

Product Summary

V_{BR} (Min)	I_{PP} (Max)	$C_{I/O}$ (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

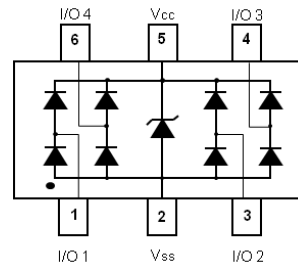
- Low Clamping Voltage: Typical 7.5V at 12A 100ns, TLP, I/O to Vss; Typical 5.8V at 12A 100ns, TLP, Vcc to Vss
- IEC 61000-4-2 (ESD): Air – ±30kV, Contact – ±30kV
- IEC 61000-4-4 (EFT): ±80A (5/50ns)
- IEC 61000-4-5 (Lighting): 20A, I/O to Vss; 45A, Vcc to Vss
- TLP Dynamic Resistance: 0.15Ω, I/O to Vss; 0.07Ω, Vcc to Vss
- 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)**
- **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](#) or your local Diodes representative. <https://www.diodes.com/quality/product-definitions/>**

Mechanical Data

- Package: SOT26
- Package Material: Molded Plastic, "Green" Molding Compound.
- 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 (G3)
- Weight: 0.016 grams (Approximate)



Top View



Device Schematic

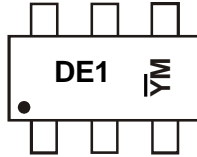
Ordering Information (Note 4)

Part Number	Compliance	Package	Marking	Reel Size (inches)	Tape Width (mm)	Packing	
						Qty.	Carrier
D5V0P4UR6SO-7	Standard	SOT26	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) & 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. For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

FireWire is a registered trademark of Apple Computer, Inc.

Marking Information



DE1 = Product Type Marking Code
 YM = Date Code Marking
 Y = Year (ex: J = 2022)
 M = Month (ex: 2 = February)
 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_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 and Storage Temperature Range	T _J , 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 _{θJA}	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	—	V	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	—	Ω	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	ΔC _{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 Incorporated's 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.

