

SuperESD - BSD5C051U-ES

1. Description

The BSD5C051U-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 BSD5C051U-ES incorporates one pair of low capacitance steering diodes plus a TVS diode.

2. Features

- IEC 61000-4-2 Level 4 ESD Protection
 - $\pm 20\text{kV}$ Contact Discharge
 - $\pm 20\text{kV}$ Air Discharge
- 120W Peak pulse Power (8/20us)
- Low clamping voltage
- Working voltage: 5V
- Low leakage current
- RoHS compliant
- Protecting one bi-directional line
- Ultra-low capacitance: 0.25pF 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
BSD5C051U-ES	SOD-523	L05B	Halogen free	Tape & Reel	3,000 PCS	UL 94V-0	7 inches

Table-1 Ordering information

5. Pin Configuration and Functions

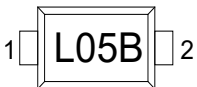
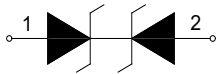
Pin	Name	Description	Outline	Circuit Diagram
1	IO1	Connect to IO	Note1 	
2	IO2	Connect to IO		

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°C	P _{pk}	-	120	W
Peak pulse current (tp=8/20us)@25°C	I _{PP}		4.5	A
ESD (IEC61000-4-2 air discharge) @25°C	V _{ESD}	-	±20	kV
ESD (IEC61000-4-2 contact discharge) @25°C	V _{ESD}	-	±20	kV
Junction temperature	T _J	-	150	°C
Operating temperature	T _{OP}	-40	125	°C
Storage temperature	T _{STG}	-55	150	°C
Lead temperature	T _L	-	260	°C

