

**4 CHANNEL LOW CAPACITANCE TVS DIODE ARRAY**
**Product Summary**

<b>V<sub>BR</sub> (Min)</b>	<b>I<sub>PP</sub> (Max)</b>	<b>C<sub>T</sub> (Typ)</b>
6V	10A	1.0pF

**Description**

The DT2041-04SO 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™, PCI.

**Features**

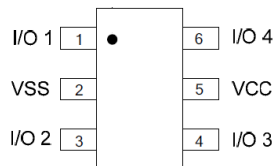
- Low Clamping Voltage: Typical 9V at 10A 100ns, TLP, I/O to V<sub>SS</sub>; Typical 8V at 10A 100ns, TLP, V<sub>CC</sub> to V<sub>SS</sub>
- IEC 61000-4-2 (ESD): Air – ±30kV, Contact – ±30kV
- IEC61000-4-5(Lighting):10A,I/O to V<sub>SS</sub>; 12A, V<sub>CC</sub> to V<sub>SS</sub>
- TLP Dynamic Resistance: 0.25Ω
- Low Channel Input Capacitance of 1.0pF Typical
- 4 Channel of ESD Protection
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. “Green” Device (Note 3)**

**Mechanical Data**

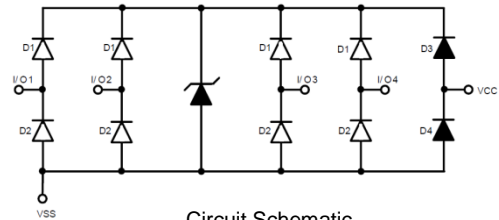
- Case: SOT26
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish Annealed over Copper Leadframe (Lead Free Plating) Solderable per MIL-STD-202, Method208 e3
- Weight: 0.016 grams (Approximate)

**NEW PRODUCT**
**SOT26**


Top View



Device Schematic

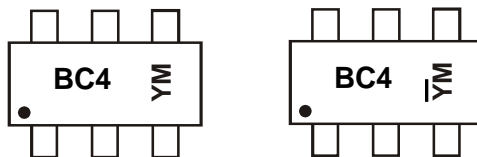


Circuit Schematic

**Ordering Information (Note 4)**

Product	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
DT2041-04SO-7	Standard	BC4	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](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**


BC4 = Product Type Marking Code  
 YM = 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

