4 CHANNELS LOW CAPACITANCE TVS DIODE ARRAY

Product Summary

$V_{BR\ MIN}$	$I_{PP\ MAX}$	$C_{I/O\ TYP}$
6.2V	6A	0.65pF

Features And Benefits

- Low Clamping Voltage, I/O to V_{SS}
- Typical 9V at 10A 100ns, TLP
- Typical 7.7V at 6A 8µs/20µs
- IEC61000-4-2 (ESD): Air –±16kV, Contact – ±16kV
- 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
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen- and Antimony-Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High-Reliability**
- **PPAP Capable (Note 4)**

Description And Applications

This new generation TVS is designed to protect sensitive electronics from the damage due to ESD. The combination of its small size and high ESD surge capability makes it ideal for use in automotive applications.

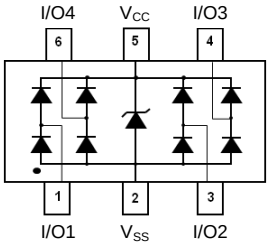
- USB Modules
- HDMI Ports
- LVDS

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 Lead-frame (Lead-Free Plating). Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.016 grams (Approximate)

SOT26

Top View



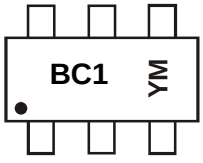
Device Schematic

Ordering Information (Note 5)

Product	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
DT1042-04SOQ-7	Automotive	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) & 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. Automotive products are AEC-Q101 qualified and are PPAP capable. Refer to https://www.diodes.com/quality/.
5. For packaging details, go to our website at https://www.diodes.com/design/support/packaging/diodes-packaging/.

Marking Information



BC1 = Product Type Marking Code
YM = Date Code Marking
Y = Year (ex: G = 2019)
M = Month (ex: 9 = September)

Date Code Key

Year	2019	2020	2021	2022	2023	2024
Code	G	H	I	J	K	L

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 IEC61000-4-5	$I_{PP\_I/O}$	±6	A	I/O to V_{SS}, 8/20µs
Peak Pulse Power, Per IEC61000-4-5	$P_{PP\_I/O}$	55	W	I/O to V_{SS}, 8/20µs
Operating Voltage (DC)	V_{DC}	5.5	V	I/O to V_{SS}
ESD Protection – Contact Discharge, Per IEC61000-4-2	$V_{ESD\_CONTACT}$	±16	kV	I/O to V_{SS}
ESD Protection – Air Discharge, Per IEC61000-4-2	V_{ESD_AIR}	±16	kV	I/O to V_{SS}
Operating Temperature	T_{OP}	-55 to +150	°C	—
Storage Temperature	T_{STG}	-55 to +150	°C	—

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation Typical (Note 6)	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 7)	I_R (V_{CC} to V_{SS})	—	—	1.0	µA	$V_R = V_{RWM}$ = 5V, V_{CC} to V_{SS}
Reverse Current (Note 7)	I_R (I/O to V_{SS})	—	—	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 8)	V_{C_VCC}	—	6.3	—	V	I_{PP} = 9A, V_{CC} to V_{SS}, 8/20µs
	$V_{C\_I/O}$	—	7.7	9	V	I_{PP} = 6A, I/O to V_{SS}, 8/20µs
ESD Clamping Voltage	V_{ESD_VCC}	—	6.8	—	V	TLP, 10A, t_P = 100ns, V_{CC} to V_{SS}, Per Figure 8
	$V_{ESD\_I/O}$	—	9	—	V	TLP, 10A, t_P = 100ns, I/O to V_{SS}, Per Figure 8
Dynamic Resistance	R_{DIF_VCC}	—	0.1	—	Ω	TLP, 10A, t_P = 100ns, V_{CC} to V_{SS}
	$R_{DIF\_I/O}$	—	0.25	—	Ω	TLP, 10A, t_P = 100ns, I/O to V_{SS}
Channel Input Capacitance	$C_{I/O}$	—	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, I/O_x to V_{SS} – I/O_y to V_{SS}

Notes:
6. Device mounted on Polymide 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.
7. Short duration pulse test used to minimize self-heating effect.
8. Clamping voltage value is based on an 8x20µs peak pulse current (I_{PP}) waveform.