Table-3 Absolute Maximum rating

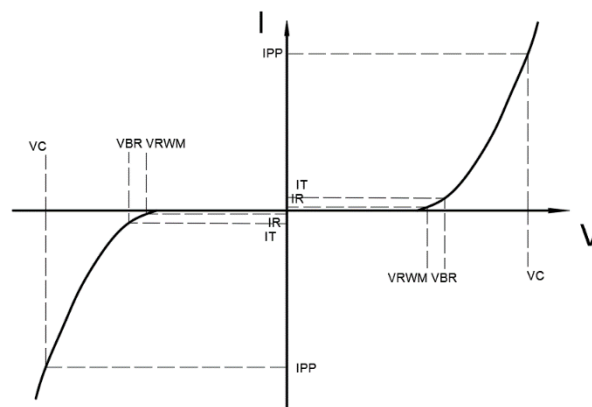
6.2. Electrical Characteristics

At TA = 25°C unless otherwise noted

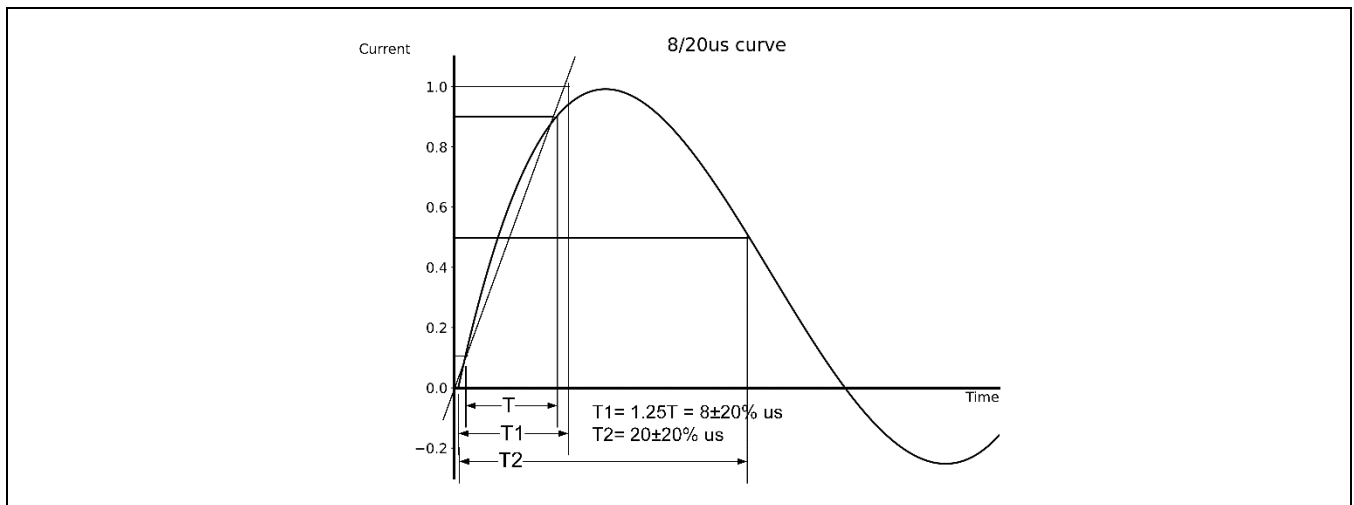
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Reverse Stand-off Voltage	V_{RWM}				5	V
Reverse Breakdown Voltage	V_{BR}	$I_T=1mA$	6.5		9.0	V
Reverse Leakage Current	I_R	$V_{RWM}=5V$			1	μA
Clamping Voltage	V_C	$I_{PP}=1A$; $t_p=8/20\mu s$		12	15	V
Clamping Voltage	V_C	$I_{PP}=3A$; $t_p=8/20\mu s$		16	19	V
Clamping Voltage	V_C	$I_{PP}=4.5A$; $t_p=8/20\mu s$		22	25	V
Junction Capacitance	C_J	$V_R=0V$; $f=1MHz$		0.25	0.32	pF

Table-4 Electrical Characteristics

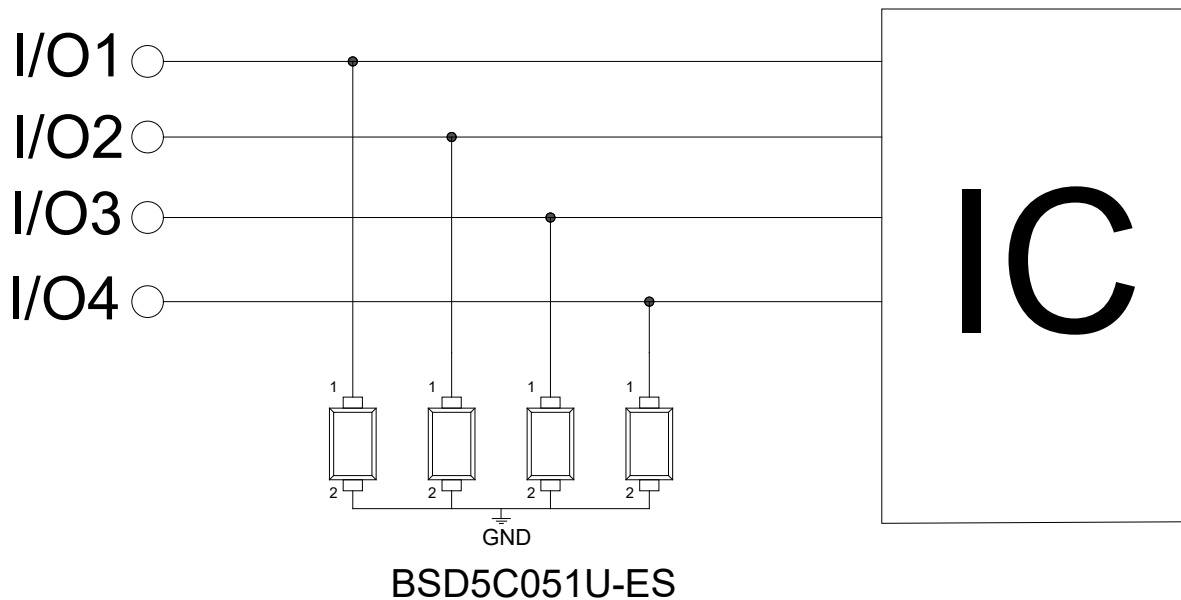
Symbol	Parameters
V_{RWM}	Peak Reverse Working Voltage
I_R	Reverse Leakage Current @ V_{RWM}
V_{BR}	Breakdown Voltage @ I_T
I_T	Test Current
I_{PP}	Maximum Reverse Peak Pulse Current
V_C	Clamping Voltage @ I_{PP}