**Maximum Ratings** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit	Conditions
Peak Pulse Current, per IEC61000-4-5	I <sub>PP</sub>	±10	A	I/O to V <sub>SS</sub> , 8/20 μs
Peak Pulse Current, per IEC61000-4-5	I <sub>PP</sub>	±12	A	V <sub>CC</sub> to V <sub>SS</sub> , 8/20 μs
Peak Pulse Power, per IEC61000-4-5	P <sub>PP</sub>	105	W	I/O to V <sub>SS</sub> , 8/20 μs
Operating Voltage (DC)	V <sub>DC</sub>	5.5	V	I/O to V <sub>SS</sub> , V <sub>CC</sub> to V <sub>SS</sub>
ESD Protection – Contact Discharge, per IEC61000-4-2	V <sub>ESD_CONTACT</sub>	±30	kV	I/O to V <sub>SS</sub> , V <sub>CC</sub> to V <sub>SS</sub>
ESD Protection – Air Discharge, per IEC61000-4-2	V <sub>ESD_AIR</sub>	±30	kV	I/O to V <sub>SS</sub> , V <sub>CC</sub> to V <sub>SS</sub>
Operating Temperature	T <sub>OP</sub>	-55 to +85	°C	—
Storage Temperature	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>	—	—	5.5	V	I/O to V <sub>SS</sub> , V <sub>CC</sub> to V <sub>SS</sub>
Reverse Current (Note 6)	I <sub>R</sub>	—	—	1	μA	V <sub>R</sub> = 5V, I/O to V <sub>SS</sub> , V <sub>CC</sub> to V <sub>SS</sub>
Reverse Breakdown Voltage	V <sub>BR</sub>	6	—	9	V	I <sub>R</sub> = 1mA, I/O to V <sub>SS</sub> , V <sub>CC</sub> to V <sub>SS</sub>
Forward Clamping Voltage	V <sub>F</sub>	-1.0	-0.8	—	V	I <sub>F</sub> = -15mA, I/O to V <sub>SS</sub> , V <sub>CC</sub> to V <sub>SS</sub>
Holding Voltage	V <sub>H</sub>	5.5	—	—	V	—
Trigger Voltage	V <sub>TRIG</sub>	—	9	9.5	V	—
Reverse Clamping Voltage (Note 7)	V <sub>C_5A</sub>	—	7.5	—	V	I <sub>PP</sub> = 5A, I/O to V <sub>SS</sub> , 8/20 μs
Reverse Clamping Voltage (Note 7)	V <sub>C_10A</sub>	—	9	10.5	V	I <sub>PP</sub> = 10A, I/O to V <sub>SS</sub> , 8/20 μs
ESD Clamping Voltage	V <sub>ESD</sub>	—	9	—	V	TLP, 10A, tp = 100ns, I/O to V <sub>SS</sub>
		—	8	—		TLP, 10A, tp = 100ns, V <sub>CC</sub> to V <sub>SS</sub>
Dynamic Resistance	R <sub>DIF</sub>	—	0.25	—	Ω	TLP, 10A, tp = 100ns, I/O to V <sub>SS</sub>
		—	0.15	—		TLP, 10A, tp = 100ns, V <sub>CC</sub> to V <sub>SS</sub>
Channel Input Capacitance	C <sub>T</sub>	—	1.0	1.5	pF	V <sub>I/O</sub> = 2.5V, V <sub>CC</sub> = 5V, f = 1MHz
Variation of Channel Input Capacitance	ΔC <sub>T</sub>	—	0.02	—	pF	V <sub>SS</sub> = 0V, V <sub>I/O</sub> = 2.5V, f = 1MHz, I/O_x to V <sub>SS</sub> – I/O_y to V <sub>SS</sub>

- Notes:
- Device mounted on FR-4 PCB pad layout (2oz copper) as shown on Diodes, Inc. suggested pad layout, which can be found on our 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 8x20μs peak pulse current (I<sub>pp</sub>) waveform.

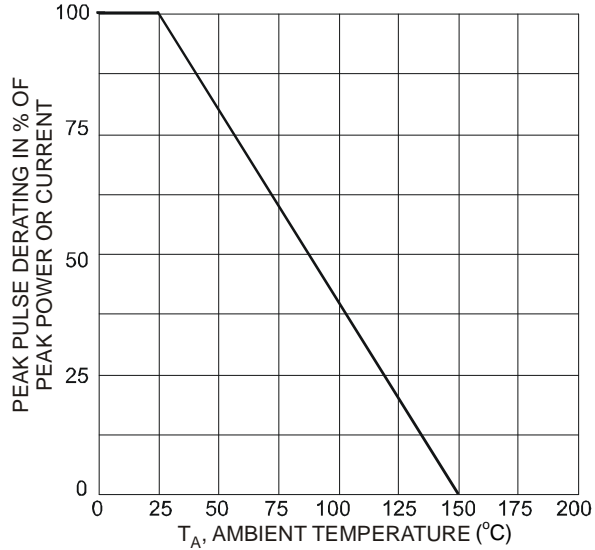


Figure 1 Pulse Derating Curve

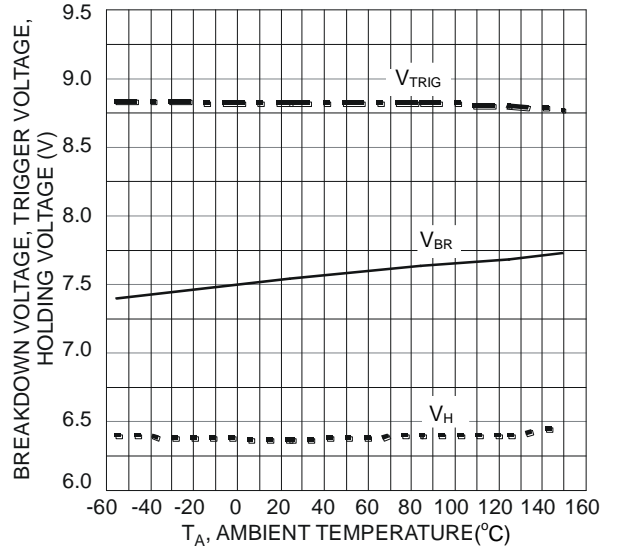


Figure 2 V<sub>BR</sub>, Trigger Voltage, Holding Voltage vs. Ambient Temperature

