SSCE5V051SB

Ultra Low Capacitance Array for ESD Protection

Description

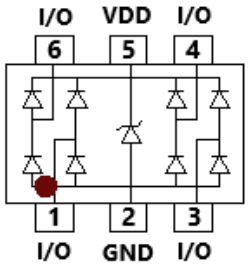
The SSCE5V051SB is a high performance and low-cost design which includes surge rated diode arrays to protect high speed data interfaces. The SSCE5V051SB family has been specifically designed to protected sensitive components. Which are connected to data and transmission lines, from over-voltage caused by Electrostatic Discharging (ESD). Electrical Fast Transients (EFT), and lightning.

The SSCE5V051SB is a unique design which includes surge rated, low capacitance steering diodes and a unique design of clamping cell which is an equivalent TVS diodes in a single package. During transient conditions, the steering diodes direct the transient to either the power supply line or to the ground line. The internal unique design of clamping cell prevents over-voltage on the power line, protecting any downstream components. The SSCE5V051SB may be used to meet the ESD immunity requirements of IEC 61000-4-2, level 4(±30KV air, ±30KV contact discharge).

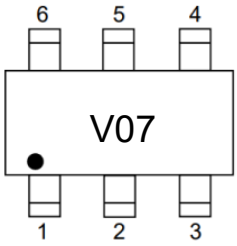
Feature

- ✧ 720W peak pulse power (t_P = 8/20μs)
- ✧ SOT23-6L Package
- ✧ Working voltage: 5V
- ✧ Low clamping voltage
- ✧ Low capacitance
- ✧ Low leakage current
- ✧ Response Time is<1 ns
- ✧ RoHS compliant
- ✧ Complies with following standards:
  - – IEC 61000-4-2 (ESD) immunity test
    - Air discharge: ±30kV
    - Contact discharge: ±30kV
  - –IEC 61000-4-5(Surge) 40A (8/20μs)

PIN configuration



Circuit Diagram



Marking (Top View)

Applications

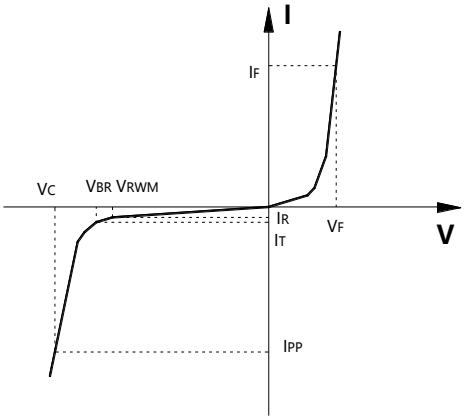
- ✧ Video Graphics Cards
- ✧ USB2.0 Power and Data lines protection
- ✧ Notebook and PC Computers
- ✧ Monitors and Flat Panel Displays
- ✧ IEEE 1394 Firewire Ports
- ✧ SIM Ports

Mechanical data

- ✧ Lead finish:100% matte Sn (Tin)
- ✧ Mounting position: Any
- ✧ Qualified max reflow temperature:260℃
- ✧ Device meets MSL 3 requirements
- ✧ Pure tin plating: 7 ~ 17 um
  - Pin flatness: ≤3mil

Electronic Parameter

Symbol	Parameter
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}
P_{PP}	Peak Pulse Power
C_J	Junction Capacitance



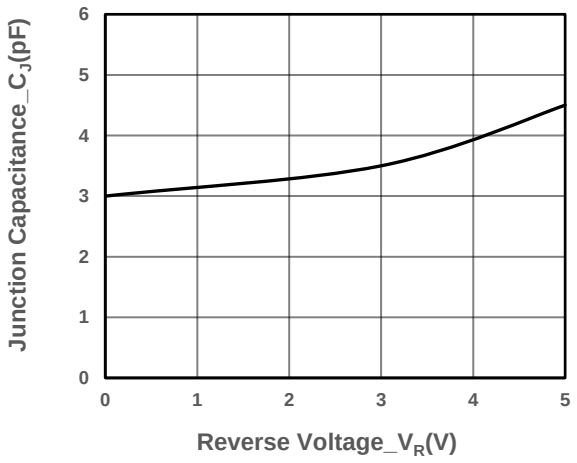
Absolute maximum rating @T_A = 25℃

Parameter		Symbol	Value	Unit
Peak Pulse Power（8/20μs）		P_{PP}	720	W
Peak Pulse Current（8/20μs）		I_{PP}	40	A
ESD Rating per IEC61000-4-2：	Contact Air	V_{ESD}	30 30	KV
Storage Temperature		T_{STG}	-55/+150	℃
Operating Temperature		T_J	-55/+125	℃

