

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_{ss})
- 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)

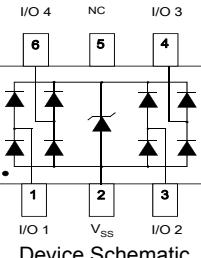
SOT26



Top View

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 208(e3)
- Weight: 0.016 grams (approximate)



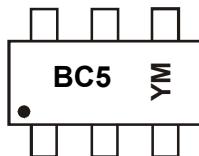
Device Schematic

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 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}	± 10	A	I/O to V_{SS} , 8/20 μs
Peak Pulse Power, per IEC 61000-4-5	P_{PP}	105	W	I/O to V_{SS} , 8/20 μs
Operating Voltage (DC)	V_{DC}	5.5	V	I/O to V_{SS}
ESD Protection – Contact Discharge, per IEC61000-4-2	$V_{ESD_contact}$	± 30	kV	I/O to V_{SS}
ESD Protection – Air Discharge, per IEC 61000-4-2	V_{ESD_air}	± 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	$^\circ\text{C}/\text{W}$

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 (Note 6)	I_R	—	—	1	μA	$V_R = 5\text{V}$, 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 μs
Reverse Clamping Voltage (Note 7)	V_{C_10A}	—	9	10.5	V	$I_{PP} = 10\text{A}$, I/O to V_{SS} , 8/20 μs
ESD Clamping Voltage	V_{ESD}	—	9	—	V	TLP, 10A, tp = 100 ns, I/O to V_{SS} , per Fig. 7
Dynamic Resistance	R_{DIF}	—	0.25	—	Ω	TLP, 10A, tp = 100 ns, I/O to V_{SS}
Channel Input Capacitance	$C_{I/O}$	—	1.2	1.5	pF	$V_R = 2.5\text{V}$, f = 1MHz
Variation of Channel Input Capacitance	$\Delta C_{I/O}$	—	0.02	—	pF	$V_{SS} = 0\text{V}$, I/O = 2.5V, f = 1MHz, T = 25°C, I/O_x to V_{SS} – I/O_y to V_{SS}

- 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 8x20 μs peak pulse current (I_{PP}) waveform.