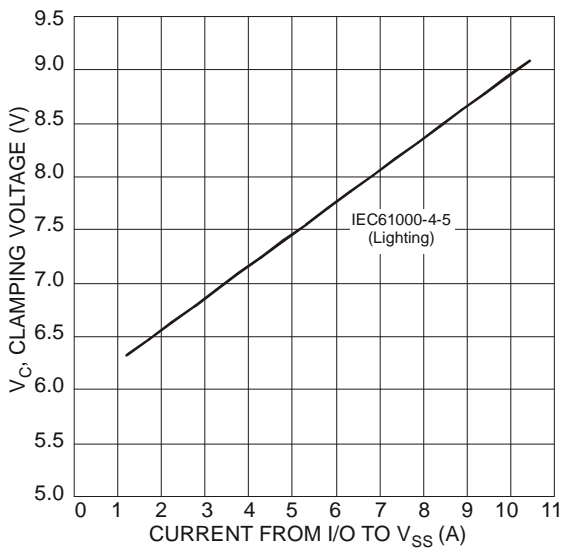


Figure 3 Clamping Voltage Characteristic

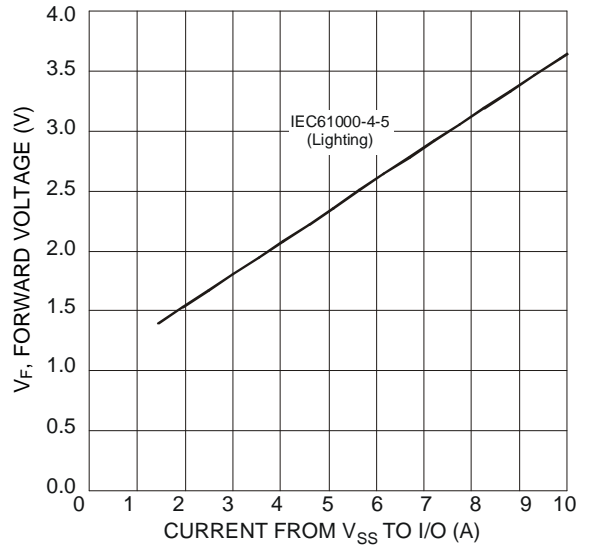


Figure 4 Forward Voltage Characteristic

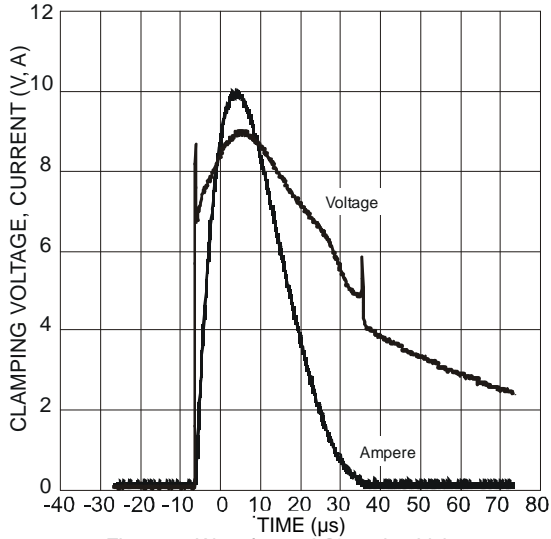


Figure 5 Waveform of Clamping Voltage, Current vs. Time (8/20µs, I/O to V<sub>SS</sub>)

