



## 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) 5A(8/20 $\mu\text{s}$ )

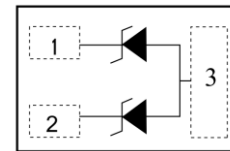
### ● Mechanical Characteristics

- ✧ Package: DFN1006-3L (1.0x0.6x0.5mm)
- ✧ 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)**

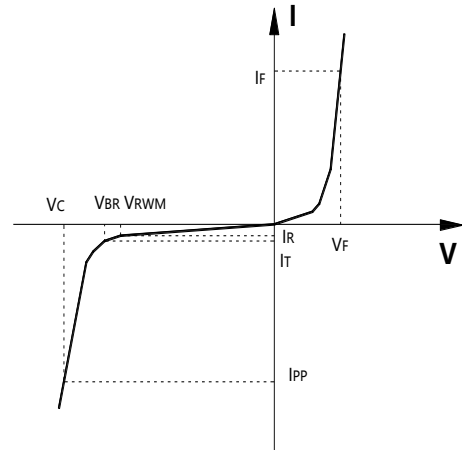
### ● Applications

- ✧ 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 @TA=25°C

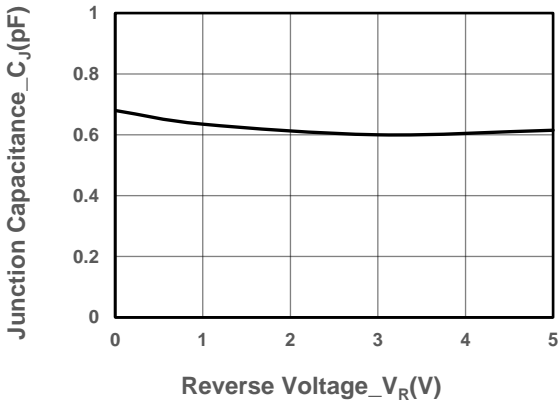
Parameter	Symbol	Value	Units
Peak Pulse Power (8/20μs)	$P_{PPP}$	75	W
Peak Pulse Current (8/20μs)	$I_{PP}$	5	A
ESD Rating per IEC61000-4-2	Contact	±20	kV
	Air	±25	
Storage Temperature	$T_{STG}$	-55/+150	°C
Operating Temperature	$T_J$	-55/+125	°C

## ● Electrical Characteristics @TA=25°C

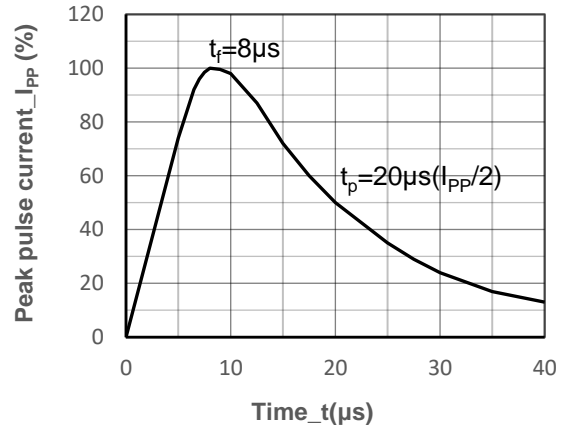
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Peak Reverse Working Voltage	$V_{RWM}$				5	V
Breakdown Voltage	$V_{BR}$	$I_T = 1\text{mA}$	6			V
Reverse Leakage Current	$I_R$	$V_{RWM} = 5\text{V}$			0.5	μA
Clamping Voltage	$V_C$	$I_{PP} = 1\text{A}$ , $t_P = 8/20\mu\text{s}$			10	V
Clamping Voltage	$V_C$	$I_{PP} = 5\text{A}$ , $t_P = 8/20\mu\text{s}$			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



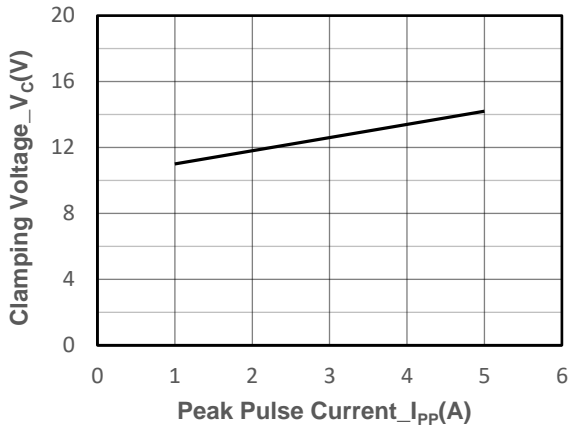
● Typical Performance Characteristics ( $T_A=25^\circ\text{C}$  unless otherwise Specified)