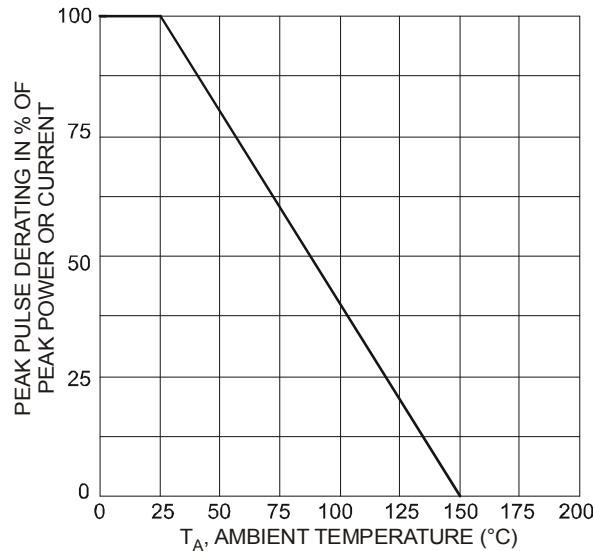


Figure 1 Pulse Derating Curve

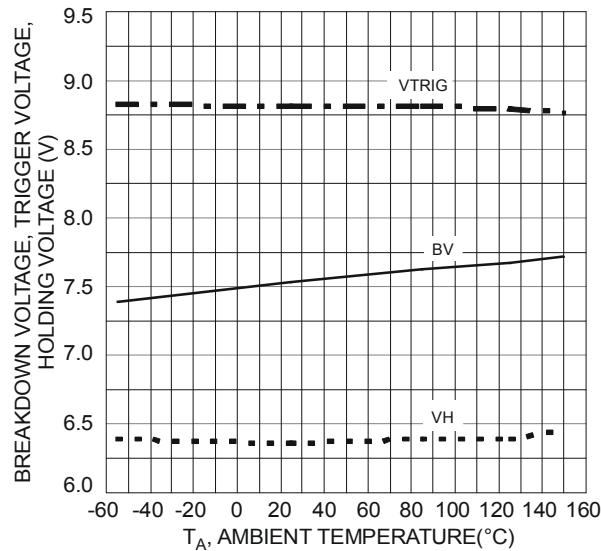


Figure 2 BV, Trigger Voltage, Holding Voltage vs. Ambient Temperature

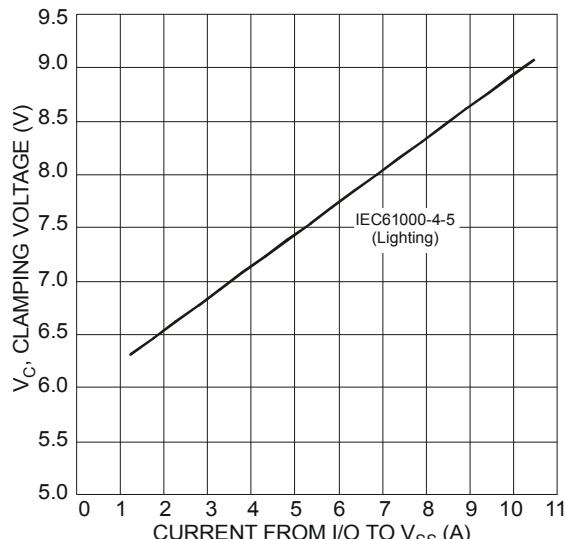


Figure 3 Clamping Voltage Characteristic

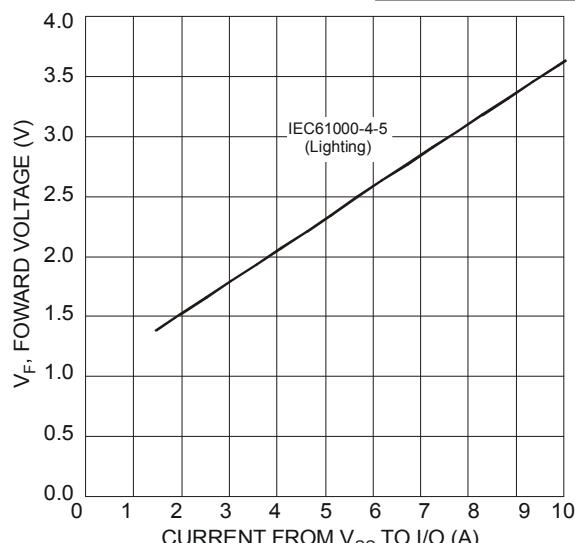


Figure 4 Forward Voltage Characteristic

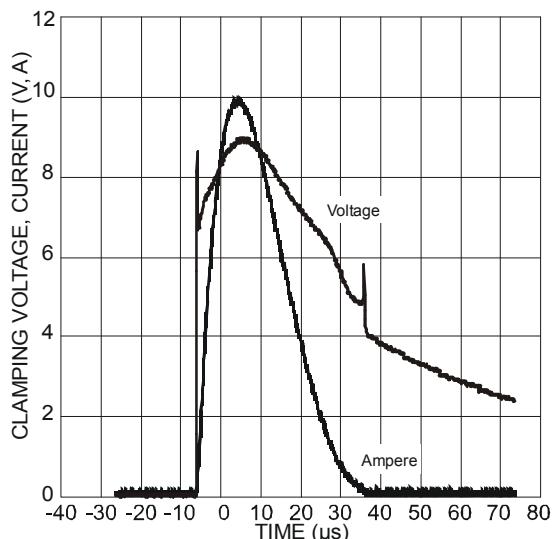


Figure 5 Waveform of Clamping Voltage, Current vs. Time (8/20μs, I/O to V_{ss})

