



SSCE5V091N1

2-Lines Uni-directional low Capacitance TVS Diode

● Description

The SSCE5V091N1 is an uni-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 high-speed data lines. The SSCE5V091N1 has an ultra-low capacitance with a typical value at 0.6pF, and complies with the IEC61000-4-2 (ESD) with $\pm 25\text{kV}$ air and $\pm 20\text{kV}$ contact discharge. It is assembled into an ultra-small 1.0x0.6x0.5mm lead-free DFN package. The small size, ultra-low capacitance and high ESD surge protection make SSCE5V091N1 an ideal choice to protect cell phone, digital visual interfaces and other high speed ports.

● Features

- ✧ Ultra low capacitance
- ✧ Working voltage: 5V
- ✧ Low clamping voltage
- ✧ 3-pin leadless package
- ✧ Low Leakage Current
- ✧ Complies with following standards:
 - IEC61000-4-2(ESD) $\pm 20\text{kV}$ (contact), $\pm 25\text{kV}$ (air)
 - IEC61000-4-4(EFT) 40A(5/50ns)
 - IEC61000-4-5(Lightning) 4A(8/20 μs)

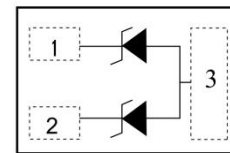
● Mechanical Characteristics

- ✧ Package: DFN1006-3L (1.0×0.6×0.5mm)
- ✧ Lead Finish: NiPdAu
- ✧ Case Material: "Green" Molding Compound.
- ✧ UL Flammability Classification Rating 94V-0
- ✧ Moisture Sensitivity: Level 3 per J-STD-020

● PIN configuration



DFN1006-3L(Bottom View)



Circuit Diagram



Marking(Top View)

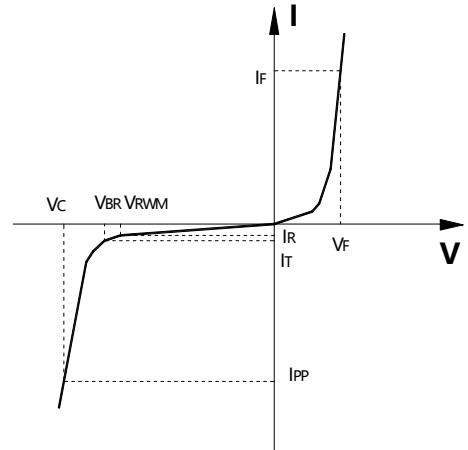
● Applications

- ✧ Cellular Handsets and Accessories
- ✧ Display Ports
- ✧ MDDI Ports
- ✧ USB 2.0 and 3.0 Ports
- ✧ HDMI 1.3 and 1.4
- ✧ Digital Visual Interface (DVI)
- ✧ PCI Express and Serial SATA Ports
- ✧ Notebook Computer
- ✧ IEEE 1394



- **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_{PPP}	Peak Pulse Power
C	Junction Capacitance



- **Absolute maximum rating @ $T_A=25^{\circ}\text{C}$**

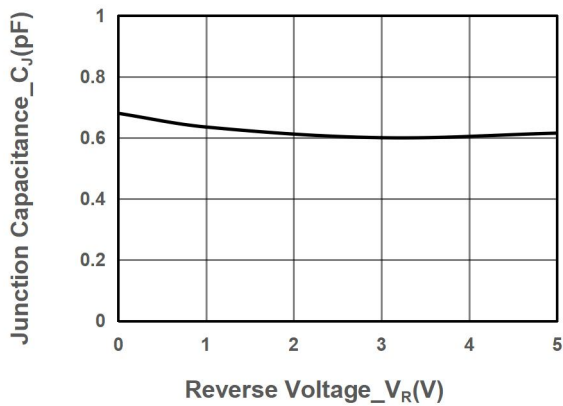
Parameter	Symbol	Value	Units
Peak Pulse Power (8/20 μs)	P_{PPP}	60	W
Peak Pulse Current (8/20 μs)	I_{PP}	4	A
ESD Rating per IEC61000-4-2			
Contact	V_{ESD}	± 20	kV
Air		± 25	
Storage Temperature	T_{STG}	-55/+150	$^{\circ}\text{C}$
Operating Temperature	T_J	-55/+125	$^{\circ}\text{C}$