7. Typical Characteristic



8. Typical Application

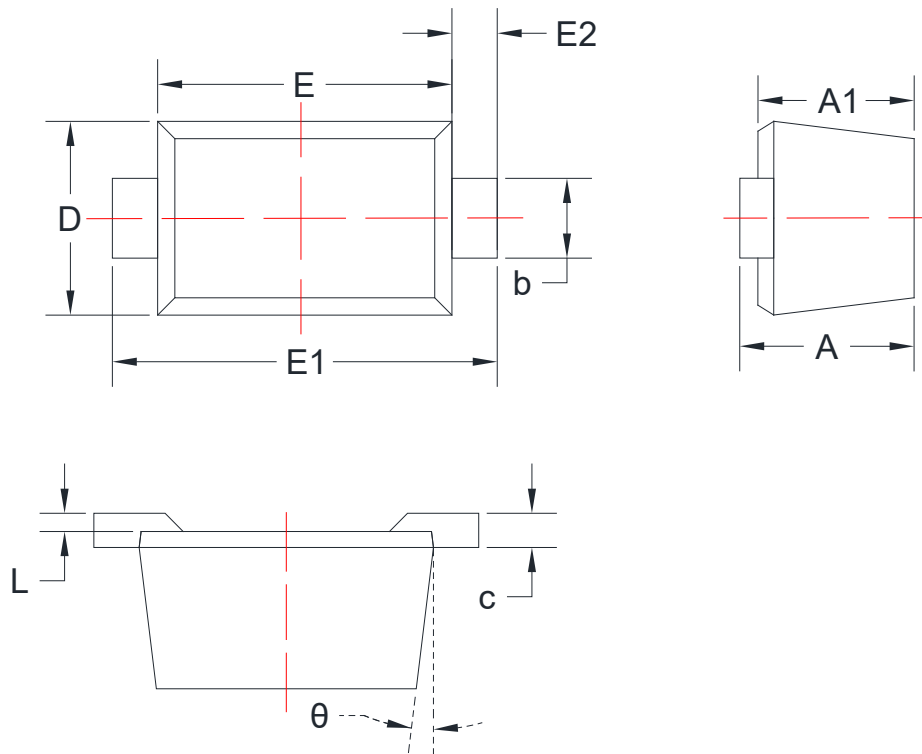


BSD5C051U-ES

Typical Interface Application

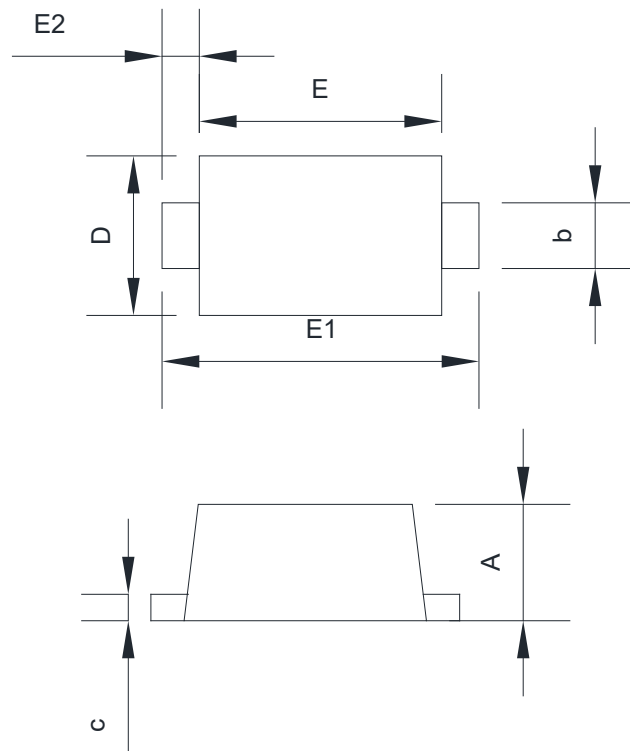
9. Dimension (SOD-523)

