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
  - ±25kV Contact Discharge
  - ±25kV Air Discharge
- 75W Peak pulse Power (8/20us)
- Low clamping voltage
- Working voltage: 5V
- Low leakage current
- RoHS compliant
- Protecting one bi-directional line
- Ultra-low capacitance: 4.5pF 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

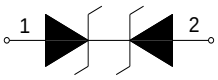
Pin	Name	Description	Outline	Circuit Diagram
1	IO1	Connect to IO	Note1 	
2	IO2	Connect to IO		

Table-2 Pin configuration

Note1: This diagram is only an electrical schematic, and the actual pin size is based on POD.

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℃	P_{pk}	-	75	W
Peak pulse current (tp=8/20us)@25℃	I_{PP}		5	A
ESD (IEC61000-4-2 air discharge) @25℃	V_{ESD}	-	±25	kV
ESD (IEC61000-4-2 contact discharge) @25℃	V_{ESD}	-	±25	kV
Junction temperature	T_J	-	150	℃
Operating temperature	T_{OP}	-40	125	℃
Storage temperature	T_{STG}	-55	150	℃
Lead temperature	T_L	-	260	℃

Table-3 Absolute Maximum rating

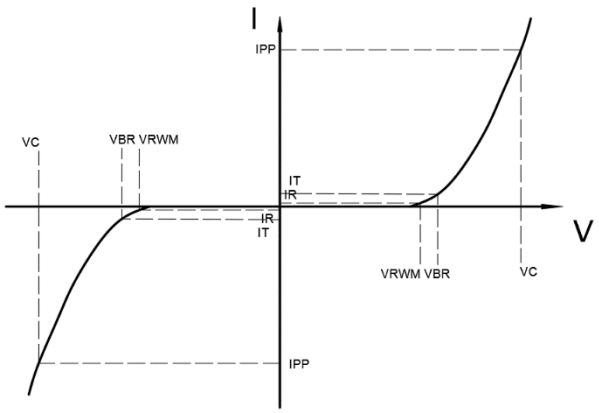
6.2. Electrical Characteristics

At TA = 25℃ unless otherwise noted

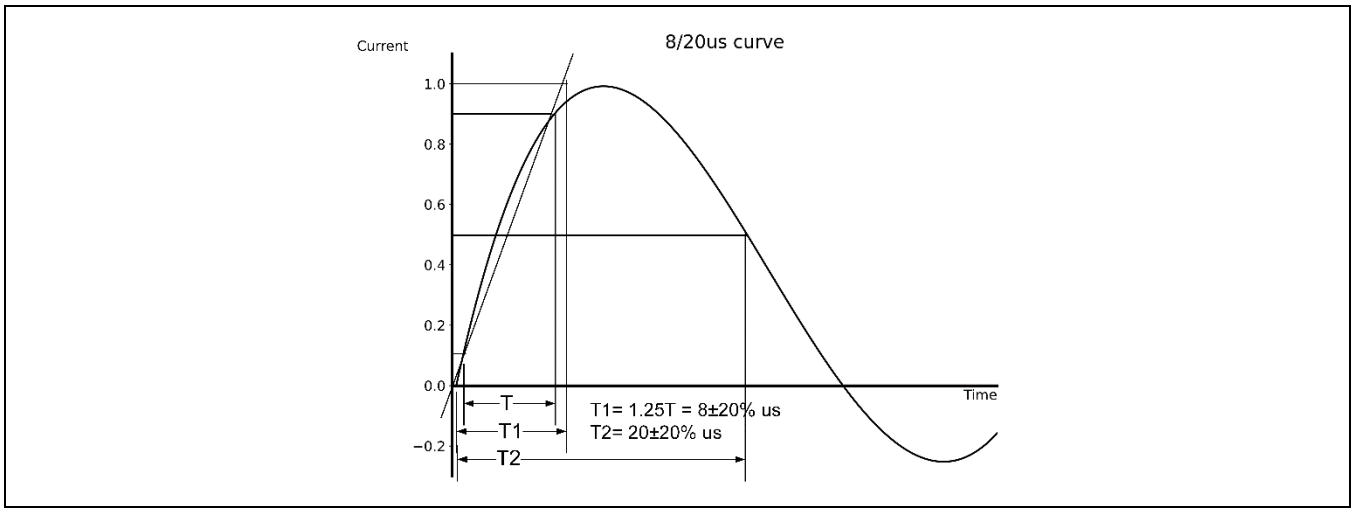
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Reverse Stand-off Voltage	V_{RWM}				5.0	V
Reverse Breakdown Voltage	V_{BR}	IT=1mA	6.0			V
Reverse Leakage Current	I_R	V_{RWM}=5V			1.0	uA
Clamping Voltage	V_C	I_{PP}=1A; tp=8/20us		9.0	12.0	V
Clamping Voltage	V_C	I_{PP}=5A; tp=8/20us		13.5	15.0	V
Junction Capacitance	C_J	I/O to GND; V_R=0V; f=1MHz		4.5	7.0	pF

