

## SuperESD - BSD5C051V-ES

### 1. Description

The BSD5C051V-ES is an low capacitance TVS designed to protect high speed data interface. It has been specifically designed to protect sensitive electronic components which are connected to data and transmission lines from over-stress caused by ESD. The BSD5C051V-ES incorporates one pair of low capacitance steering diodes plus a TVS diode.

### 2. Features

- IEC 61000-4-2 Level 4 ESD Protection
  - $\pm 25$ kV Contact Discharge
  - $\pm 25$ kV Air Discharge
- 75W Peak pulse Power (8/20us)
- Low clamping voltage
- Working voltage: 5V
- Low leakage current
- RoHS compliant
- Protecting one bi-directional lines
- Ultra-low capacitance: 3.5pF Typ.

### 3. Applications

- USB 2.0 and USB 3.0
- SATA and eSATA
- Notebooks & handhelds
- HDMI 1.3 and HDMI 1.4
- PCI Express
- Peripherals

### 4. Ordering Information

Part Number	Package	Marking	Material	Packing	Quantity per reel	Flammability Rating	Reel Size
BSD5C051V-ES	SOD-523	LB	Halogen free	Tape & Reel	3,000 PCS	UL 94V-0	7 inches

Table-1 Ordering information

## 5. Pin Configuration and Functions


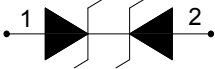
Pin	Name	Description	Outline	Circuit Diagram
1	IO1	Connect to IO		
2	IO2	Connect to IO		

Table-2 Pin configuration

## 6. Specification

### 6.1. Absolute Maximum rating

Over operating free-air temperature range (unless otherwise noted)

Parameters	Symbol	Min.	Max.	Unit
Peak pulse power (tp=8/20us)@25°C	P <sub>pk</sub>	-	75	W
Peak pulse current (tp=8/20us)@25°C	I <sub>PP</sub>	-	5	A
ESD (IEC61000-4-2 air discharge) @25°C	V <sub>ESD</sub>	-	±25	kV
ESD (IEC61000-4-2 contact discharge) @25°C	V <sub>ESD</sub>	-	±25	kV
Junction temperature	T <sub>J</sub>	-	150	°C
Operating temperature	T <sub>OP</sub>	-40	125	°C
Storage temperature	T <sub>STG</sub>	-55	150	°C
Lead temperature	T <sub>L</sub>	-	260	°C

Table-3 Absolute Maximum rating

## 6.2. Electrical Characteristics

At TA = 25°C unless otherwise noted

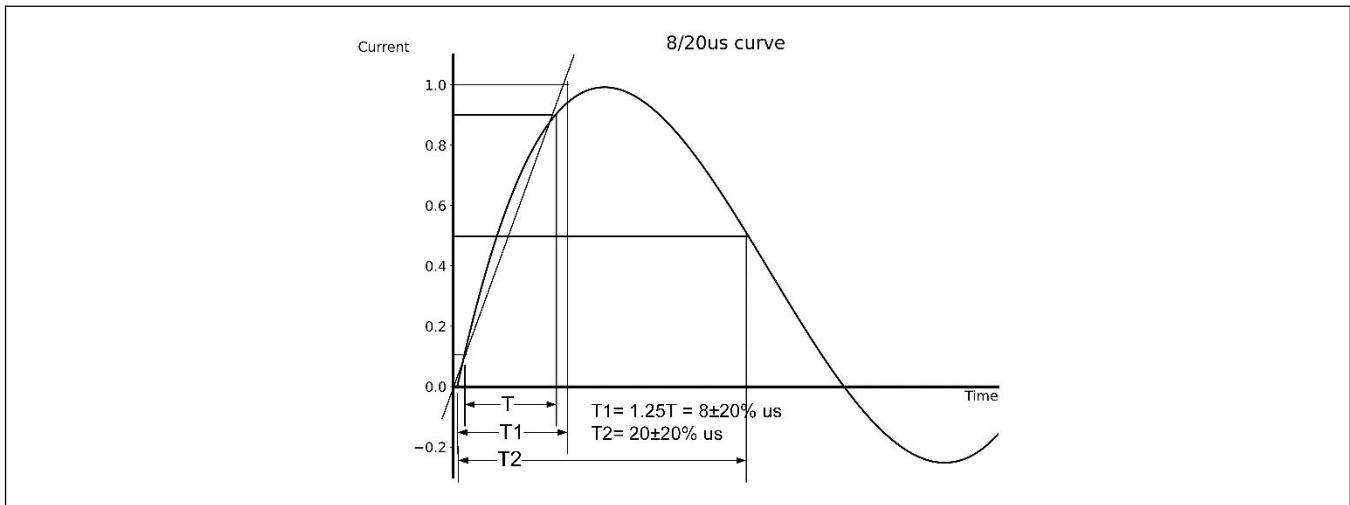
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Reverse Stand-off Voltage	$V_{RWM}$				5.0	V
Reverse Breakdown Voltage	$V_{BR}$	$I_T=1mA$	6.0			V
Reverse Leakage Current	$I_R$	$V_{RWM}=5V$			1.0	$\mu A$
Clamping Voltage	$V_C$	$I_{PP}=1A$ ; $t_p=8/20\mu s$		9.0	10.0	V
Clamping Voltage	$V_C$	$I_{PP}=5A$ ; $t_p=8/20\mu s$		13.5	15.0	V
Junction Capacitance	$C_J$	I/O to GND; $V_R=0V$ ; $f=1MHz$		3.5	5.0	pF