- **Electrical Characteristics @ $T_A=25^{\circ}\text{C}$**

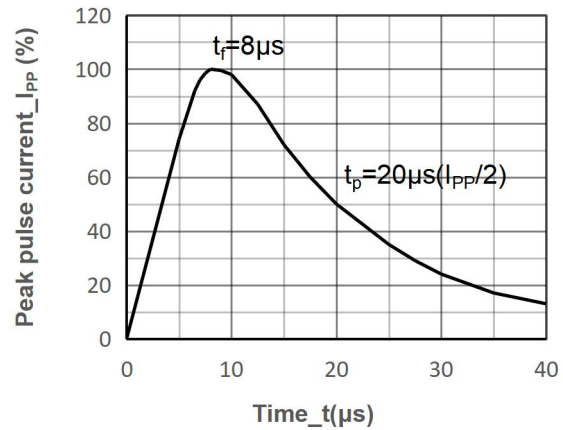
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Peak Reverse Working Voltage	V_{RWM}				5	V
Breakdown Voltage	V_{BR}	$I_T = 1\text{mA}$	6			V
Reverse Leakage Current	I_R	$V_{RWM} = 5\text{V}$			0.5	μA
Clamping Voltage	V_C	$I_{PP} = 1\text{A}$, $t_P = 8/20\mu\text{s}$			10	V
Clamping Voltage	V_C	$I_{PP} = 4\text{A}$, $t_P = 8/20\mu\text{s}$		11	15	V
Junction Capacitance	C_J	$V_R = 0\text{V}$, $f = 1\text{MHz}$, between Pin 1 and Pin 2		0.4	0.6	pF
Junction Capacitance	C_J	$V_R = 0\text{V}$, $f = 1\text{MHz}$, Pin 1 or Pin 2 to Pin 3		0.8	1.0	pF



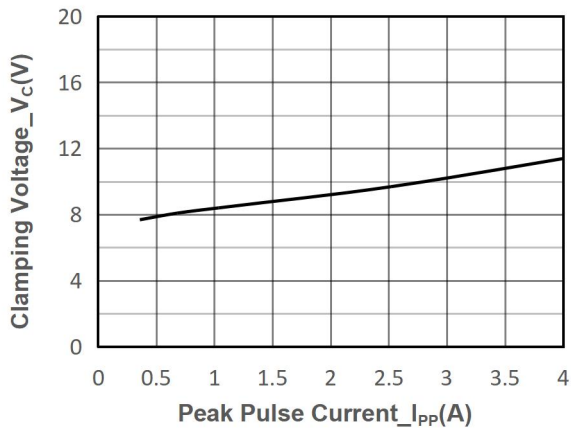
- Typical Performance Characteristics($T_A=25^{\circ}\text{C}$ unless otherwise Specified)



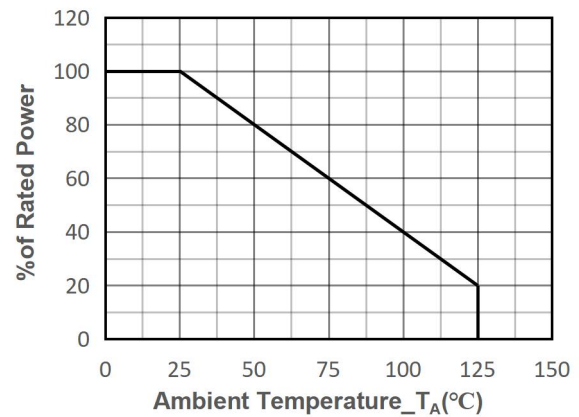
Junction Capacitance vs. Reverse Voltage



