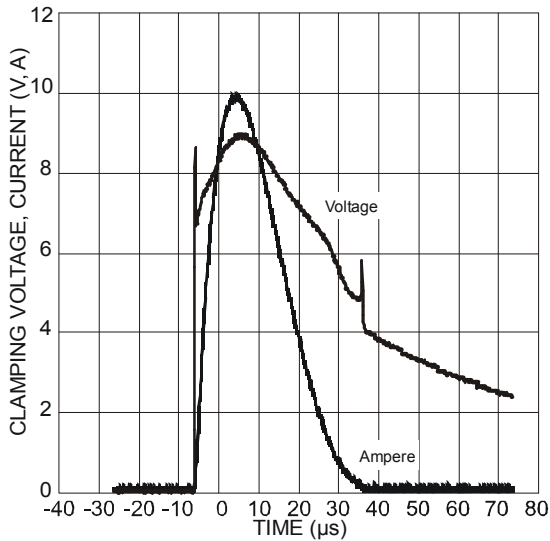


Figure 5 Waveform of Clamping Voltage, Current vs. Time (8/20µs, I/O to V<sub>SS</sub>)

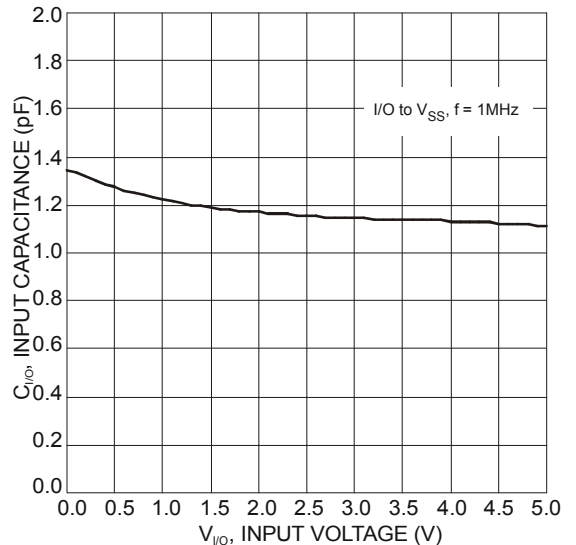


Figure 6 Input Capacitance vs. Input Voltage

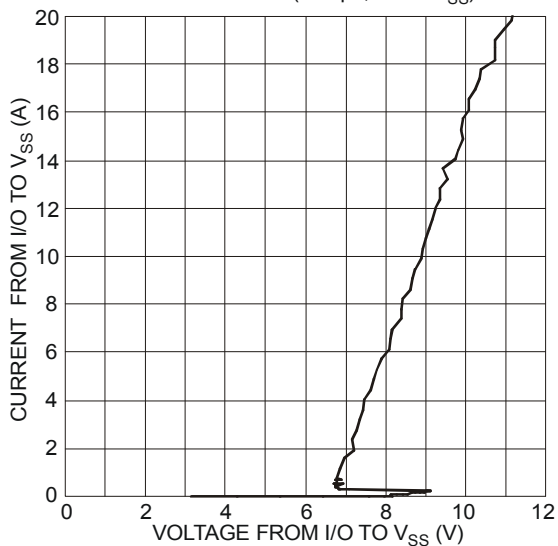
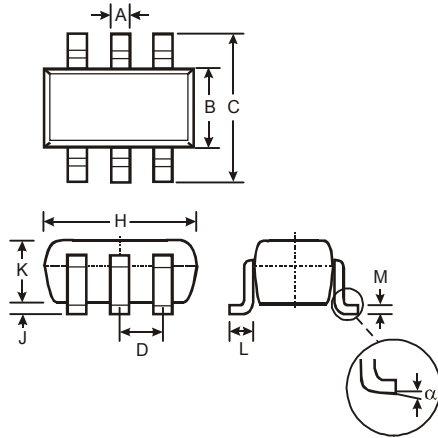


Figure 7 Current vs. Voltage

**Package Outline Dimensions**

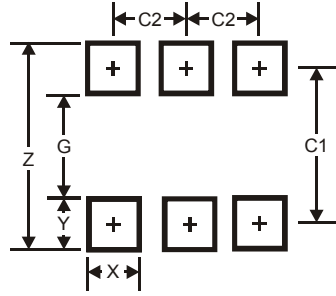
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.



SOT26			
Dim	Min	Max	Typ
A	0.35	0.50	0.38
B	1.50	1.70	1.60
C	2.70	3.00	2.80
D	—	—	0.95
H	2.90	3.10	3.00
J	0.013	0.10	0.05
K	1.00	1.30	1.10
L	0.35	0.55	0.40
M	0.10	0.20	0.15
α	0°	8°	—
<b>All Dimensions in mm</b>			

**Suggested Pad Layout**

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



Dimensions	Value (in mm)
Z	3.20
G	1.60
X	0.55
Y	0.80
C1	2.40
C2	0.95

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