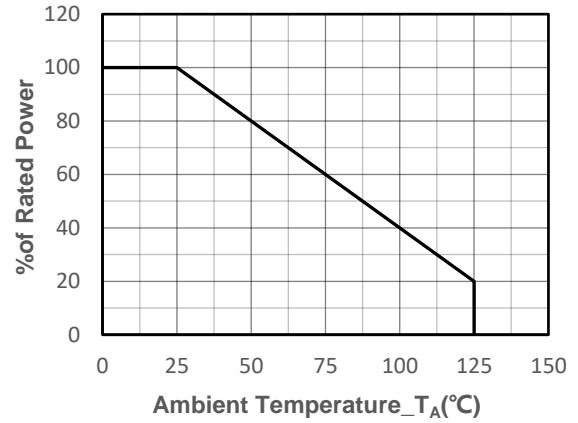
Junction Capacitance vs. Reverse Voltage



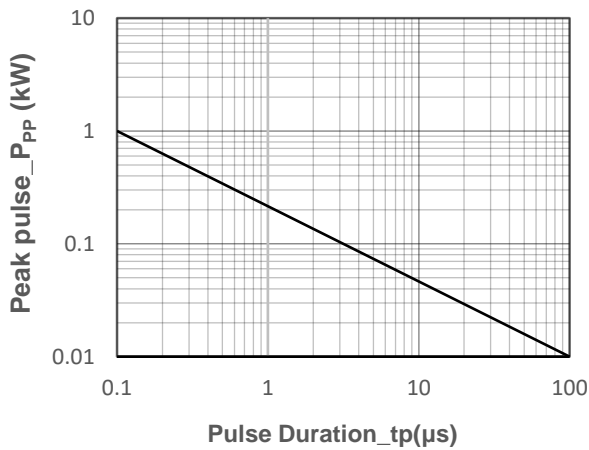
8/20 $\mu\text{s}$  Pulse Waveform



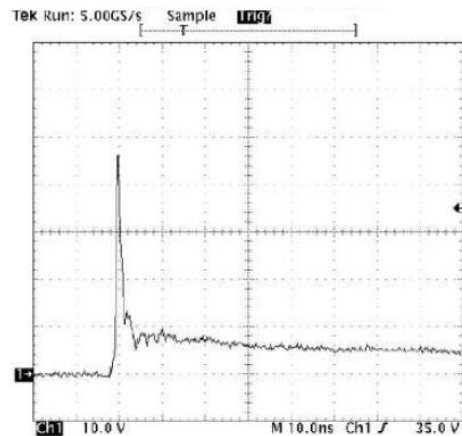
Clamping Voltage vs. Peak Pulse Current



Power derating vs. Ambient temperature



Peak Pulse Power vs. Pulse Time



ESD Clamping Voltage  
8 kV Contact per IEC61000-4-2



## ● Package Information

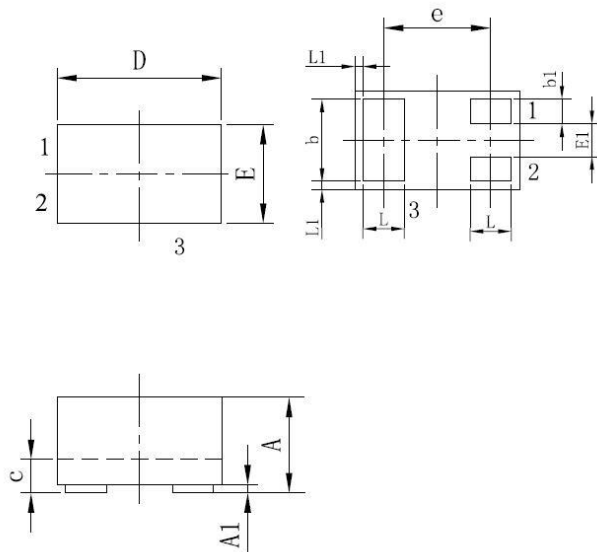
### Ordering Information

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

### Mechanical Data

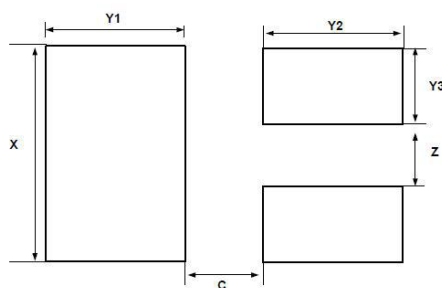
Case: DFN1006-3L

Case Material: Molded Plastic. UL Flammability



DIM	Millimeters		
	Min	Nom	Max
A	0.45	0.50	0.55
A1	0.00	0.02	0.05
b	0.45	0.50	0.55
b1	0.10	0.15	0.20
c	0.12	0.15	0.18
D	0.95	1.00	1.05
e	0.65 BSC		
E	0.55	0.60	0.65
E1	0.15	0.20	0.25
L	0.20	0.25	0.30
L1	0.05REF		

### 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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