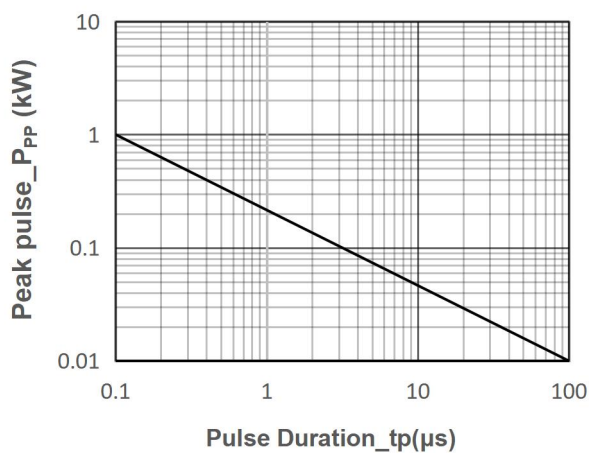
8/20 μs Pulse Waveform



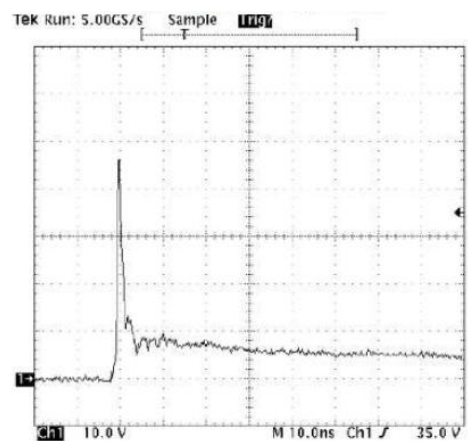
Clamping Voltage vs. Peak Pulse Current



Power derating vs. Ambient temperature



Peak Pulse Power vs. Pulse Time



ESD Clamping Voltage

8 kV Contact per IEC61000-4-2



● Package Information

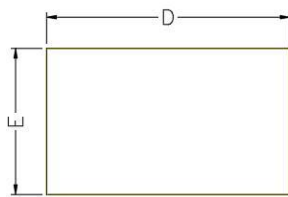
Ordering Information

Device	Package	Qty per Reel	Reel Size
SSCE5V091N1	DFN1006-3L	10000	7 Inch

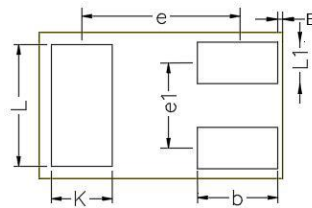
Mechanical Data

Case: DFN1006-3L

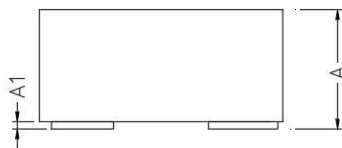
Case Material: Molded Plastic. UL Flammability



TOP VIEW



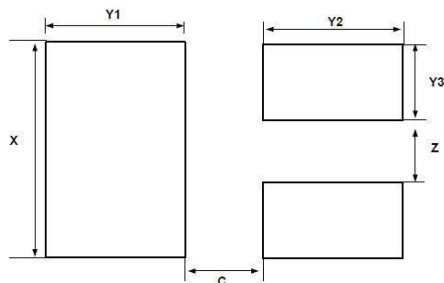
BOTTOM VIEW



SIDE VIEW

DIM	Millimeters	
	Min	Max
A	0.45	0.55
A1	0.00	0.05
B	0.45	0.55
b	0.10	0.20
D	0.12	0.18
E	0.95	1.05
L	0.65 BSC	
L1	0.55	0.65
e	0.645BSC	
e1	0.35BSC	
K	0.20	0.30

Suggested Land Pattern



DIM	Millimeters
C	0.25
X	0.65
Y1	0.50
Y2	0.50
Y3	0.25
Z	0.20



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