



## SSCE5V0C2N1

1-Line Bi-directional low Capacitance TVS Diode

### ● Description

The SSCE5V0C2N1 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 high-speed data lines. The SSCE5V0C2N1 has an ultra-low capacitance with a typical value at 0.15 pF, and complies with the IEC 61000-4-2 (ESD) with  $\pm 20\text{kV}$  air and  $\pm 15\text{kV}$  contact discharge. It is assembled into an ultra-small 1.0x0.6x0.5mm lead-free DFN package.

Also because of its low capacitance, it is suited for use in high frequency designs such as USB 2.0 high speed, USB 3.0 and USB 4.0 super speed, VGA, DVI, HDMI, SDI and other high speed line applications.

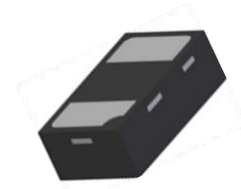
### ● Features

- ◇ 40W peak pulse power ( $t_P = 8/20\mu\text{s}$ )
- ◇ DFN1006-2L Package
- ◇ Working voltage:5V
- ◇ Low Leakage Current
- ◇ Low capacitance
- ◇ Low clamping voltage
- ◇ Response Time is Typically $<1\text{ns}$
- ◇ Complies with following standards:
  - IEC 61000-4-2 (ESD) immunity test
    - Air discharge:  $\pm 20\text{kV}$
    - Contact discharge:  $\pm 15\text{kV}$
  - IEC61000-4-5(Lightning)2.5A(8/20 $\mu\text{s}$ )

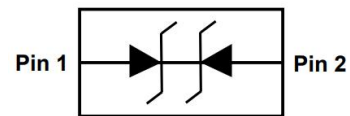
### ● Mechanical Characteristics

- ◇ Package: DFN1006-2L (1.0x0.6x0.5mm)
- ◇ Lead finish: 100% matte Sn (Tin)
- ◇ Device meets MSL 3 requirements
- ◇ Case Material: "Green" Molding Compound.

### ● PIN configuration



**DFN1006-2L (Bottom View)**



**Circuit Diagram**



**Marking (Top View)**

### ● Applications

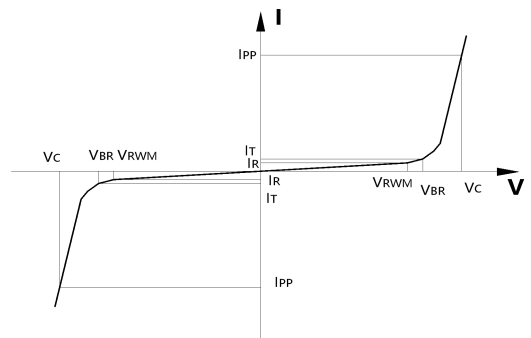
- ◇ DVI & HDMI Port Protection
- ◇ USB 2.0, USB 3.0 and USB 4.0
- ◇ SATA and eSATA
- ◇ Serial and Parallel Ports
- ◇ Projection TV
- ◇ Notebooks, Desktops, Servers
- ◇ Digital cameras
- ◇



◇ RoHS Compliant

## ● 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 ( $T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Units
Peak Pulse Power (8/20 $\mu\text{s}$ )	$P_{PP}$	40	W
Peak Pulse Current (8/20 $\mu\text{s}$ )	$I_{PP}$	2.5	A
ESD Rating per IEC61000-4-2: Contact Air	$V_{ESD}$	$\pm 15$ $\pm 20$	kV
Storage Temperature	$T_{STG}$	-55/+150	$^\circ\text{C}$
Operating Temperature	$T_J$	-55/+125	$^\circ\text{C}$

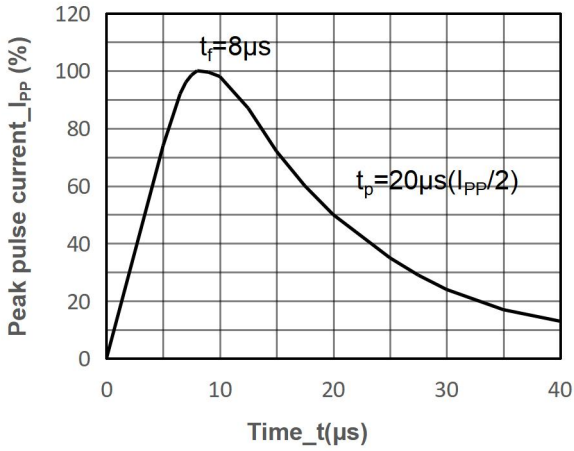
## ● Electrical Characteristics ( $T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Peak Reverse Working Voltage	$V_{RWM}$				5	V
Breakdown Voltage	$V_{BR}$	$I_T = 1\text{mA}$	6		9	V
Reverse Leakage Current	$I_R$	$V_{RWM} = 5\text{V}$			0.1	$\mu\text{A}$
Clamping Voltage	$V_C$	$I_{PP} = 1\text{A}, t_P = 8/20\mu\text{s}$		10	12	V
Clamping Voltage	$V_C$	$I_{PP} = 2.5\text{A}, t_P = 8/20\mu\text{s}$		13	20	V
Dynamic resistance	$R_{DYN}$			0.26		$\Omega$
Junction Capacitance	$C_J$	$V_R = 0\text{V}, f = 1\text{MHz}$		0.15	0.3	pF