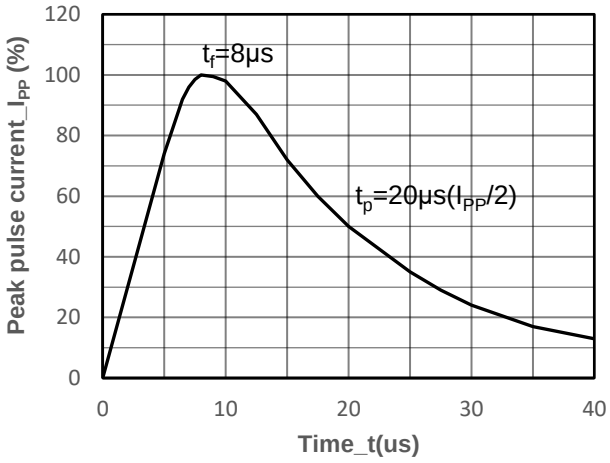
Electrical Characteristics @T_A = 25℃

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Peak Reverse Working Voltage	V_{RWM}				5	V
Breakdown Voltage	V_{BR}	I_T = 1mA	6.0			V
Reverse Leakage Current	I_R	V_{RWM} = 5V			1	μA
Clamping Voltage (I/O pin to GND)	V_{C1}	I_{PP} = 1A, t_P = 8/20μs		9.5	11	V
	V_{C2}	I_{PP} = 40A, t_P = 8/20μs		16	18	V
Clamping Voltage (VDD pin to GND)	Vc	I_{PP} = 90A, t_P = 8/20μs			19	V
Junction Capacitance	C_J	V_R = 0V, f = 1MHz, between I/O pins			3	pF
Junction Capacitance	C_J	V_R = 0V, f = 1MHz, I/O pins pin to GND			5	pF

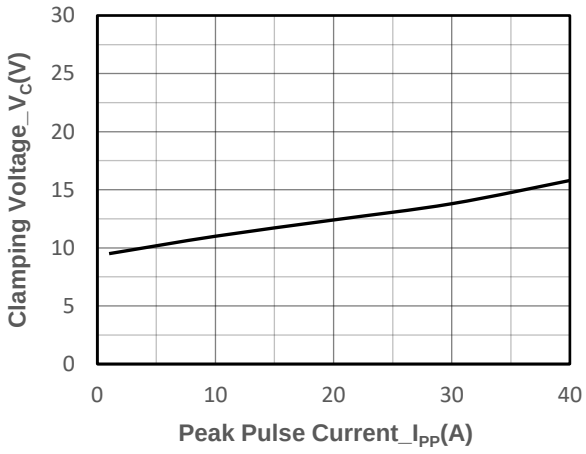
Typical Performance Characteristics



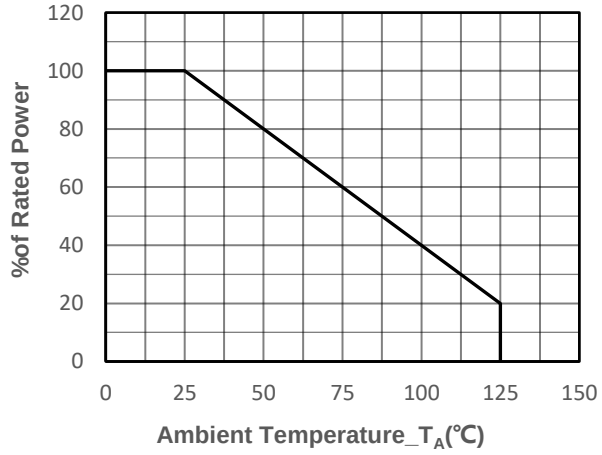
Junction Capacitance vs. Reverse Voltage



8/20μs Pulse Waveform



Clamping Voltage vs. Peak Pulse Current



Power derating vs. Ambient temperature

● Package Information

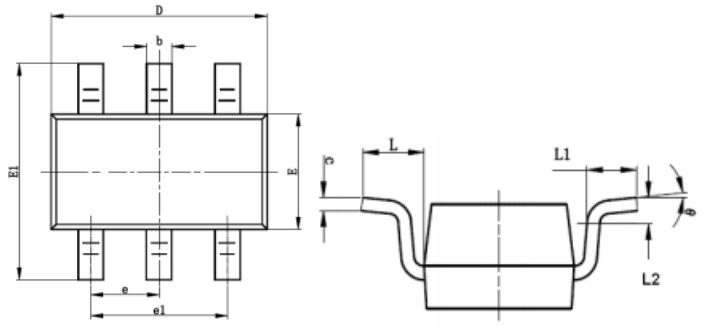
Ordering Information

Device	Package	Qty per Reel	Reel Size
SSCE5V051SB	SOT23-6L	3000	7 Inch

Mechanical Data

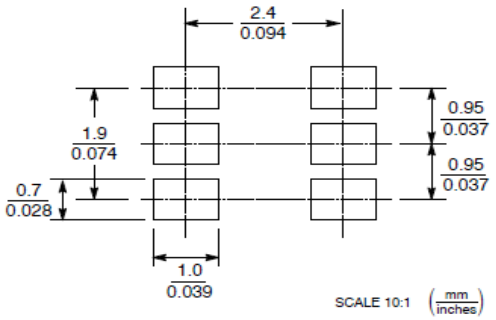
Case: SOT23-6L

Case Material: Molded Plastic. UL Flammability



DIM	Millimeters	
	Min	Max
A	0.900	1.450
A1	0.000	0.150
A2	0.900	1.300
b	0.300	0.500
c	0.080	0.210
D	2.720	3.120
E	1.400	1.800
E1	2.600	2.950
e	0.950BSC	
el	1.9BSC	
L1	0.300	0.600
L	0.7REF	
L2	0.25REF	
θ	0	8

Recommended Pad outline (Unit: mm)



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