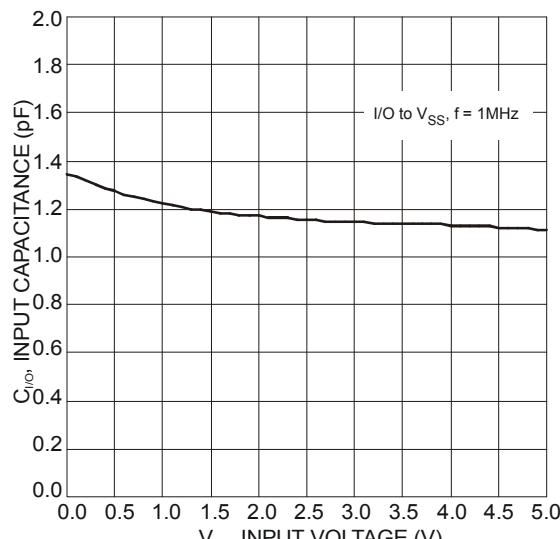


Figure 6 Input Capacitance vs. Input Voltage

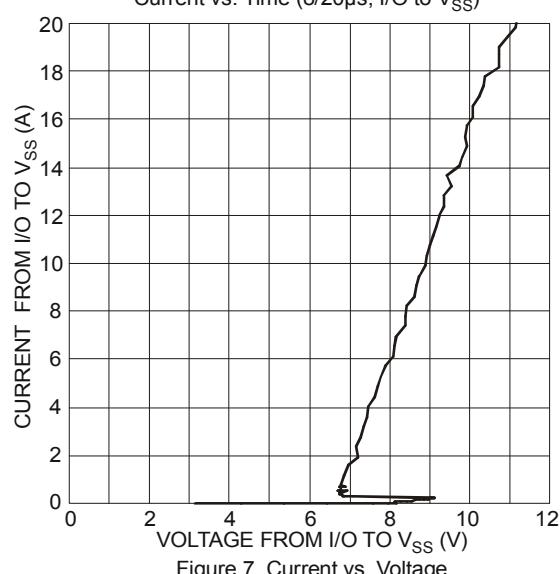
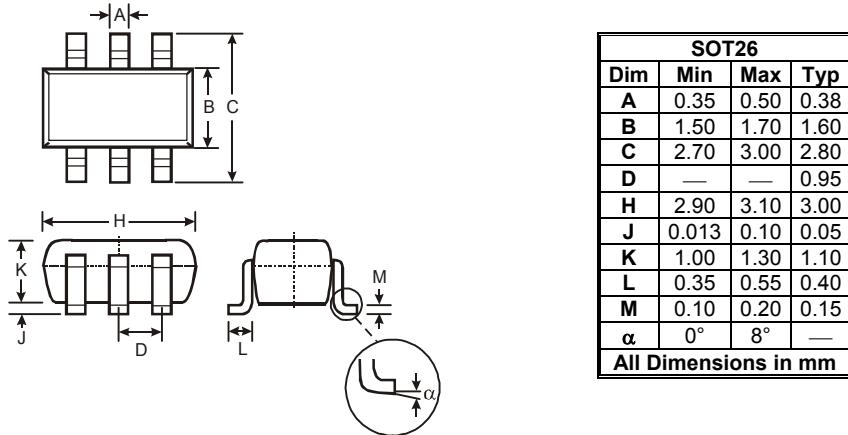


Figure 7 Current vs. Voltage

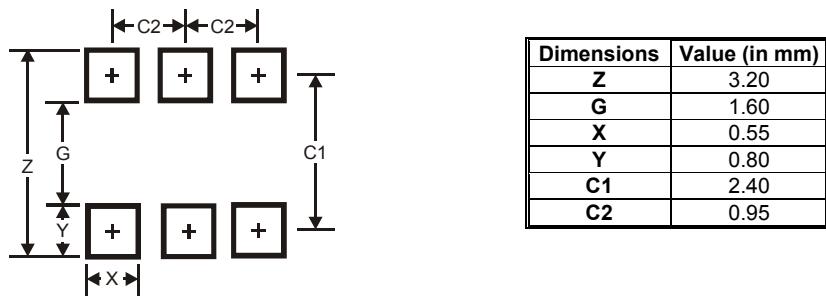
Package Outline Dimensions

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



Suggested Pad Layout

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



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