

## Product Summary

V <sub>BR</sub> (Min)	I <sub>PP</sub> (Max)	C <sub>T</sub> (Typ)
4.5V	20A	2.4pF

## Description

The DIODES™ D5V0P4URL6SO 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

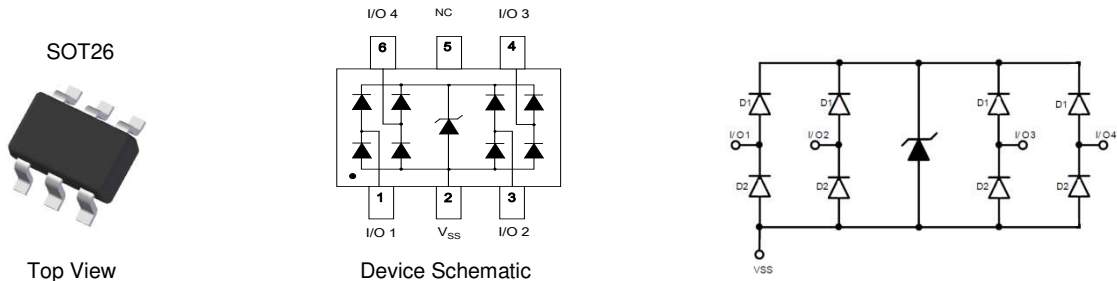
Typically used at high-speed ports such as USB 2.0, IEEE1394 (FireWire®, iLink), serial ATA, DVI, HDMI and PCI.

## Features

- Clamping Voltage: 7.5V at 12A 100ns, TLP 6V at 5A 8μs/20μs
- IEC 61000-4-2 (ESD): Air – 30kV, Contact – 30kV
- IEC 61000-4-4 (EFT): 80A (5/50ns)
- IEC 61000-4-5 (Lighting): 20A (8/20μs)
- Four Channels of ESD Protection
- Low Channel Input Capacitance of 2.4pF Typical
- TLP Dynamic Resistance: 0.15Ω
- Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- Halogen and Antimony Free. “Green” Device (Note 3)**
- For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/104/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please [contact us](mailto:contact us) or your local Diodes representative.**  
<https://www.diodes.com/quality/product-definitions/>

## Mechanical Data

- Package: SOT26
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: See Schematic
- Terminals: Finish – Matte Tin Plated Leadframe.  
Solderable per MIL-STD-202, Method 208 (E3)
- Weight: 0.016 grams (Approximate)

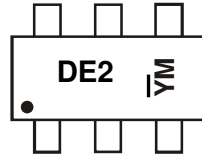


## Ordering Information (Note 4)

Part Number	Package	Marking	Reel Size (inches)	Tape Width (mm)	Packing	
					Qty.	Carrier
D5V0P4URL6SO-7	SOT26	DE2	7	8	3,000	Tape & Reel

- Notes:
- No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
  - 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.
  - Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
  - For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

## Marking Information



DE2 = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year (ex: J = 2022)  
 M = Month (ex: 9 = September)  
 Note: "—" Represents Internal Code

### Date Code Key

Year	2016	....	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Code	D	....	J	K	L	M	N	O	P	R	S	T

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<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit	Conditions
Peak Pulse Current, per IEC 61000-4-5	I <sub>PP</sub>	20	A	I/O to V <sub>SS</sub> , 8/20μs
Peak Pulse Power, per IEC 61000-4-5	P <sub>PP</sub>	180	W	I/O to V <sub>SS</sub> , 8/20μs
ESD Protection – Contact Discharge, per IEC 61000-4-2	V <sub>ESD_CONTACT</sub>	30	kV	I/O to V <sub>SS</sub>
ESD Protection – Air Discharge, per IEC 61000-4-2	V <sub>ESD_AIR</sub>	30	kV	I/O to V <sub>SS</sub>
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C	—

## Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation Typical (Note 5)	P <sub>D</sub>	300	mW
Thermal Resistance, Junction to Ambient Typical (Note 5)	R <sub>θJA</sub>	417	°C/W

