



BSD5C051L

1-Line Bi-directional TVS Diode

Description

The BSD5C051L is a bi-directional TVS diode, utilizing leading monolithic silicon technology to provide fast response time and low ESD clamping voltage, making this device an ideal solution for protecting voltage sensitive data and power line. The BSD5C051L complies with the IEC 61000-4-2 (ESD) with ± 15 kV air and ± 8 kV contact discharge. It is assembled into an ultra-small SOD-523 lead-free package. The small size and high ESD surge protection make BSD5C051L an ideal choice to protect cell phone, digital cameras, audio players and many other portable applications.

Features

- Protects one data or power line
- Ultra low leakage: nA level
- Operating voltage: 5V
- Low clamping voltage
- Complies with following standards:
 - IEC 61000-4-2 (ESD) immunity test
 - Air discharge: ± 15 kV
 - Contact discharge: ± 8 kV
- IEC61000-4-5 (Lightning) 2A (8/20 μ s)

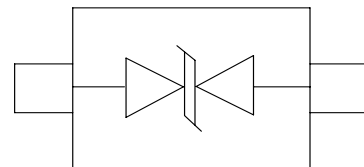
Mechanical Characteristics

- Package: SOD-523
- Lead Finish: Matte Tin
- Case Material: "Green" Molding Compound.
- Terminal Connections: See Diagram Below
- Marking Information: See Below

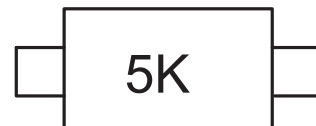
Applications

- Cellular Handsets and Accessories
- Personal Digital Assistants
- Notebooks and Handhelds
- Portable Instrumentation
- Digital Cameras
- Peripherals
- Audio Players
- Keypads, Side Keys, LCD Displays

SOD-523



Circuit diagram



3D= Device code

Marking (Top View)

Ordering Information

Part Number	Packaging	Reel Size
BSD5C051L	3000/Tape & Reel	7 inch

Absolute maximum ratings

Parameter	Symbol	Rating	Unit
Peak pulse power ($t_p = 8/20\mu s$)	P_{pk}	25	W
Peak pulse current ($t_p = 8/20\mu s$)	I_{PP}	2	A
ESD according to IEC61000-4-2 air discharge	V_{ESD}	± 15	kV
ESD according to IEC61000-4-2 contact discharge		± 8	
Junction temperature	T_J	125	$^{\circ}C$
Operating temperature	T_{OP}	-40~85	$^{\circ}C$
Lead temperature	T_L	260	$^{\circ}C$
Storage temperature	T_{STG}	-55~150	$^{\circ}C$

Electrical characteristics ($T_A=25^{\circ}C$, unless otherwise noted)

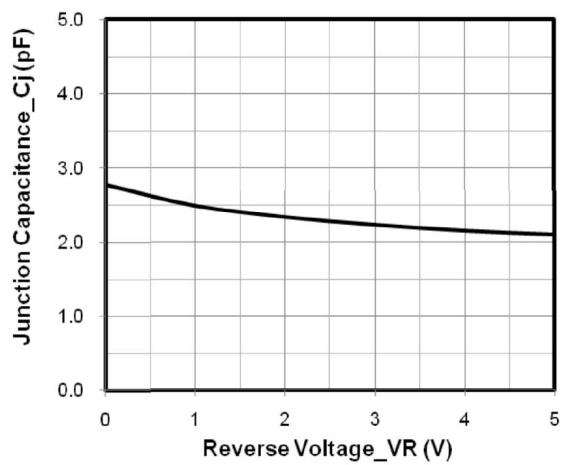
Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	V_{RWM}			5	V	
Breakdown Voltage	V_{BR}	6			V	$I_T = 1mA$
Reverse Leakage Current	I_R			0.2	μA	$V_{RWM} = 5V$
Clamping Voltage	V_C			10	V	$I_{PP} = 1A$ (8 x 20 μs pulse)
Clamping Voltage	V_C			12.5	V	$I_{PP} = 2A$ (8 x 20 μs pulse)
Junction Capacitance	C_J		2.5	3	pF	$V_R = 0V$, $f = 1MHz$

Notes:

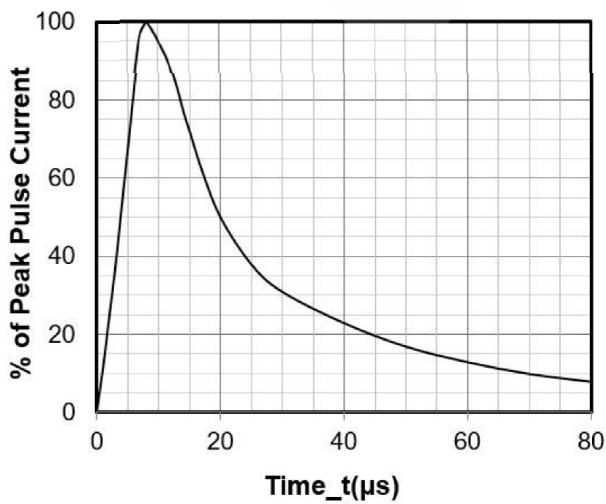
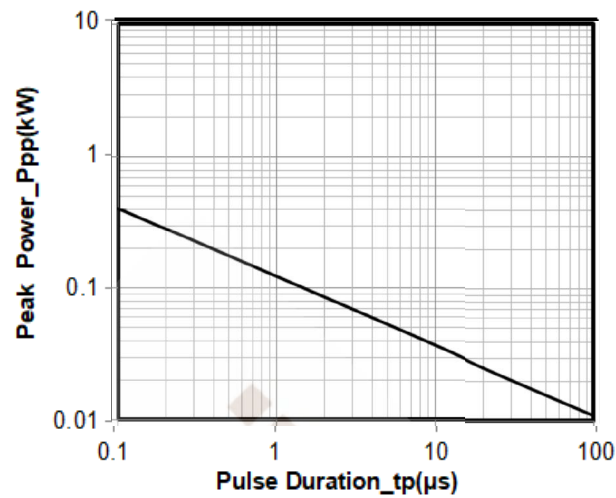
- 1) TLP parameter: $Z_0 = 50\Omega$, $t_p = 100ns$, $t_r = 0.2ns$, averaging window from 70ns to 90ns. R_{DYN} is calculated from 4A to 16A.
- 2) Contact discharge mode, according to IEC61000-4-2.
- 3) Non-repetitive current pulse, according to IEC61000-4-5.

Typical Performance Characteristics (TA=25°C unless otherwise Specified)

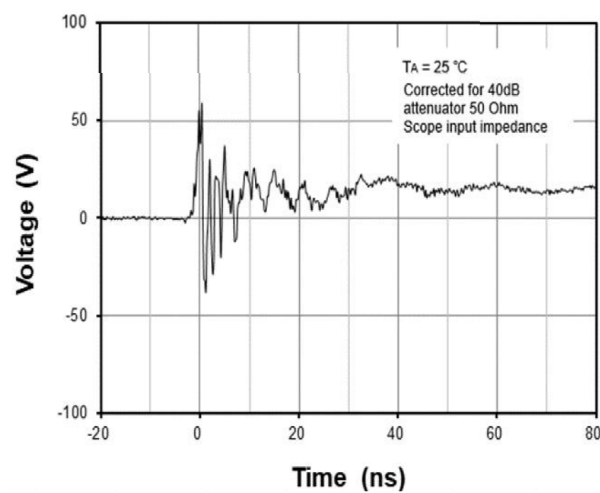
BSD5C051L



Junction Capacitance vs. Reverse Voltage



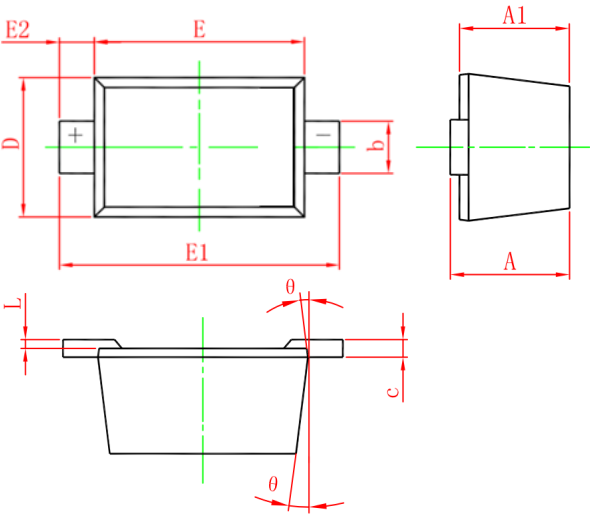
8 X 20μs Pulse Waveform



ESD Clamping Voltage

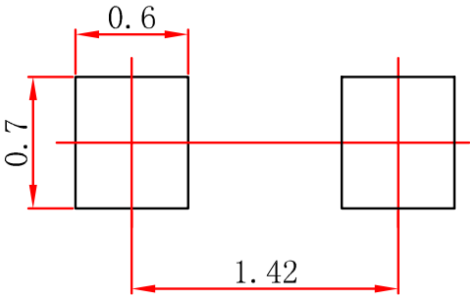
8 kV Contact per IEC61000-4-2

SOD-523 Package Outline Drawing



SYM	DIMENSIONS					
	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.51	--	0.77	0.020	--	0.031
A1	0.50	--	0.70	0.020	--	0.028
b	0.25	--	0.35	0.010	--	0.014
c	0.08	--	0.15	0.003	--	0.006
D	0.75	--	0.85	0.030	--	0.033
E	1.10	--	1.30	0.043	--	0.051
E1	1.50	--	1.70	0.059		0.067
E2	0.20REF			0.008REF		
L	0.01	--	0.07	0.001	--	0.003
Θ	7° REF			7° REF		

Suggested Land Pattern



Unit: mm