SuperESD - SP0503BAHTG

1. Description

The SP0503BAHTG is Ultra low capacitance double rail-to-rail Electro Static Discharge (ESD) protection diode in a small SOT143 Surface Mounted Device plastic package designed to protect two Hi-Speed data lines or high frequency signal lines from the damage caused by ESD and other transients.

2. Features

- IEC 61000-4-2 Level 4 ESD Protection
  - ±8kV Contact Discharge
  - ±15kV Air Discharge
- 60W Peak pulse Power (8/20us)
- Working voltage: 5V
- Protect three I/O lines
- Low operating and clamping voltage
- Low leakage current
- Solid-state silicon technology
- Capacitance: 0.8pF Typ.

3. Applications

- USB 2.0
- DVI and HDMI interfaces
- Mobile and cordless phones
- Personal Digital Assistants (PDA)
- Digital cameras
- PCs, notebooks, printers and other PC peripherals

4. Ordering Information

Part Number	Package	Marking	Material	Packing	Quantity per reel	Flammability Rating	Reel Size
SP0503BAHTG	SOT-143	5V3U	Halogen free	Tape & Reel	3,000 PCS	UL 94V-0	7 inches

Table-1 Ordering information

5. Pin Configuration and Functions

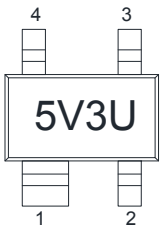
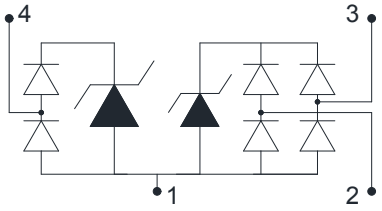
Pin	Name	Description	Outline	Circuit Diagram
1	GND	Connect to GND		
2	IO	Connect to IO		
3	IO	Connect to IO		
4	IO	Connect to IO		

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_{pk}	-	60	W
Peak pulse current (tp=8/20us)@25˚C	I_{PP}		4	A
ESD (IEC61000-4-2 air discharge) @25˚C	V_{ESD}	-	±15	kV
ESD (IEC61000-4-2 contact discharge) @25˚C	V_{ESD}	-	±8	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