## Electrical Characteristics (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions
Reverse Working Voltage	V <sub>RWM</sub>	—	—	3.3	V	I <sub>R</sub> = 1mA, I/O to V <sub>SS</sub>
Reverse Current (Note 6)	I <sub>R</sub>	—	—	1	μA	V <sub>R</sub> = 3.3V, I/O to V <sub>SS</sub>
Reverse Breakdown Voltage	V <sub>BR</sub>	4.5	—	8.0	V	I <sub>R</sub> = 1mA, I/O to V <sub>SS</sub>
Forward Clamping Voltage	V <sub>F</sub>	—	0.8	1.2	V	I <sub>F</sub> = 15mA, V <sub>SS</sub> to I/O
Reverse Clamping Voltage (Note 7)	V <sub>C</sub>	—	6	—	V	I <sub>PP</sub> = 5A, I/O to V <sub>SS</sub> , 8/20μs
ESD Clamping Voltage	V <sub>ESD</sub>	—	7.5	—	V	TLP, 12A, t <sub>P</sub> = 100ns, I/O to V <sub>SS</sub>
Dynamic Reverse Resistance	R <sub>DIF-R</sub>	—	0.15	—	Ω	TLP, 12A, t <sub>P</sub> = 100ns, I/O to V <sub>SS</sub>
Channel Input Capacitance	C <sub>I/O</sub>	—	2.4	3	pF	V <sub>I/O</sub> = 1.65V, V <sub>SS</sub> = 0V, f = 1MHz
Delta C <sub>I/O</sub>	C <sub>I/OMAX</sub> - C <sub>I/OMIN</sub>	—	0.04	—	pF	C <sub>I/OMAX</sub> - C <sub>I/OMIN</sub>

- Notes:
- Device mounted on FR-4 PCB pad layout (2oz copper) as shown on Diodes Incorporated's website at <http://www.diodes.com/package-outlines.html>.
  - Short duration pulse test used to minimize self-heating effect.
  - Clamping voltage value is based on an 8 x 20μs peak pulse current (I<sub>PP</sub>) waveform.