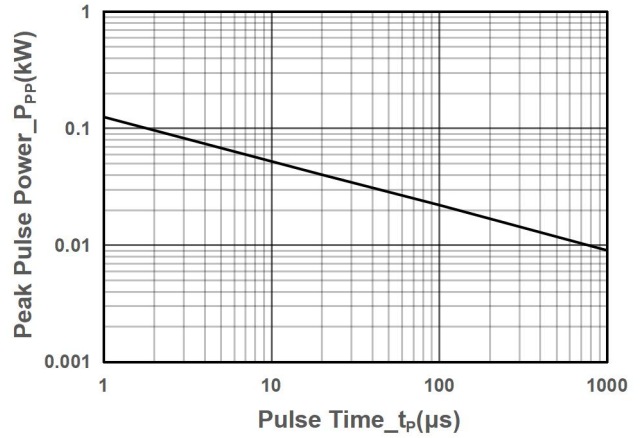


# SSCE5V0C2N1

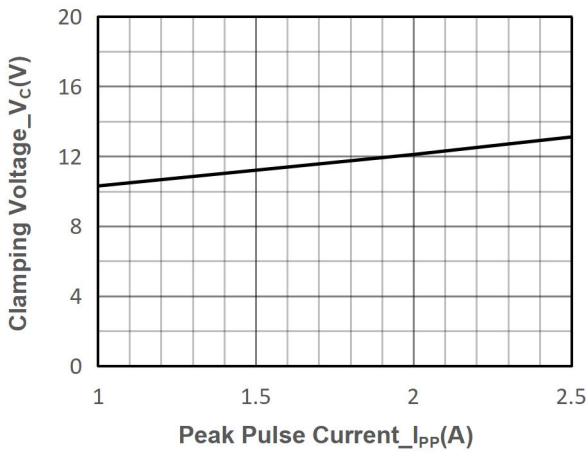
● **Typical Performance Characteristics ( $T_A=25^{\circ}\text{C}$  unless otherwise noted)**