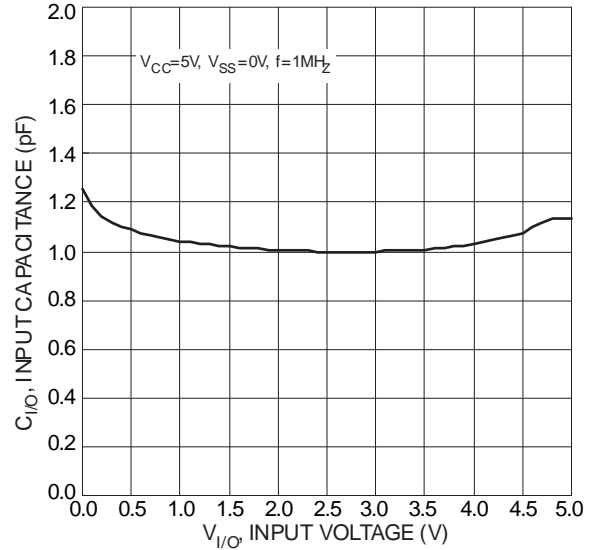


Figure 6 Input Capacitance vs. Input Voltage

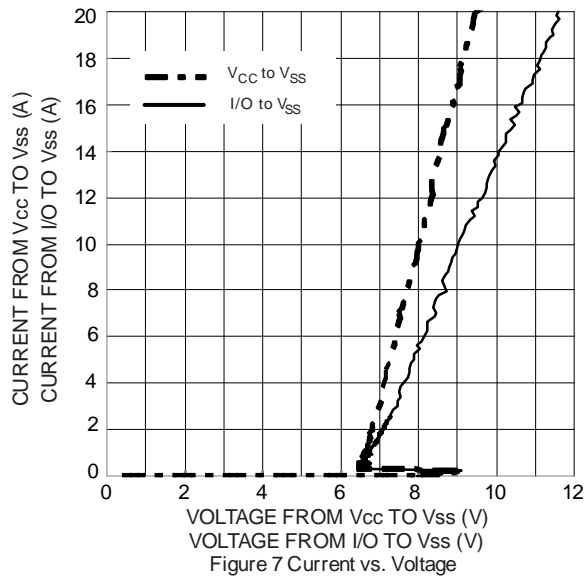
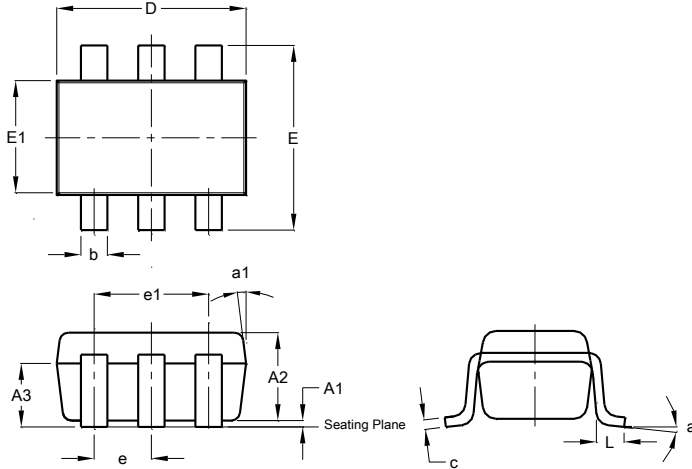


Figure 7 Current vs. Voltage

## Package Outline Dimensions

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

### SOT26

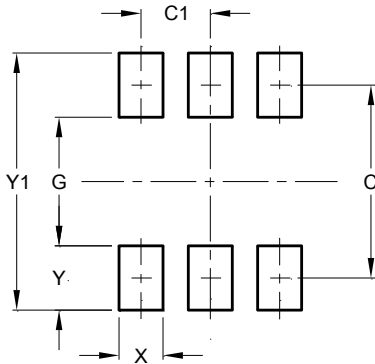


SOT26			
Dim	Min	Max	Typ
A1	0.013	0.10	0.05
A2	1.00	1.30	1.10
A3	0.70	0.80	0.75
b	0.35	0.50	0.38
c	0.10	0.20	0.15
D	2.90	3.10	3.00
e	-	-	0.95
e1	-	-	1.90
E	2.70	3.00	2.80
E1	1.50	1.70	1.60
L	0.35	0.55	0.40
a	-	-	8°
a1	-	-	7°
All Dimensions in mm			

## 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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