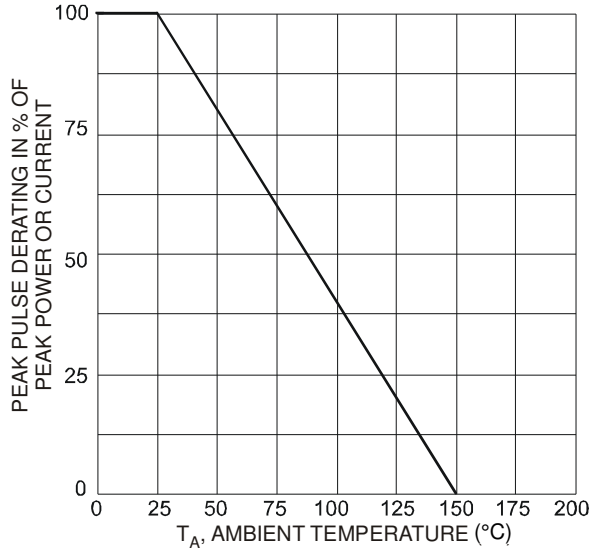


Figure 1 Pulse Derating Curve

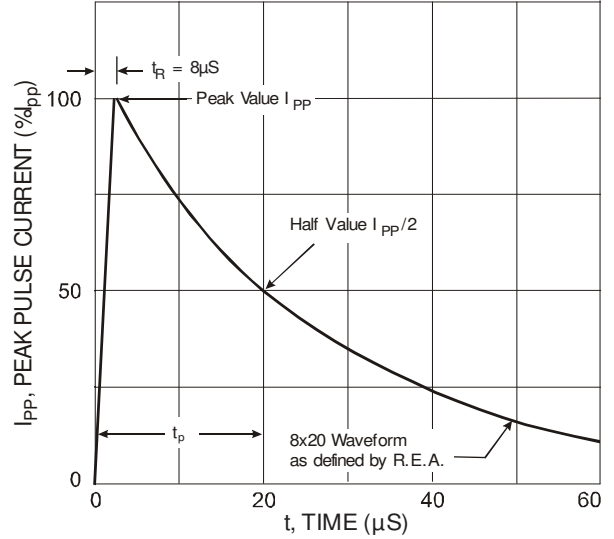


Figure 2 Pulse Waveform

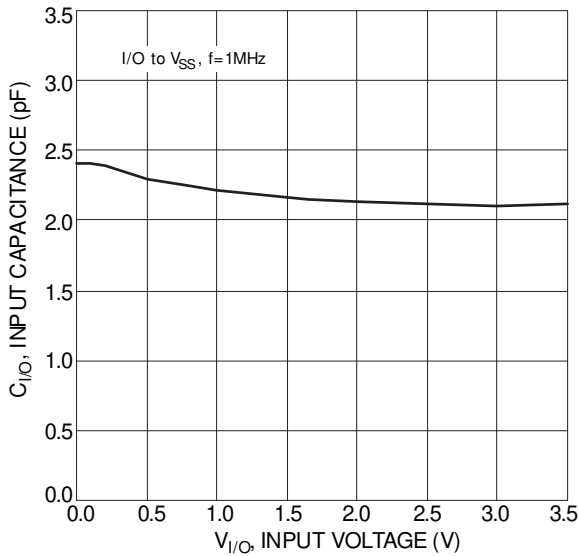


Figure 3 Input Capacitance vs. Input Voltage

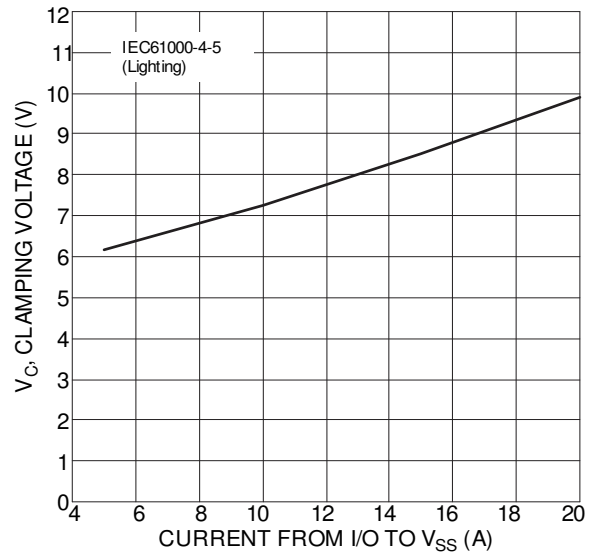


Figure 4 Clamping Voltage Characteristic

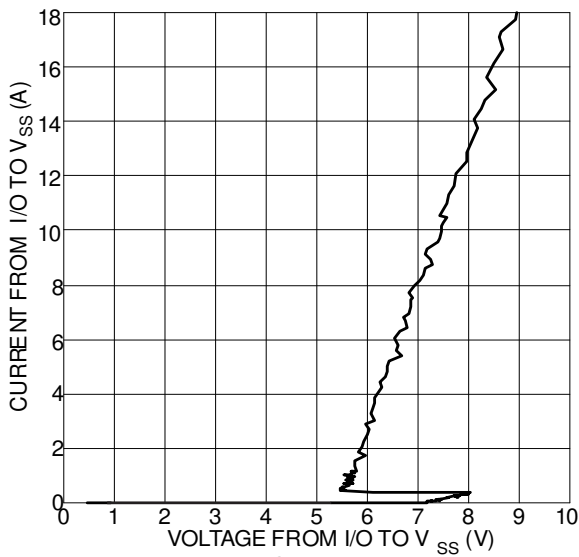
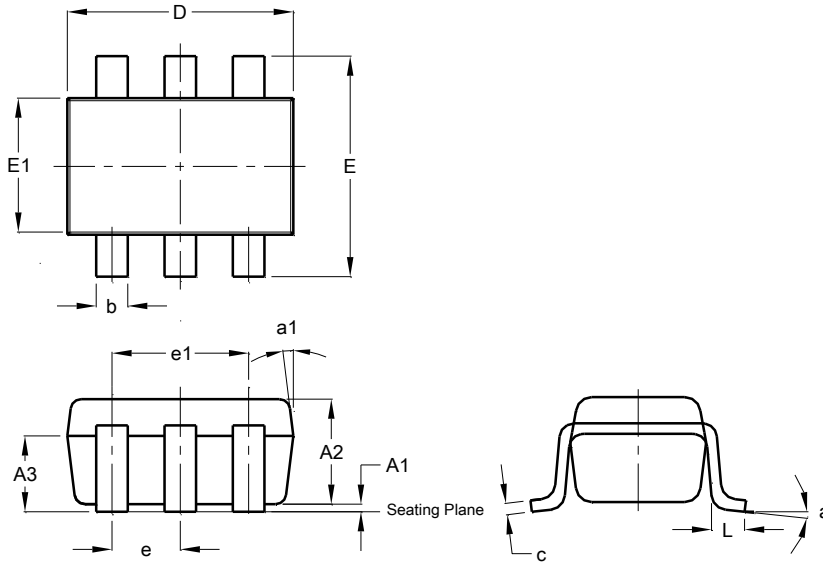


Figure 5 Current vs. Voltage

**Package Outline Dimensions**

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

**SOT26**

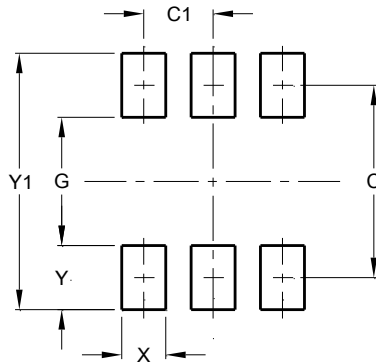


SOT26			
Dim	Min	Max	Typ
A1	0.013	0.10	0.05
A2	1.00	1.30	1.10
A3	0.70	0.80	0.75
b	0.35	0.50	0.38
c	0.10	0.20	0.15
D	2.90	3.10	3.00
e	-	-	0.95
e1	-	-	1.90
E	2.70	3.00	2.80
E1	1.50	1.70	1.60
L	0.35	0.55	0.40
a	-	-	8°
a1	-	-	7°
<b>All Dimensions in mm</b>			

**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

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