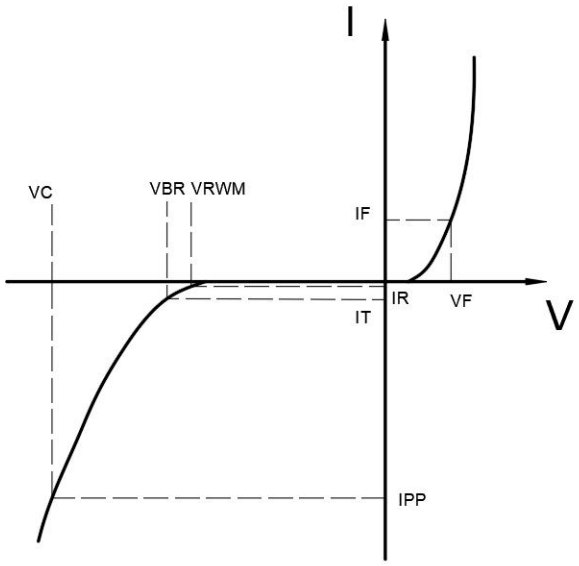
6.2. Electrical Characteristics

At TA = 25℃ unless otherwise noted

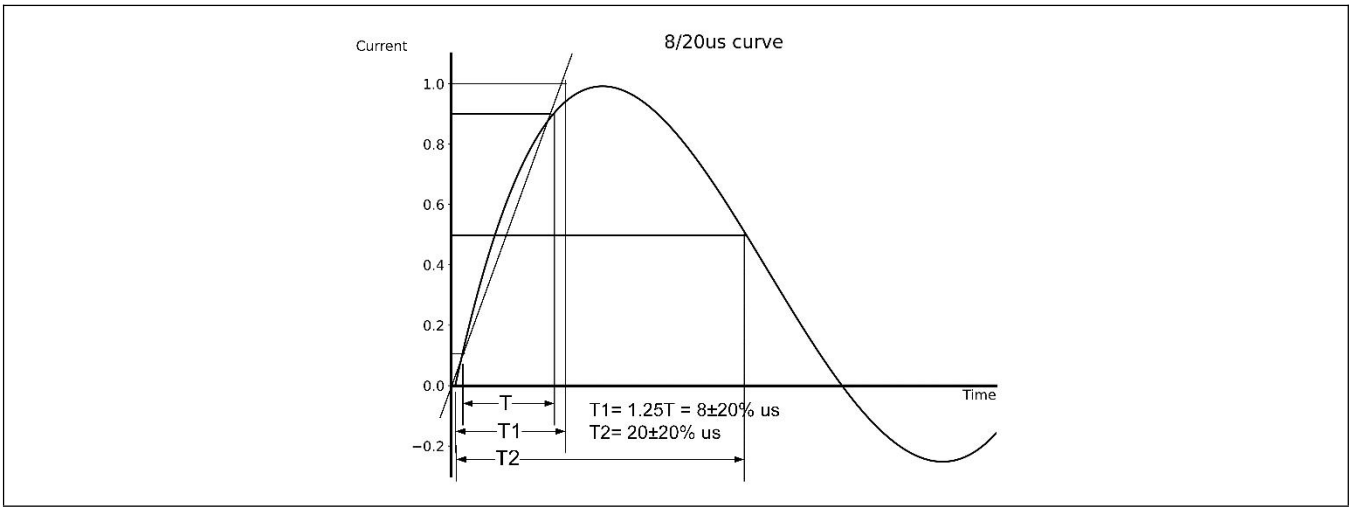
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Reverse Stand-off Voltage	V_{RWM}				5.0	V
Reverse Breakdown Voltage	V_{BR}	IT=1mA	6.0			V
Reverse Leakage Current	I_R	V_{RWM}=5V			1.0	uA
Clamping Voltage	V_C	I_{PP}=1A; tp=8/20us		9.0	11.0	V
Clamping Voltage	V_C	I_{PP}=4A; tp=8/20us		12.0	15.0.	V
Junction Capacitance	C_J	V_R=0V; f=1MHz I/O pin to I/O pin		0.3	0.4	pF
Junction Capacitance	C_J	V_R=0V; f=1MHz I/O pin to GND		0.6	0.8	pF

Table-4 Electrical Characteristics

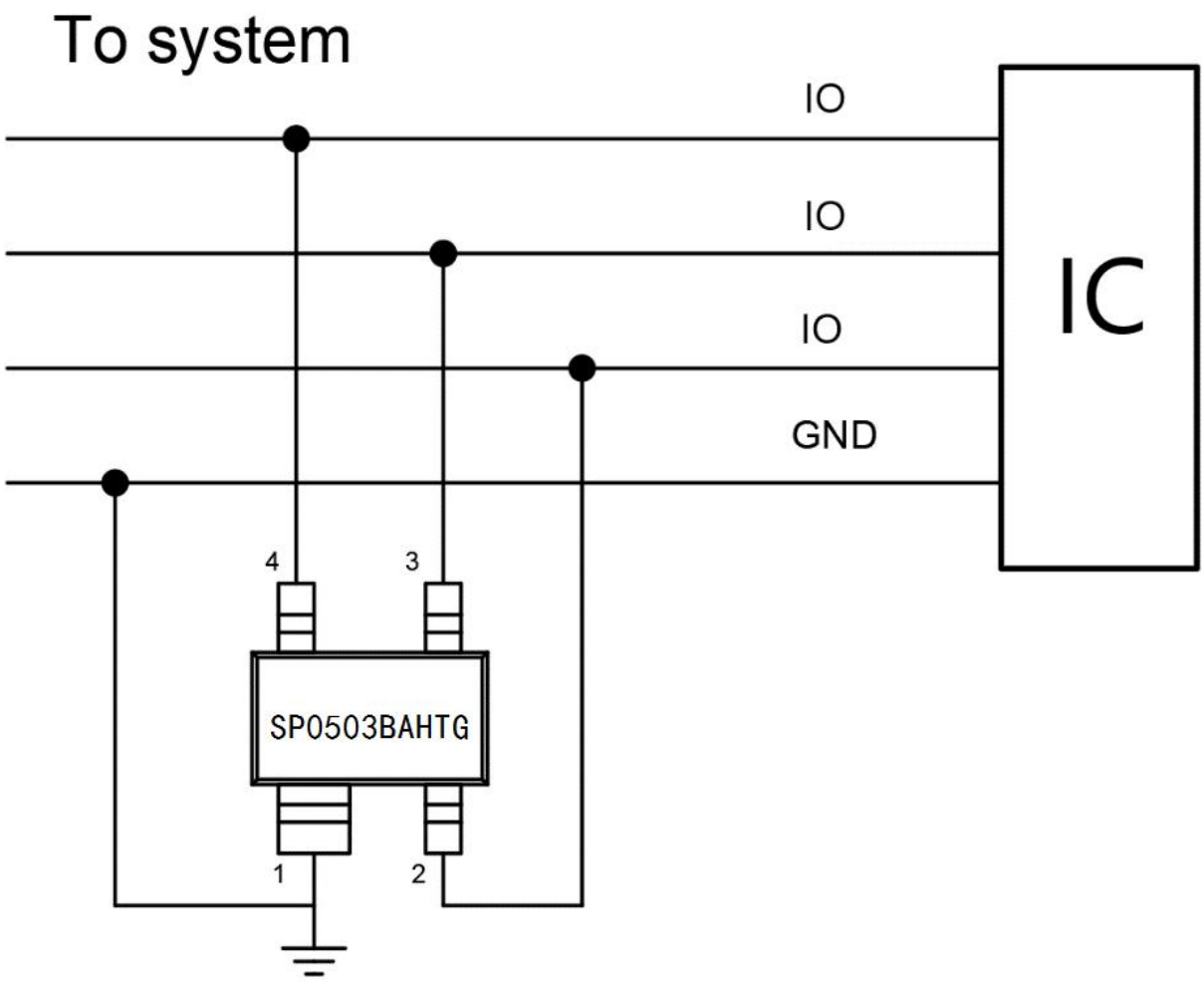
Symbol	Parameters
V_{RWM}	Peak Reverse Working Voltage
I_R	Reverse Leakage Current @ V_{RWM}
V_{BR}	Breakdown Voltage @ I_T
I_T	Test Current
I_{PP}	Maximum Reverse Peak Pulse Current
V_C	Clamping Voltage @ I_{PP}
I_F	Forward Current
V_F	Forward Voltage @ I_F