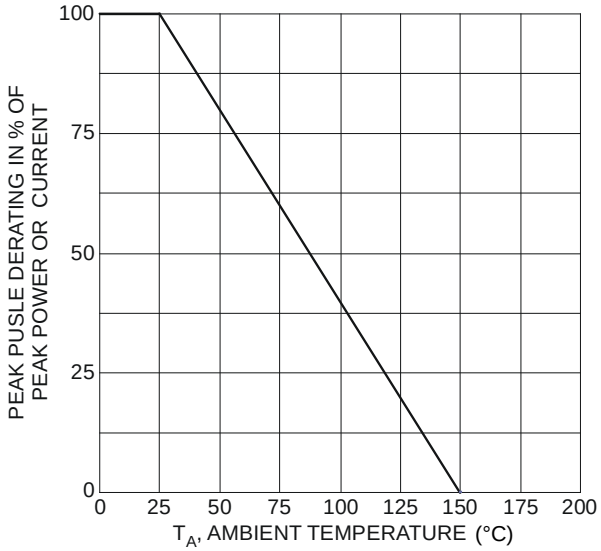


Figure 1 Pulse Derating Curve

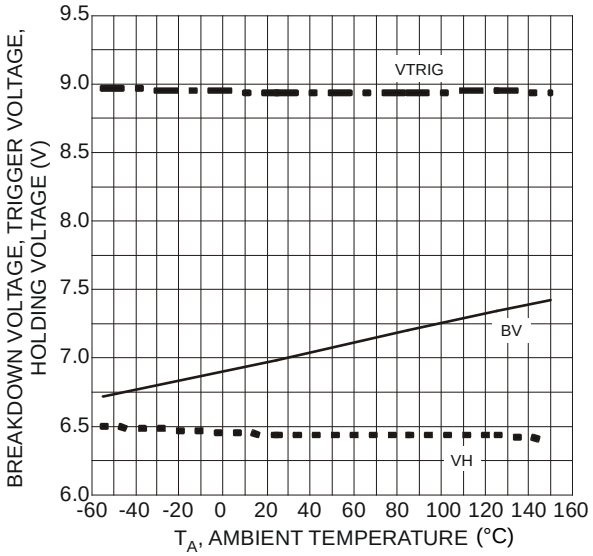


Figure 2 Breakdown Voltage, Trigger Voltage, Holding Voltage vs. Ambient Temperature

