4 CHANNEL LOW CAPACITANCE TVS DIODE ARRAY

Product Summary

V_{BR} (Min)	I_{PP} (Max)	C_T (Typ)
4.5V	45A	2.1pF

Description

The D5V0P4UR6SO is a high-performance device suitable for protecting four high-speed I/Os. These devices are assembled in SOT26 package and have high ESD surge capability and low capacitance.

Applications

Typically used at high-speed ports such as USB 2.0, IEEE1394 (Firewire®, iLink™), Serial ATA, DVI, HDMI and PCI.

Features

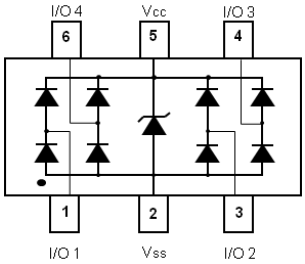
- Low Clamping Voltage: Typical 7.5V at 12A 100ns, TLP, I/O to V_{SS}; Typical 5.8V at 12A 100ns, TLP, V_{CC} to V_{SS}
- IEC 61000-4-2 (ESD): Air – ±30kV, Contact – ±30kV
- IEC 61000-4-4 (EFT): ±80A (5/50ns)
- IEC 61000-4-5 (Lighting): 20A, I/O to $V_{SS;}$ 45A, V_{CC} to V_{SS}
- TLP Dynamic Resistance: 0.15Ω, I/O to $V_{SS;}$ 0.07Ω, V_{CC} to V_{SS}
- Low Channel Input Capacitance of 2.1pF Typical
- 4 Channels of ESD Protection
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

Mechanical Data

- Case: SOT26
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: See Schematic
- Terminals – Finish – Matte Tin Pleated Leadframe. Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.016 grams (Approximate)

SOT26

Top View



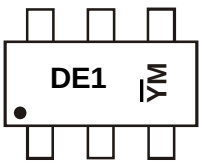
Device Schematic

Ordering Information (Note 4)

Product	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
D5V0P4UR6SO-7	Standard	DE1	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



DE1 = Product Type Marking Code
$\overline{Y}$M = Date Code Marking
Y = Year (ex: D = 2016)
M = Month (ex: 9 = September)
Note: "—" Represents Internal Code

Date Code Key

Year	2016	2017	2018	2019	2020	2021
Code	D	E	F	G	H	I

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

FireWire is a registered trademark of Apple Computer, Inc.
iLink is a trademark of CEM Corporation.

Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit	Conditions
Peak Pulse Current, per IEC 61000-4-5	I_{PP}	20	A	I/O to V_{SS}, 8/20µs
Peak Pulse Current, per IEC 61000-4-5	I_{PP}	45	A	V_{CC} to V_{SS}, 8/20µs
Peak Pulse Power, per IEC 61000-4-5	P_{PP}	180	W	I/O to V_{SS}, 8/20µs
Operating Supply Voltage (DC)	V_{DC}	3.6	V	V_{CC} to V_{SS}
ESD Protection – Contact Discharge, per IEC 61000-4-2	$V_{ESD\_CONTACT}$	±30	kV	I/O to V_{SS}, V_{CC} to V_{SS}
ESD Protection – Air Discharge, per IEC 61000-4-2	V_{ESD_AIR}	±30	kV	I/O to V_{SS}, V_{CC} 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}	—	—	3.3	V	V_{CC} to V_{SS}
Reverse Leakage Current (Note 6)	I_{LEAK}	—	—	5	µA	V_{CC} = 3.3V, V_{CC} to V_{SS}
Channel Leakage Current (Note 6)	$I_{CH-LEAK}$	—	—	1	µA	$V_{I/O}$ = 3.3V, I/O to V_{SS}
Reverse Breakdown Voltage	V_{BR}	4.5	—	7	V	I_{BR} = 1mA, V_{CC} to V_{SS}
Forward Clamping Voltage	V_F	—	0.8	1.2	V	I_F = 15mA, V_{SS} to V_{CC}
Reverse Clamping Voltage (Note 7)	V_{C_5A}	—	6	—	V	I_{PP} = 5A, I/O to V_{SS}, 8/20µs
		—	4.8	—	V	I_{PP} = 5A, V_{CC} to V_{SS}, 8/20µs
ESD Clamping Voltage	V_{ESD}	—	7.5	—	V	TLP, 12A, t_P = 100ns, I/O to V_{SS}
		—	5.8	—		TLP, 12A, t_P = 100ns, V_{CC} to V_{SS}
Dynamic Resistance	R_{DIF}	—	0.15	—	Ω	TLP, 12A, t_P = 100ns, I/O to V_{SS}
		—	0.07	—		TLP, 12A, t_P = 100ns, V_{CC} to V_{SS}
Channel Input Capacitance	$C_{I/O}$	—	2.1	2.5	pF	$V_{I/O}$ = 1.65V, V_{CC} = 3.3V, f = 1MHz
		—	2.4	3.0	pF	$V_{I/O}$ = 1.65V, V_{CC} = floated, f = 1MHz
Variation of Channel Input Capacitance	$\Delta C_{I/O}$	—	0.05	—	pF	V_{SS} = 0V, I/O = 1.65V, V_{CC} = 3.3V, f = 1MHz, I/O_x to V_{SS} – I/O_y to V_{SS}
		—	0.04	—	pF	V_{SS} = 0V, I/O = 1.65V, V_{CC} = floated, f = 1MHz, 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. website at http://www.diodes.com/package-outlines.html.
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.