Table-4 Electrical Characteristics

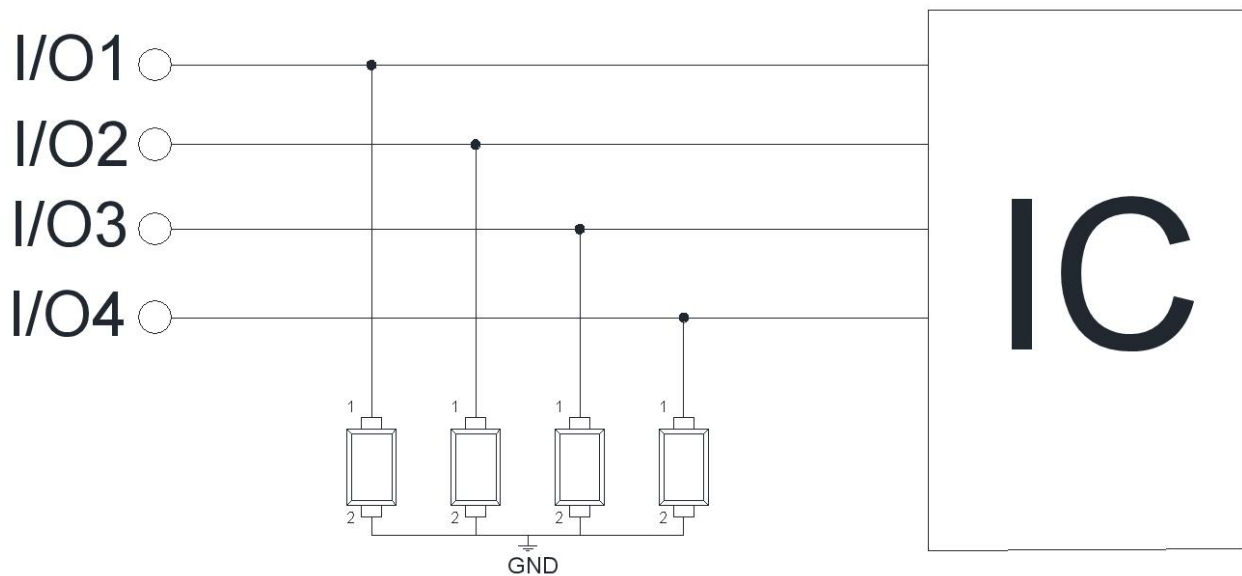
Symbol	Parameters
$V_{RWM}$	Peak Reverse Working Voltage
$I_R$	Reverse Leakage Current @ $V_{RWM}$
$V_{BR}$	Breakdown Voltage @ $I_T$
$I_T$	Test Current
$I_{PP}$	Maximum Reverse Peak Pulse Current
$V_C$	Clamping Voltage @ $I_{PP}$



### 7. Typical Characteristic



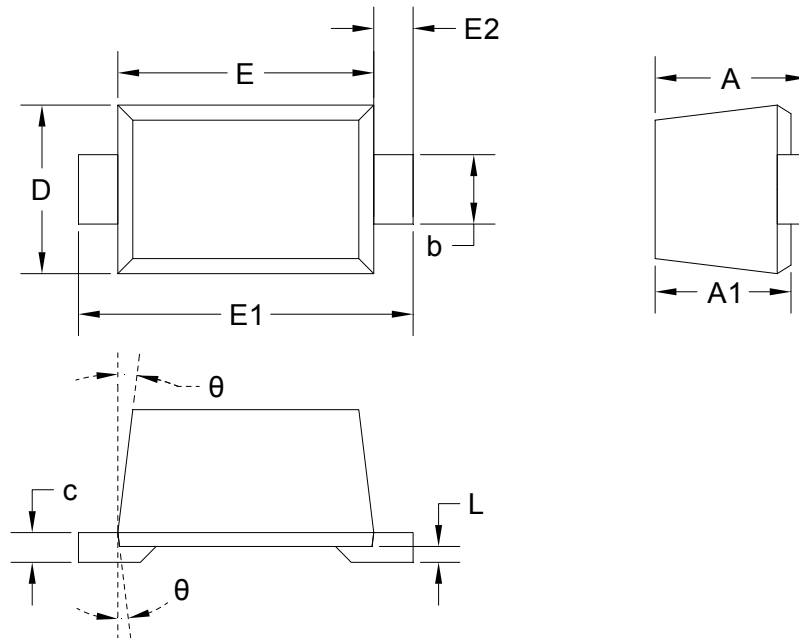
### 8. Typical Application



**BSD5C051V-ES**

Typical Interface Application

9. Dimension (SOD-523)



Units in millimeters

Unit	A	A1	b	c	D	E	E1	E2	L	$\theta$
Min.	0.58	0.50	0.28	0.08	0.75	1.10	1.50	0.20 REF.	0.01	7° REF.
Max.	0.68	0.70	0.38	0.15	0.85	1.30	1.70		0.07	

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