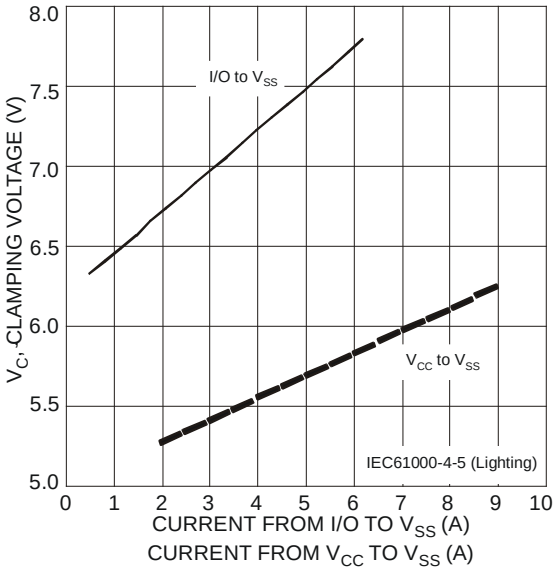


Figure 3 Clamping Voltage Characteristics

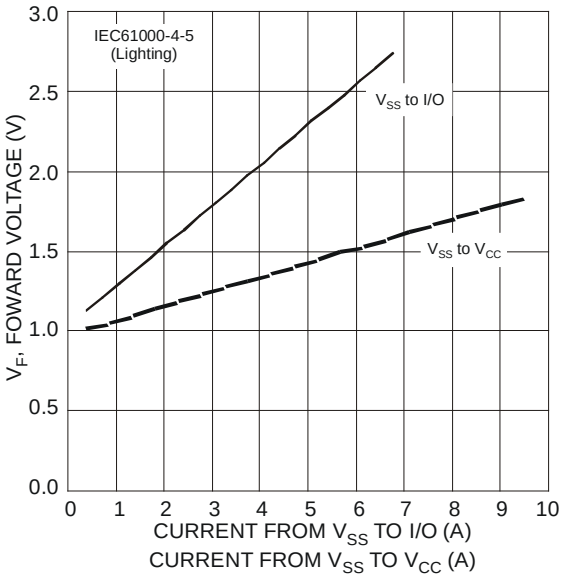


Figure 4 Forward Voltage Characteristics

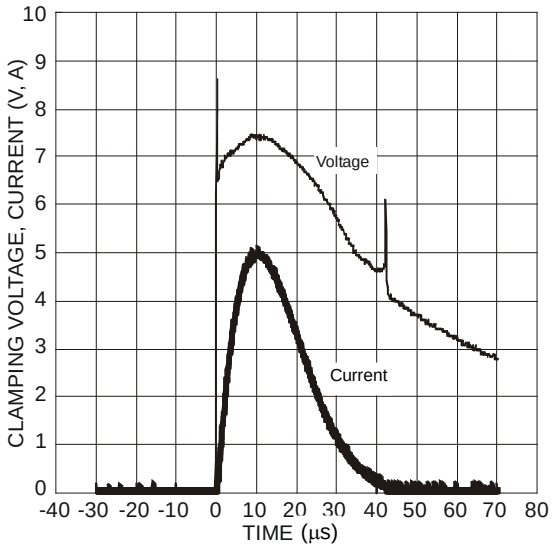


Figure 5 Waveform of Clamping Voltage, Current vs. Time (8/20µs, I/O to V_{SS})

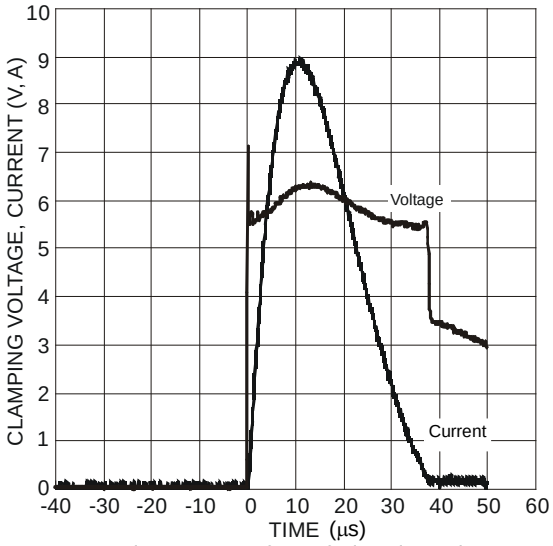


Figure 6 Waveform of Clamping Voltage, Current vs. Time (8/20µs, V_{CC} to V_{SS})