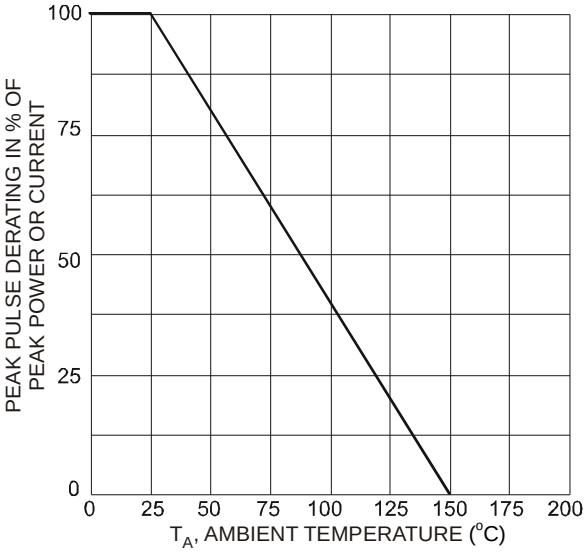


Figure 1 Pulse Derating Curve

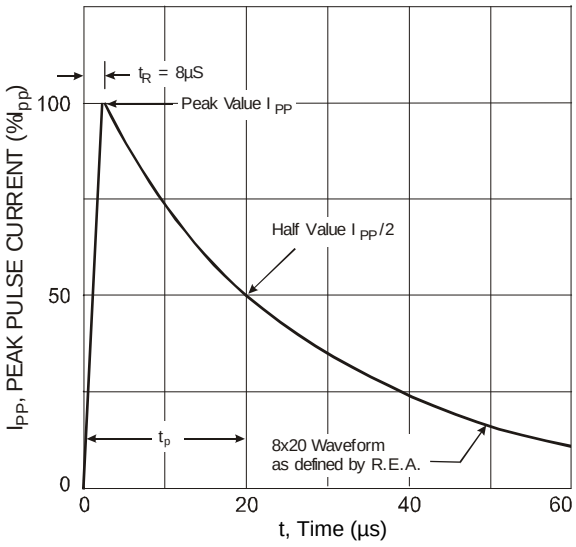


Figure 2 Pulse Waveform

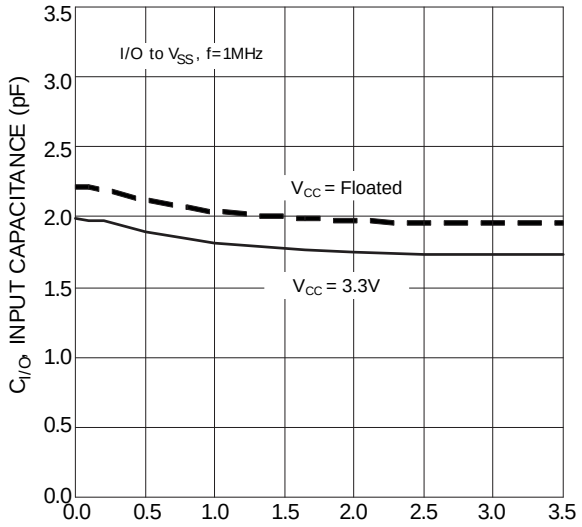


Figure 3 Input Capacitance vs. Input Voltage

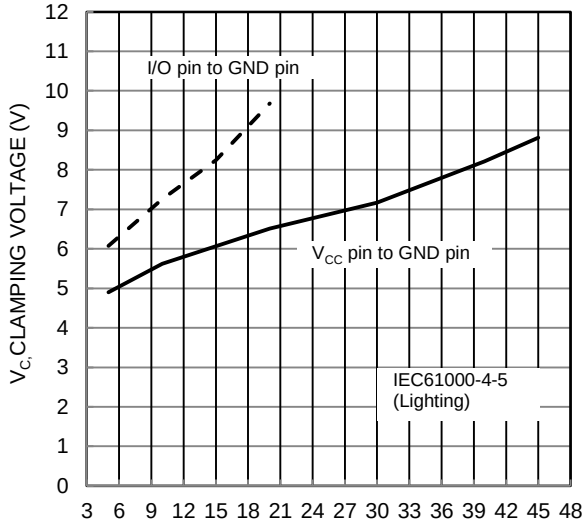


Figure 4 Clamping Voltage Characteristic

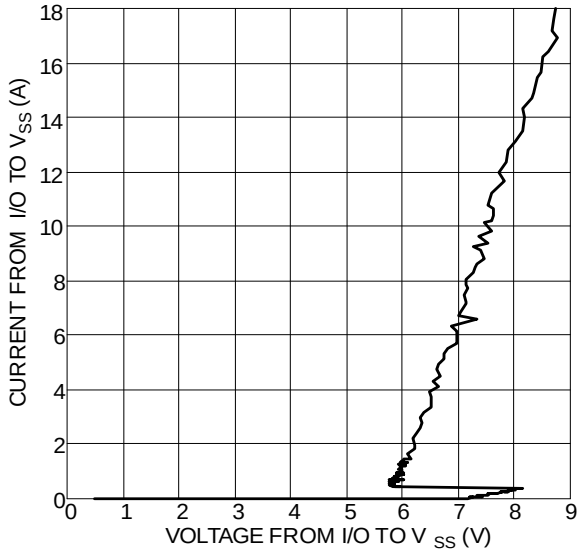


Figure 5 Current vs. Voltage

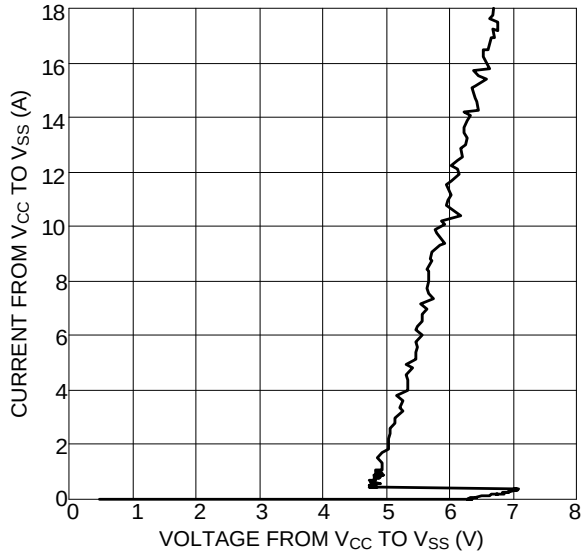
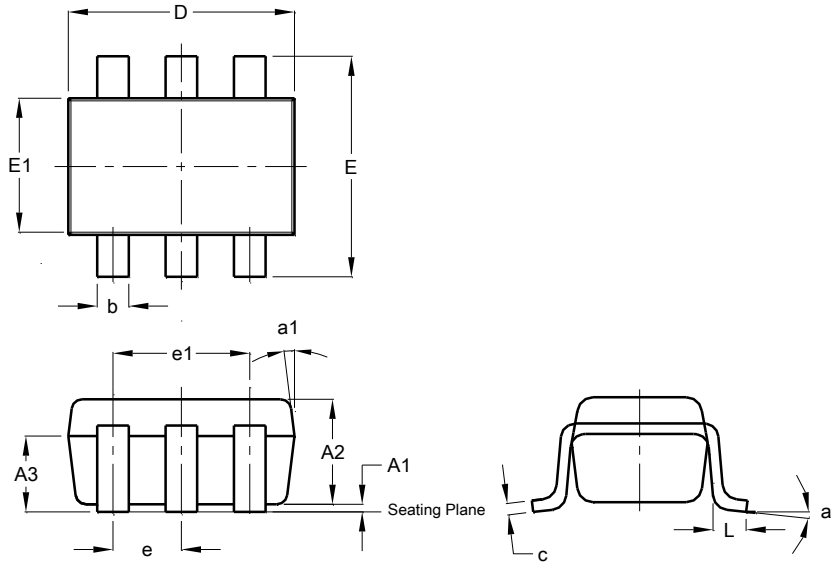


Figure 6 Current vs. Voltage

Package Outline Dimensions

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

SOT26

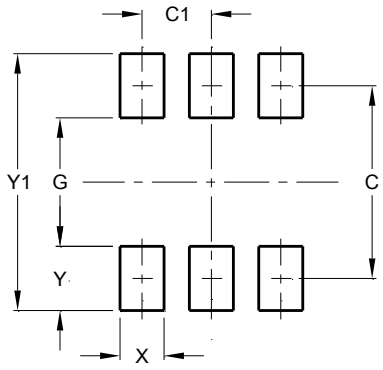


SOT26			
Dim	**Min**	**Max**	**Typ**
A1	0.013	0.10	0.05
A2	1.00	1.30	1.10
A3	0.70	0.80	0.75
b	0.35	0.50	0.38
c	0.10	0.20	0.15
D	2.90	3.10	3.00
e	–	–	0.95
e1	–	–	1.90
E	2.70	3.00	2.80
E1	1.50	1.70	1.60
L	0.35	0.55	0.40
a	–	–	8°
a1	–	–	7°
All Dimensions in mm			

Suggested Pad Layout

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

SOT26



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

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Diodes Incorporated:

D5V0P4UR6SO-7