4 CHANNEL LOW CAPACITANCE TVS DIODE ARRAY

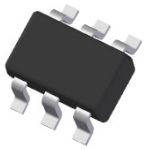
Features

- Low Clamping Voltage, I/O to V_{SS}
- Typical 9V at 10A 100ns, TLP
- Typical 7.7V at 6A 8µs/20µs
- IEC 61000-4-2 (ESD): Air – +27/-19kV, Contact – ±16kV
- IEC 61000-4-4 (EFT): Level-4
- IEC 61000-4-5 (Lightning): ±6A
- 4 Channels of ESD protection
- Low Channel Input Capacitance of 0.65pF Typical
- TLP Dynamic Resistance: 0.25Ω
- Typically Used for High Speed Ports such as USB 2.0, IEEE1394, HDMI, 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)**

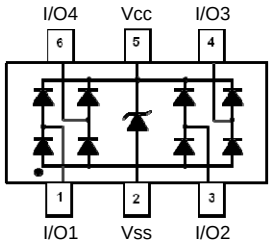
Mechanical Data

- 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 208 e3
- Weight: 0.016 grams (approximate)

SOT26



Top View



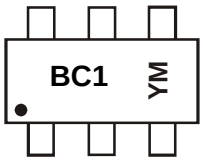
Device Schematic

Ordering Information (Note 4)

Product	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
DT1042-04SO-7	Standard	BC1	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



BC1 = 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°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit	Conditions
Peak Pulse Current, per IEC 61000-4-5	$I_{PP\_I/O}$	±6	A	I/O to V_{SS}, 8/20 µs
Peak Pulse Power, per IEC 61000-4-5	$P_{PP\_I/O}$	55	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 IEC 61000-4-2	$V_{ESD\_I/O}$	±16	kV	I/O to V_{SS}
ESD Protection – Air Discharge, per IEC 61000-4-2	$V_{ESD\_I/O}$	+27/-19	kV	I/O to V_{SS}
Operating Temperature	T_{OP}	-55 to +85	°C	___
Storage Temperature	T_{STG}	-55 to +150	°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	°C/W

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions
Reverse Working Voltage	V_{RWM}	—	—	5.0	V	V_{CC} to V_{SS}
Reverse Current (Note 6)	$I_{R(Vcc\ to\ Vss)}$	—	—	1.0	µA	$V_R = V_{RWM}$ = 5V, V_{CC} to V_{SS}
Reverse Current (Note 6)	$I_{R(IO\ to\ Vss)}$	—	—	0.5	µA	$V_R = V_{RWM}$ = 5V, any I/O to V_{SS}
Reverse Breakdown Voltage	V_{BR}	6.2	—	—	V	I_R = 1mA, V_{CC} to V_{SS}
Forward Clamping Voltage	V_F	-1.0	-0.8	—	V	I_F = -15mA, V_{CC} to V_{SS}
Reverse Clamping Voltage(Note 7)	V_{C_Vcc}	—	6.3	—	V	I_{PP} = 9A, V_{CC} to V_{SS}, 8/20 µs
	$V_{C\_I/O}$	—	7.7	9	V	I_{PP} = 6A, I/O to V_{SS}, 8/20 µs
ESD Clamping Voltage	V_{ESD_Vcc}	—	6.8	—	V	TLP, 10A, tp = 100 ns, V_{CC} to V_{SS}, per Fig. 8
	$V_{ESD\_I/O}$	—	9	—	V	TLP, 10A, tp = 100 ns, I/O to V_{SS}, per Fig. 8
Dynamic Resistance	R_{DIF_Vcc}	—	0.1	—	Ω	TLP, 10A, tp = 100 ns, V_{CC} to V_{SS}
	$R_{DIF\_I/O}$	—	0.25	—	Ω	TLP, 10A, tp = 100 ns, I/O to V_{SS}
Channel Input Capacitance	$C_{I/O\ to\ VSS}$	—	0.65	0.8	pF	V_R = 2.5V, V_{CC} = 5V, f = 1MHz
Variation of Channel Input Capacitance	$\Delta C_{I/O}$	—	0.02	—	pF	V_{CC} = 5V, V_{SS} = 0V, 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 Polymide 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.