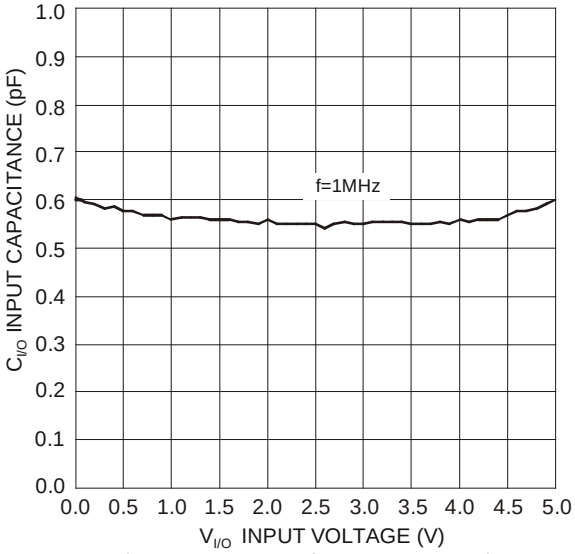


Figure 7 Input Capacitance vs. Input Voltage

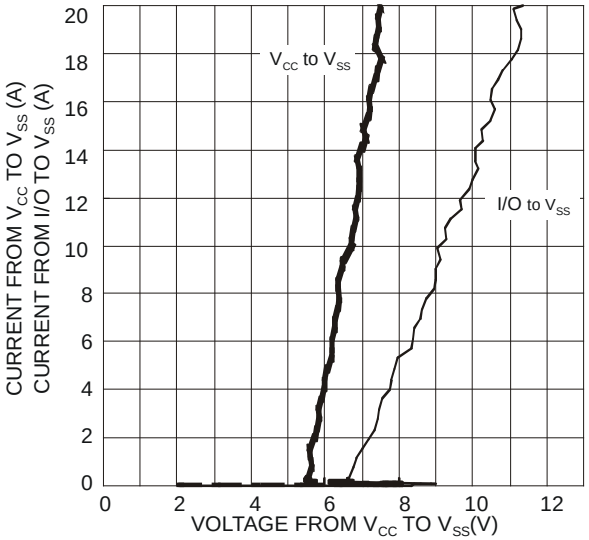
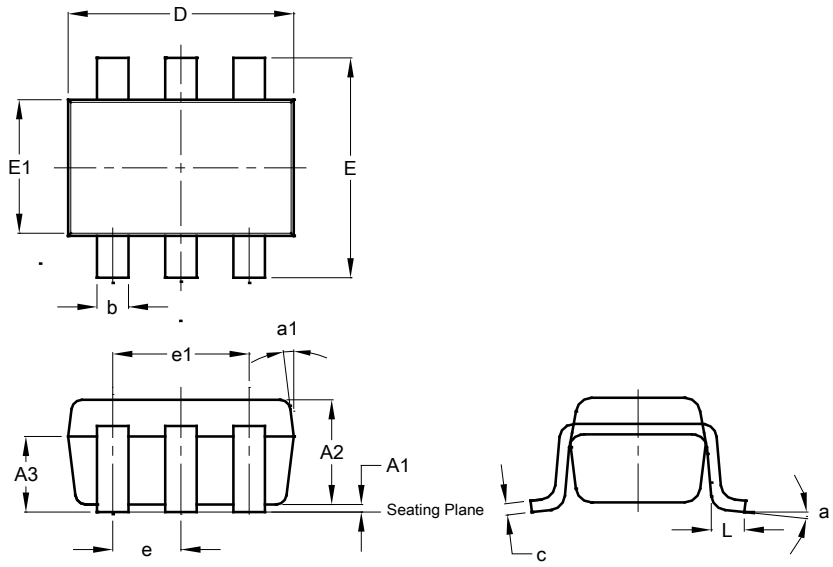


Figure 8. Current vs. Voltage

Package Outline Dimensions

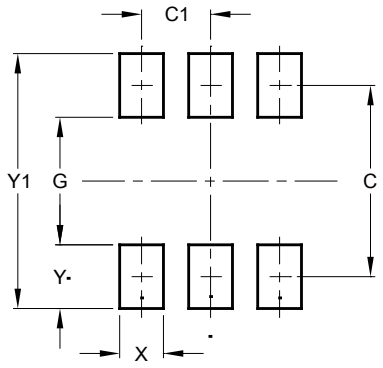
Please see http://www.diodes.com/package-outlines.html for the latest version.