Table-4 Electrical Characteristics

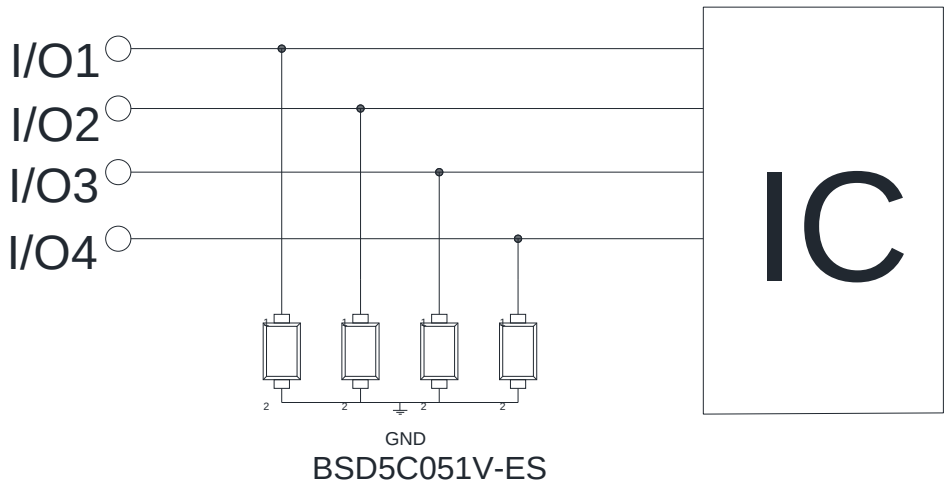
Symbol	Parameters
V_{RWM}	Peak Reverse Working Voltage
I_R	Reverse Leakage Current @ V_{RWM}
V_{BR}	Breakdown Voltage @ I_T
I_T	Test Current
I_{PP}	Maximum Reverse Peak Pulse Current
V_C	Clamping Voltage @ I_{PP}



7. Typical Characteristic



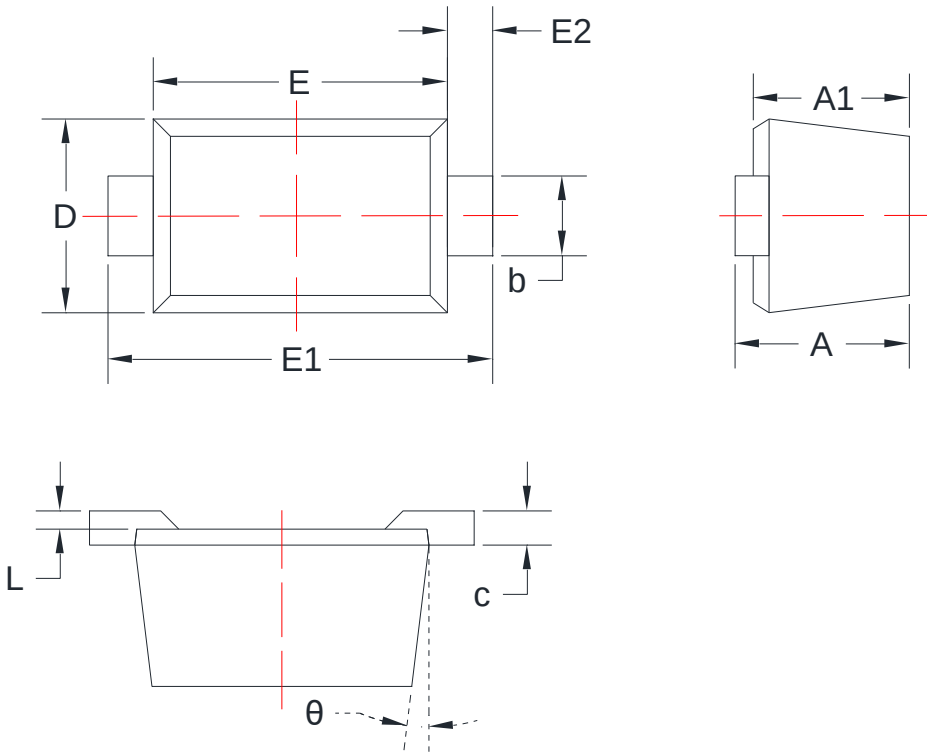
8. Typical Application



Typical Interface Application

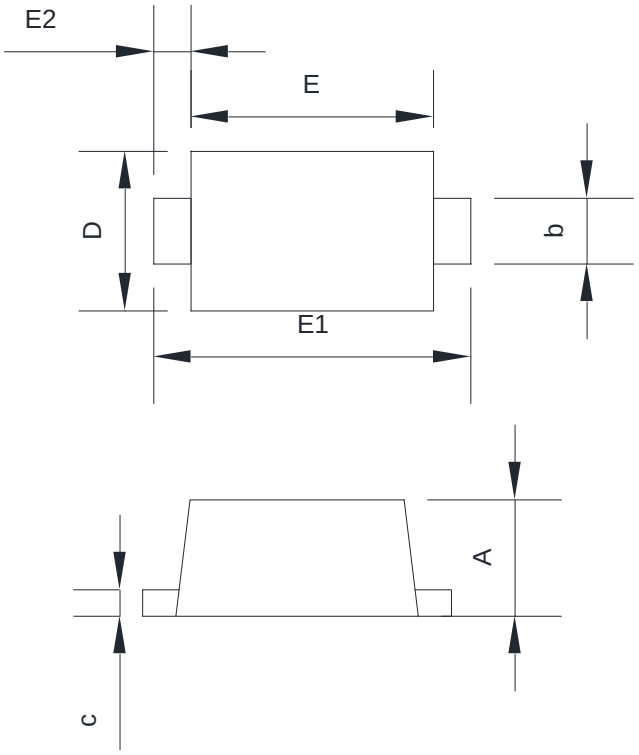
9. Dimension (SOD-523)