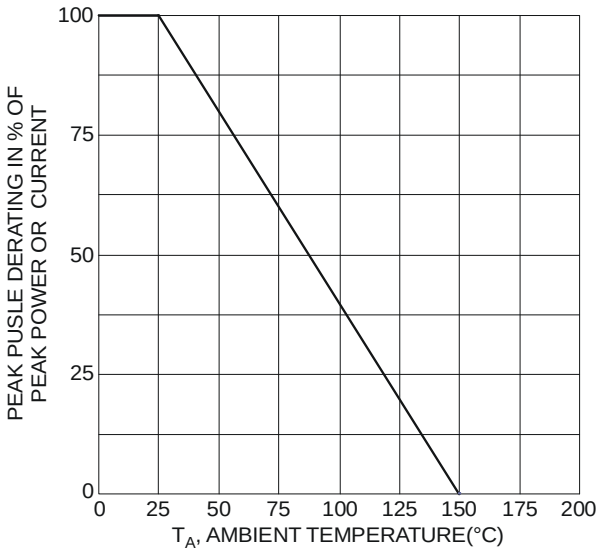


Figure 1 Pulse Derating Curve

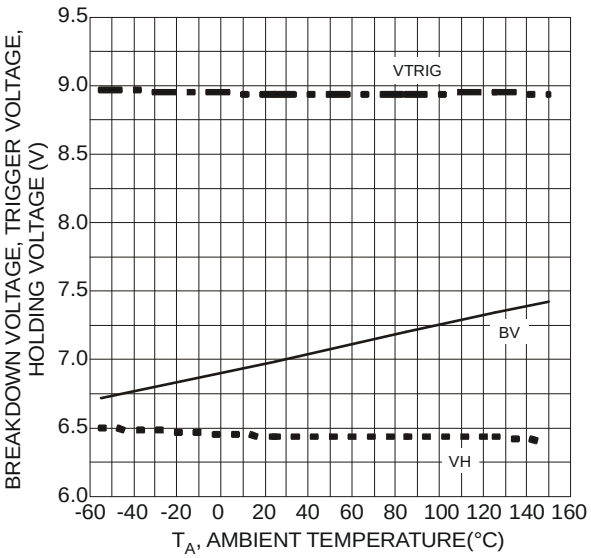


Figure 2 Breakdown Voltage, Trigger Voltage, Holding Voltage vs. Ambient Temperature

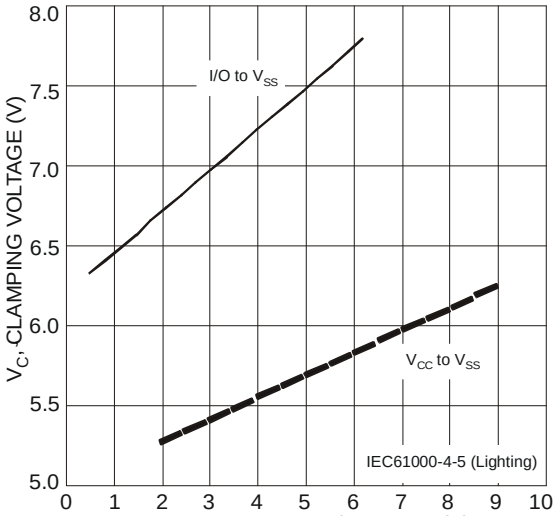


Figure 3 Clamping Voltage Characteristics

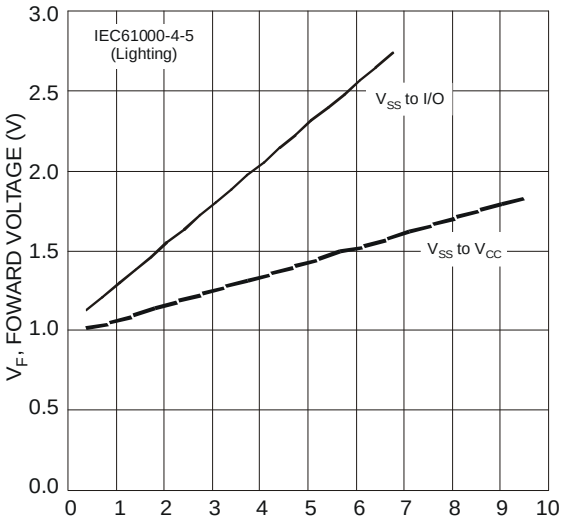


Figure 4 Forward Voltage Characteristics

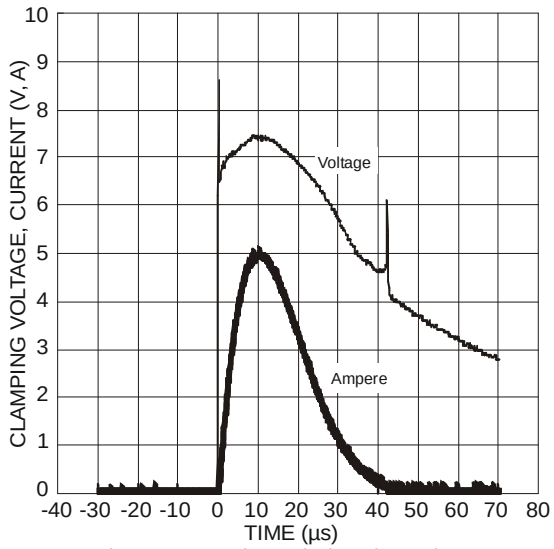


Figure 5 Waveform of Clamping Voltage, Current vs. Time (8/20µs, I/O to V_{SS})