7. Typical Characteristic

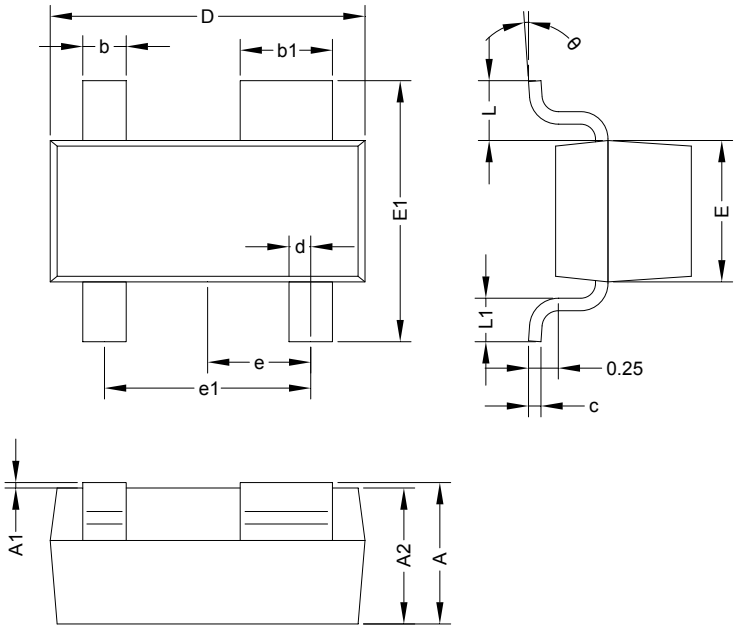


8. Typical Application



Typical Interface Application

9. Dimension (SOT-143)



COMMON DIMENSIONS CUNITS MEASURE=MILLIMETER							
SYMBOL	MIN	TYP	MAX	SYMBOL	MIN	TYP	MAX
A	0.95	1.125	1.300	E	1.200	1.300	1.400
A1	0.00	0.050	0.100	E1	2.250	2.400	2.550
A2	0.900	1.050	1.200	e	0.950 TYP		
b	0.300	0.400	0.500	e1	1.800	1.900	2.000
b1	0.750	0.850	0.950	L	0.550 TYP		
c	0.080	0.115	0.150	L1	0.300	0.400	0.500
D	2.800	2.900	3000	θ	0°	4°	8°
d	0.200 TYP						

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