POD A(SX)



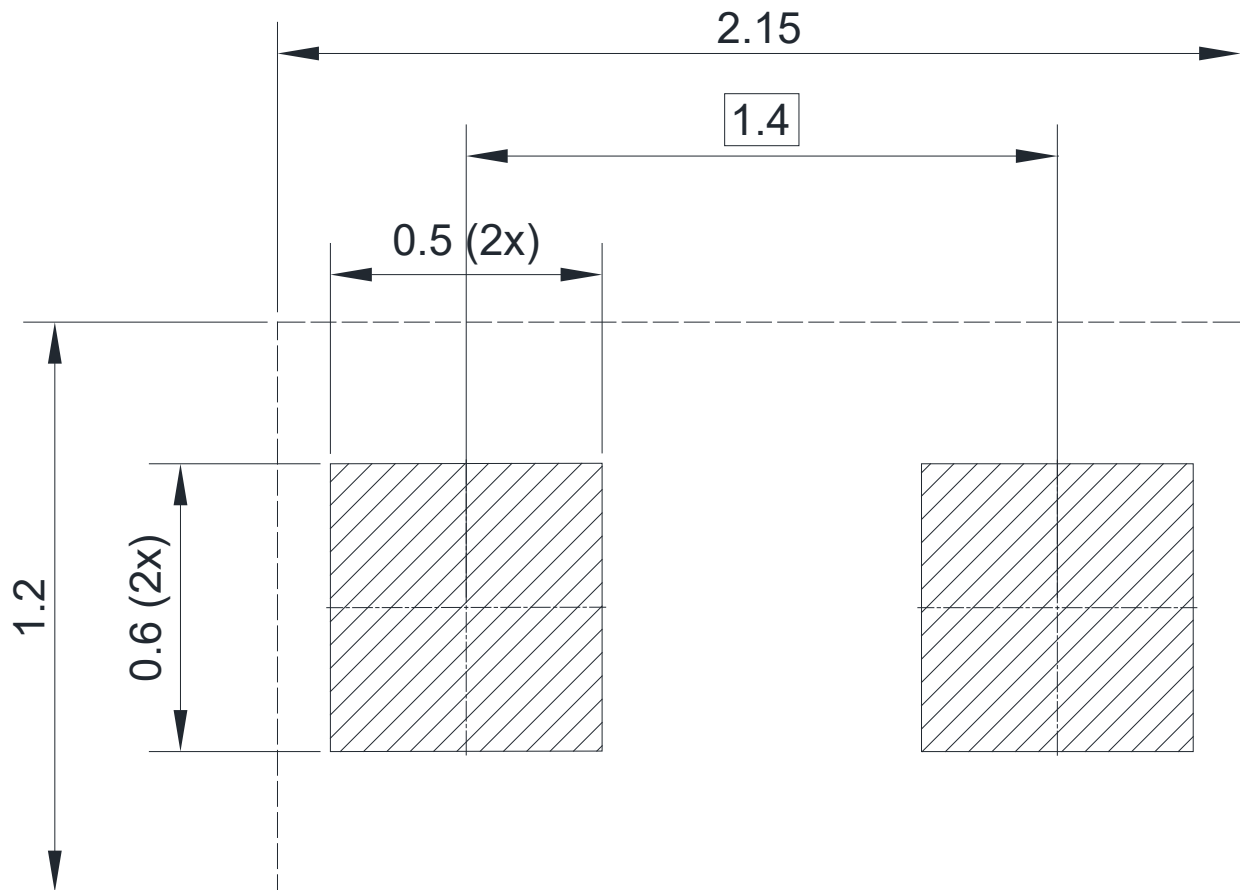
Symbol	Dimensions in Millimeters	
	Min.	Max.
A	0.50	0.73
A1	0.45	0.70
b	0.25	0.38
c	0.08	0.20
D	0.70	0.90
E	1.10	1.30
E1	1.50	1.70
E2	0.10	0.30
L	0.00	0.07
θ	7° REF	

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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