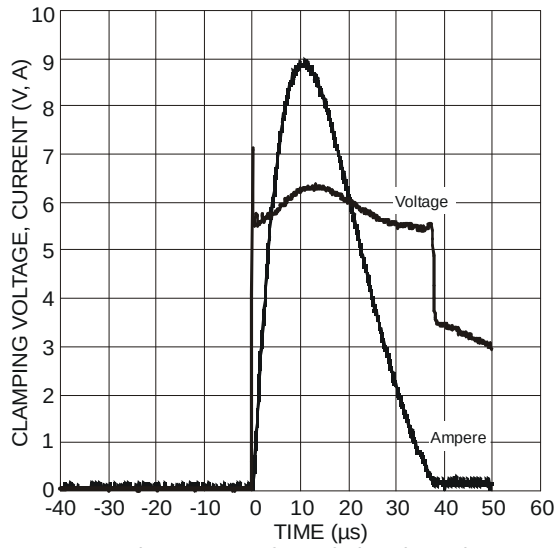


Figure 6 Waveform of Clamping Voltage, Current vs. Time (8/20µs, V_{CC} to V_{SS})

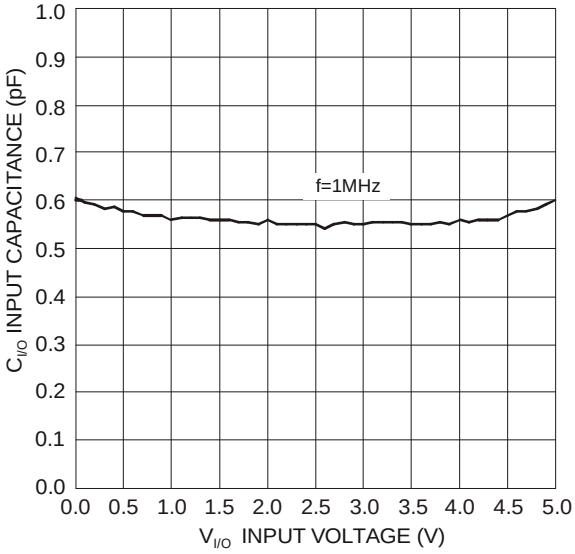


Figure 7 Input Capacitance vs. Input Voltage

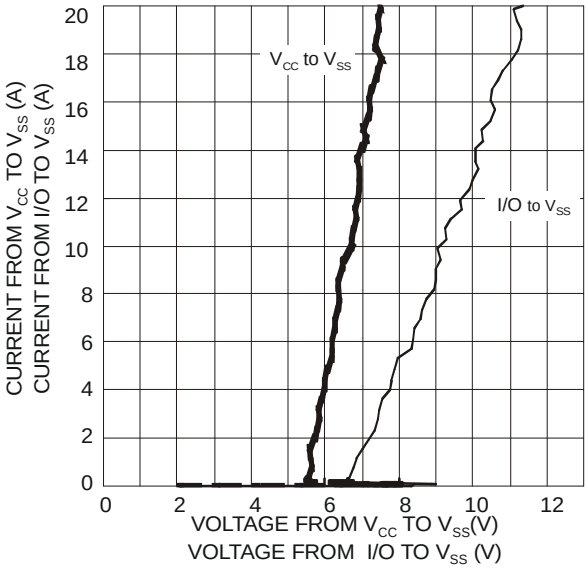
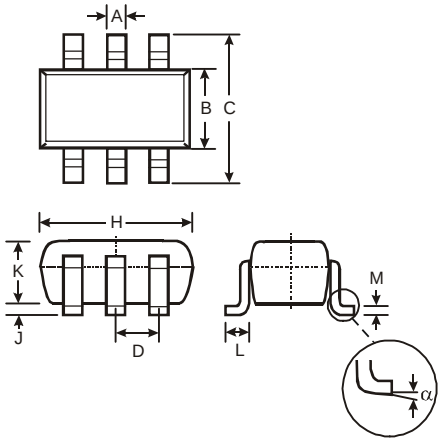


Figure 8. Current vs. Voltage

Package Outline Dimensions

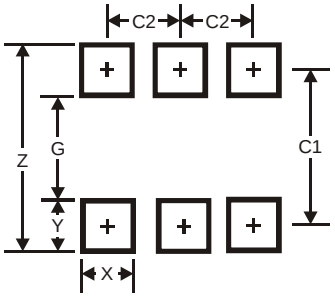
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for latest version.



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°	—
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	3.20
G	1.60
X	0.55
Y	0.80
C1	2.40
C2	0.95

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