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°
All Dimensions in mm			

Suggested Pad Layout

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



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

IMPORTANT NOTICE

DIODES INCORPORATED MAKES NO WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, WITH REGARDS TO THIS DOCUMENT, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION).

Diodes Incorporated and its subsidiaries reserve the right to make modifications, enhancements, improvements, corrections or other changes without further notice to this document and any product described herein. Diodes Incorporated does not assume any liability arising out of the application or use of this document or any product described herein; neither does Diodes Incorporated convey any license under its patent or trademark rights, nor the rights of others. Any Customer or user of this document or products described herein in such applications shall assume all risks of such use and will agree to hold Diodes Incorporated and all the companies whose products are represented on Diodes Incorporated website, harmless against all damages.

Diodes Incorporated does not warrant or accept any liability whatsoever in respect of any products purchased through unauthorized sales channel. Should Customers purchase or use Diodes Incorporated products for any unintended or unauthorized application, Customers shall indemnify and hold Diodes Incorporated and its representatives harmless against all claims, damages, expenses, and attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized application.

Products described herein may be covered by one or more United States, international or foreign patents pending. Product names and markings noted herein may also be covered by one or more United States, international or foreign trademarks.

This document is written in English but may be translated into multiple languages for reference. Only the English version of this document is the final and determinative format released by Diodes Incorporated.

LIFE SUPPORT

Diodes Incorporated products are specifically not authorized for use as critical components in life support devices or systems without the express written approval of the Chief Executive Officer of Diodes Incorporated. As used herein:

A. Life support devices or systems are devices or systems which:

1. are intended to implant into the body, or
2. support or sustain life and whose failure to perform when properly used in accordance with instructions for use provided in the labeling can be reasonably expected to result in significant injury to the user.

B. A critical component is any component in a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or to affect its safety or effectiveness.

Customers represent that they have all necessary expertise in the safety and regulatory ramifications of their life support devices or systems, and acknowledge and agree that they are solely responsible for all legal, regulatory and safety-related requirements concerning their products and any use of Diodes Incorporated products in such safety-critical, life support devices or systems, notwithstanding any devices- or systems-related information or support that may be provided by Diodes Incorporated. Further, Customers must fully indemnify Diodes Incorporated and its representatives against any damages arising out of the use of Diodes Incorporated products in such safety-critical, life support devices or systems.

www.diodes.com

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for ESD Suppressors / TVS Diodes ***category:***

Click to view products by Diodes Incorporated ***manufacturer:***

Other Similar products are found below :

60KS200C D12V0H1U2WS-7 D18V0L1B2LP-7B 82356050220 D5V0F4U5P5-7 D5V0M5U6V-7 NTE4902 P4KE27CA P6KE11CA P6KE39CA-TP P6KE8.2A SA110CA SA60CA SA64CA SMBJ12CATR SMBJ33CATR SMBJ8.0A SMLJ30CA-TP ESD112-B1-02EL E6327 ESD119B1W01005E6327XTSA1 ESD5V0J4-TP ESD5V0L1B02VH6327XTSA1 ESD7451N2T5G 19180-510 CPDT-5V0USP-HF 3.0SMCJ33CA-F 3.0SMCJ36A-F HSPC16701B02TP D3V3Q1B2DLP3-7 D55V0M1B2WS-7 DESD5V0U1BL-7B DRTR5V0U4SL-7 SCM1293A-04SO ESD203-B1-02EL E6327 SM12-7 SMF8.0A-TP SMLJ45CA-TP CEN955 W/DATA 82350120560 82356240030 VESD12A1A-HD1-GS08 CPDUR5V0R-HF CPDUR24V-HF CPDQC5V0U-HF CPDQC5V0USP-HF CPDQC5V0-HF D1213A-01LP4-7B D1213A-02WL-7 ESDLIN1524BJ-HQ 5KP100A