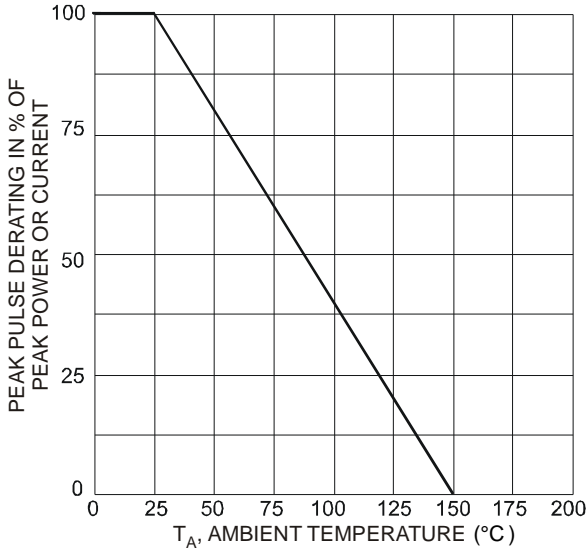


Figure 1 Pulse Derating Curve

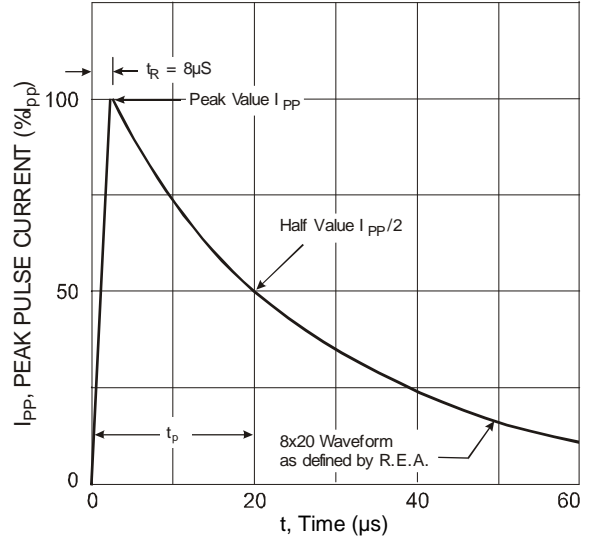


Figure 2 Pulse Waveform

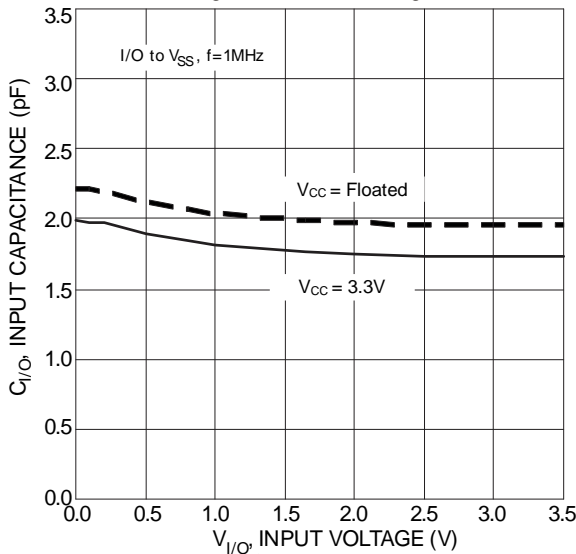


Figure 3 Input Capacitance vs. Input Voltage

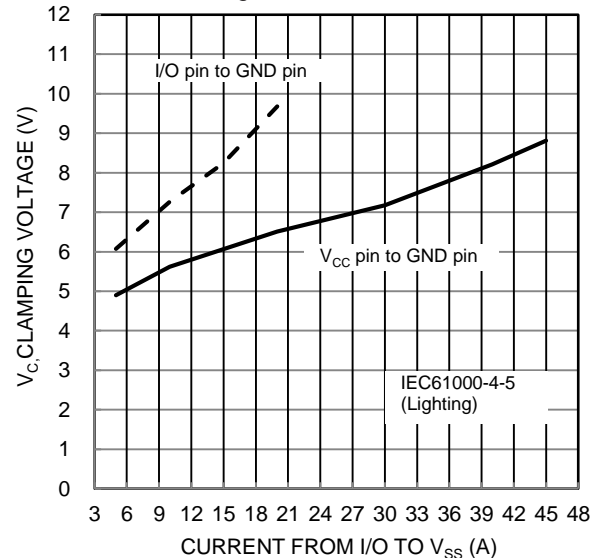


Figure 4 Clamping Voltage Characteristic

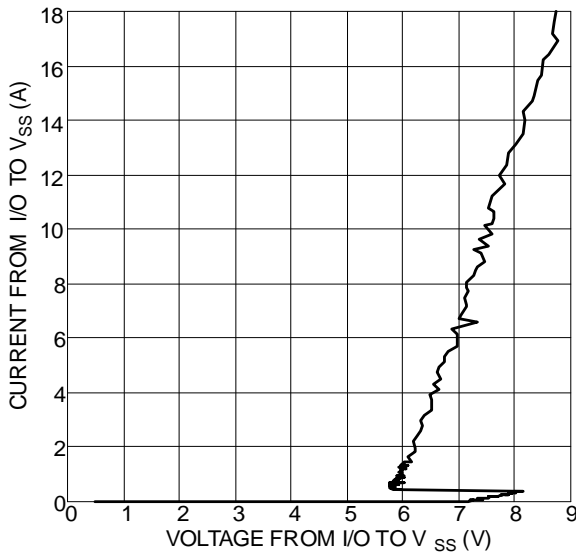


Figure 5 Current vs. Voltage

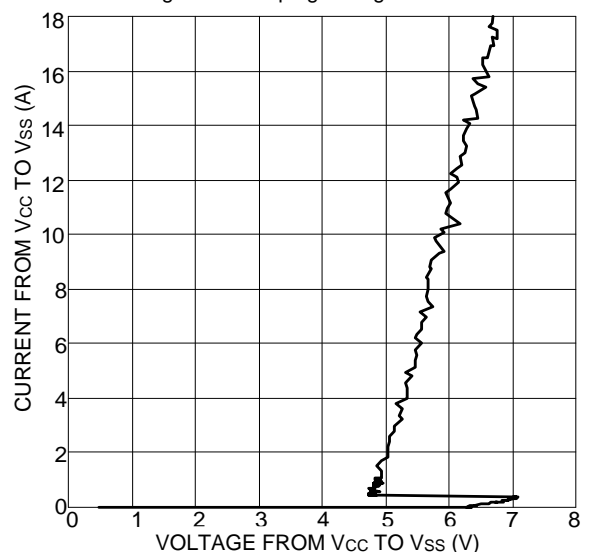
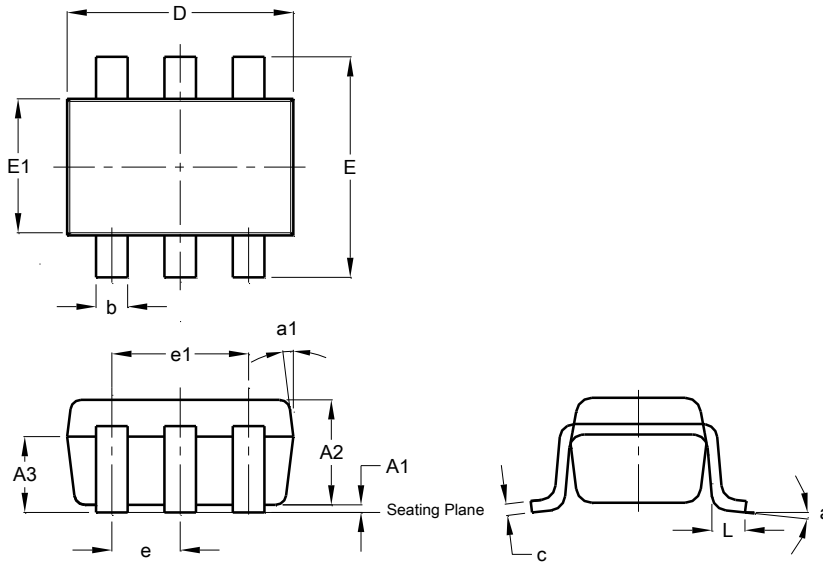


Figure 6 Current vs. Voltage

Package Outline Dimensions

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

SOT26

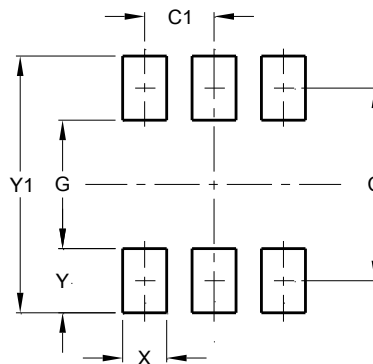


SOT26			
Dim	Min	Max	Typ
A1	0.013	0.10	0.05
A2	1.00	1.30	1.10
A3	0.70	0.80	0.75
b	0.35	0.50	0.38
c	0.10	0.20	0.15
D	2.90	3.10	3.00
e	-	-	0.95
e1	-	-	1.90
E	2.70	3.00	2.80
E1	1.50	1.70	1.60
L	0.35	0.55	0.40
a	-	-	8°
a1	-	-	7°
All Dimensions in mm			

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

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