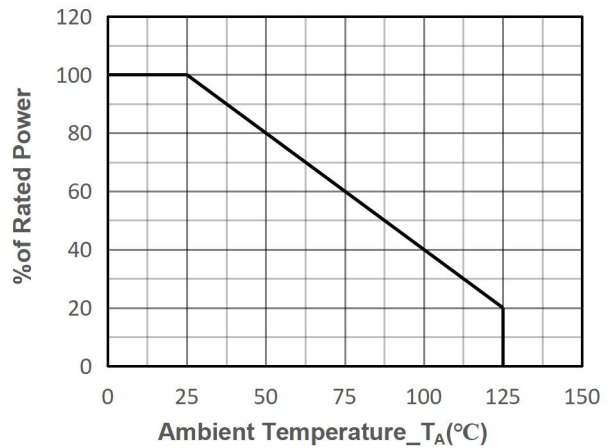
**8/20µs Pulse Waveform**



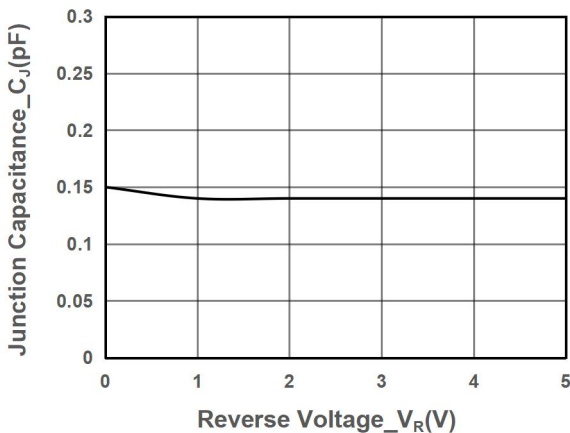
**Peak Pulse Power vs. Pulse Time**



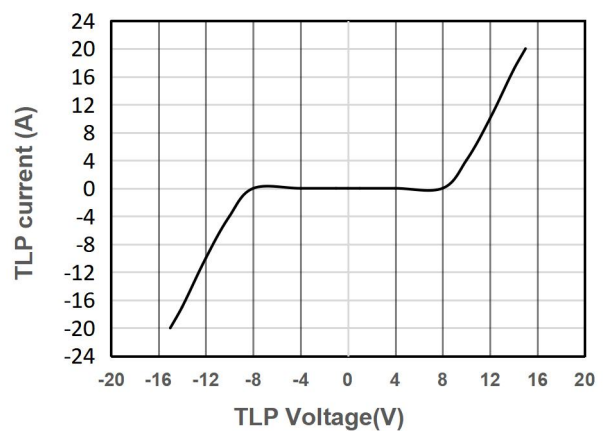
**Clamping Voltage vs. Peak Pulse Current**



**Power derating vs. Ambient temperature**



**Junction Capacitance vs. Reverse Voltage**

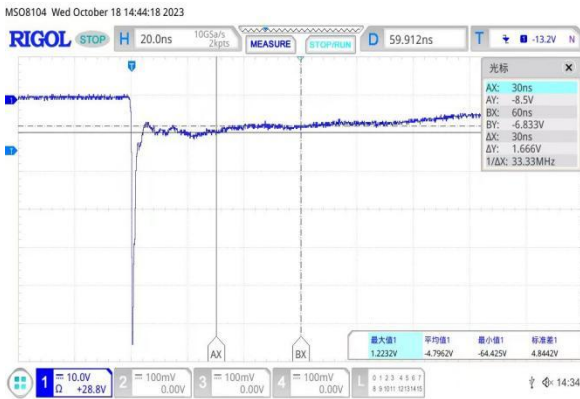


**TLP Measurement**

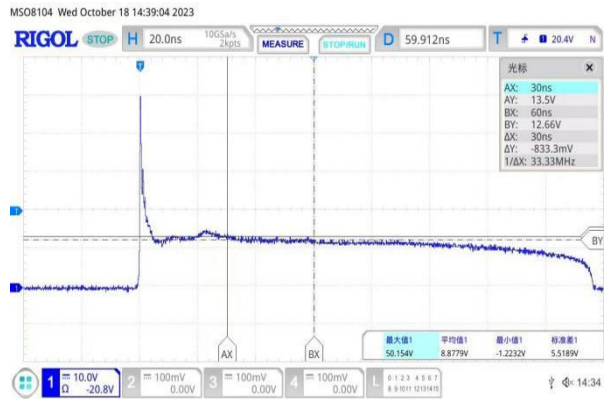


# SSCE5V0C2N1

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



Note: Data is taken with a 10x attenuator  
ESD Clamping Voltage -8kV contact per  
IEC61000-4-2



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ESD Clamping Voltage 8kV contact per  
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## ● Package Information

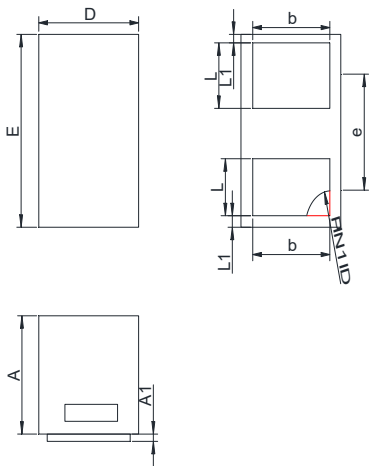
### Ordering Information

Device	Package	Qty per Reel	Reel Size
SSCE5V0C2N1	DFN1006-2L	10000	7 Inch

### Mechanical Data

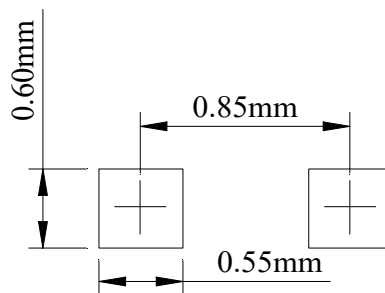
Case: DFN1006-2L

Case Material: Molded Plastic. UL Flammability



DIM	Millimeters	
	Min	Max
A	0.45	0.55
A1	0.00	0.05
D	0.55	0.65
E	0.95	1.05
b	0.45	0.60
e	0.65TYP	
L	0.2	0.3
L1	0.05REF	

### Suggested Land Pattern





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