POD A(SX)



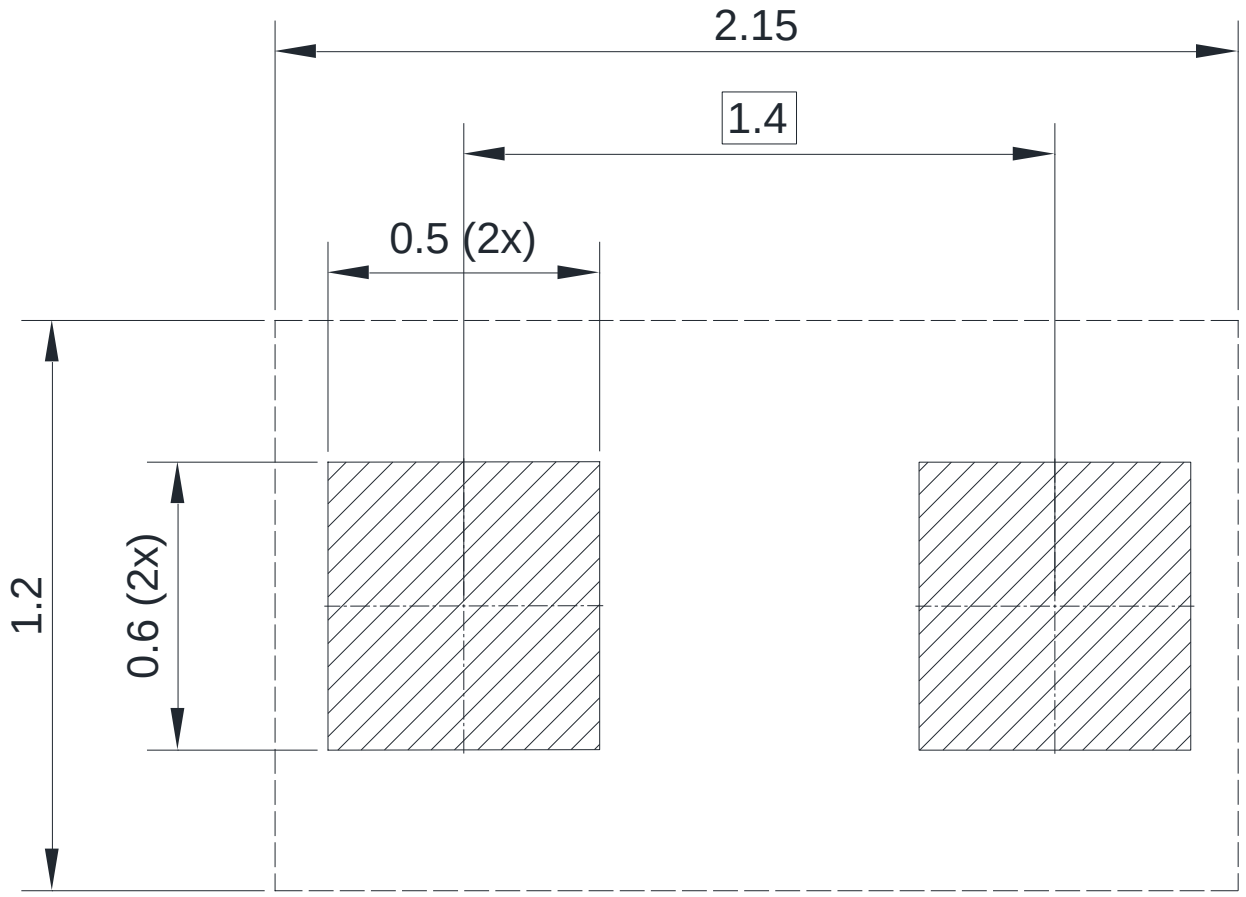
Symbol	Dimensions in Millimeters	
	Min.	Max.
A	0.50	0.73
A1	0.45	0.70
b	0.25	0.38
c	0.08	0.20
D	0.70	0.90
E	1.10	1.30
E1	1.50	1.70
E2	0.10	0.30
L	0.00	0.07
θ	7° REF	

POD B(H)



Symbol	Dimensions in Millimeters	
	Min.	Max.
A	0.50	0.70
b	0.25	0.35
c	0.10	0.20
D	0.75	0.85
E	1.10	1.30
E1	1.50	1.70
E2	0.10	0.30

10. Recommended Soldering Footprint



DIMENSIONS: MILLIMETERS

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