



## SSCE5V0C1N1

1-Line Uni-directional low Capacitance TVS Diode

### ● Description

The SSCE5V0C1N1 is a 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 SSCE5V0C1N1 has an ultra-low capacitance with a typical value at 0.32 pF, and complies with the IEC 61000-4-2 (ESD) with  $\pm 20$ kV air and  $\pm 15$ 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

- ✧ 30W peak pulse power ( $t_P = 8/20\mu s$ )
- ✧ DFN1006-2L Package
- ✧ Working voltage: 5V
- ✧ Low Leakage Current
- ✧ Low capacitance
- ✧ Low clamping voltage
- ✧ Response Time is Typically  $< 1$ ns
- ✧ Complies with following standards:
  - IEC 61000-4-2 (ESD) immunity test
    - Air discharge:  $\pm 20$ kV
    - Contact discharge:  $\pm 15$ kV
  - IEC 61000-4-5 (Lightning) 2.5A (8/20 $\mu s$ )

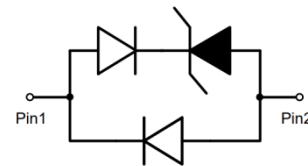
### ● Mechanical Characteristics

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

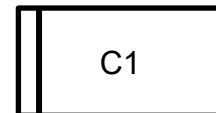
### ● PIN configuration



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



**Circuit Diagram**



**Marking (Top View)**

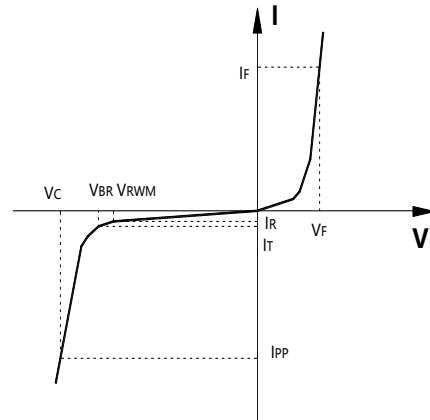
### ● Applications

- ✧ 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



● **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 $\mu\text{s}$ )	$P_{PP}$	30	W
Peak Pulse Current (8/20 $\mu\text{s}$ )	$I_{PP}$	2.5	A
ESD Rating per IEC61000-4-2:			
Contact	$V_{ESD}$	$\pm 15$	kV
Air		$\pm 20$	
Storage Temperature	$T_{STG}$	-55/+150	$^\circ\text{C}$
Operating Temperature	$T_J$	-55/+125	$^\circ\text{C}$

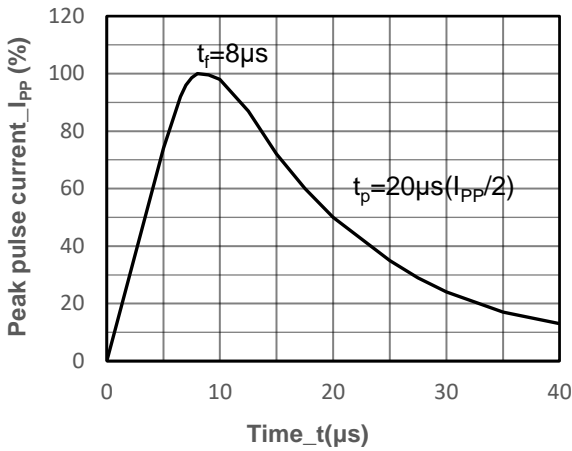
● **Electrical Characteristics ( $T_A=25^\circ\text{C}$  unless otherwise noted)**

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	7.2	9	V
Reverse Leakage Current	$I_R$	$V_{RWM} = 5\text{V}$			0.1	$\mu\text{A}$
Forward Voltage	$V_F$	$I_F = 15\text{mA}$			1.2	V
Clamping Voltage	$V_C$	$I_{PP} = 1\text{A}, t_P = 8/20\mu\text{s}$		8.5	10	V
Clamping Voltage	$V_C$	$I_{PP} = 2.5\text{A}, t_P = 8/20\mu\text{s}$		10	12	V
Dynamic resistance	$R_{DYN}$			0.26		$\Omega$
Junction Capacitance	$C_J$	$V_R = 0\text{V}, f = 1\text{MHz}$		0.32	0.6	pF

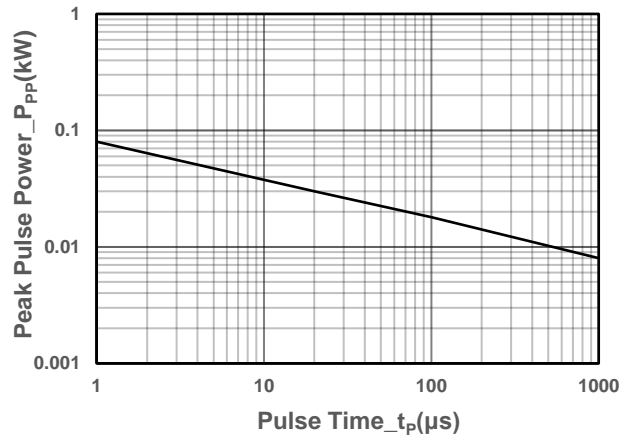


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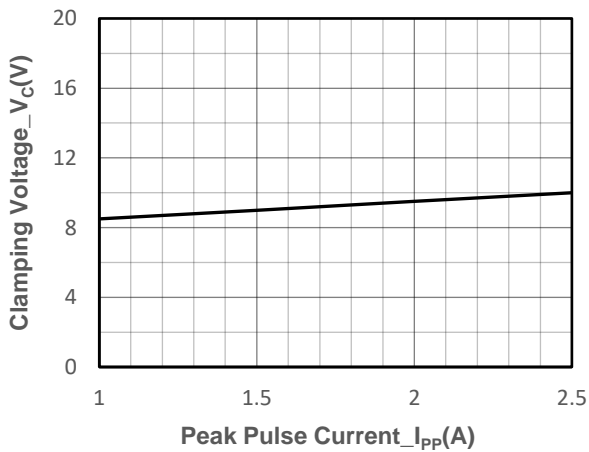
## ● Typical Performance Characteristics ( $T_A=25^\circ\text{C}$ unless otherwise noted)



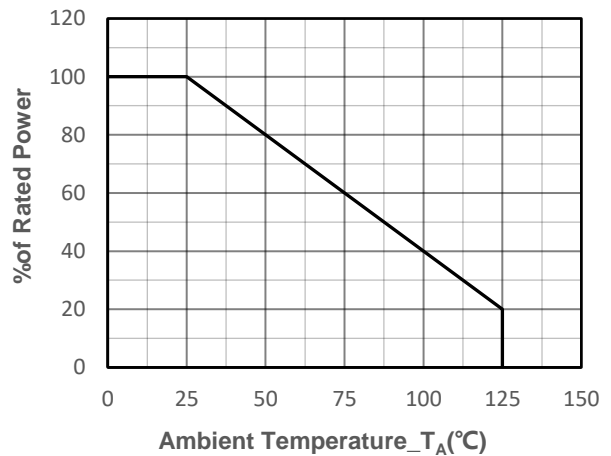
8/20 $\mu\text{s}$  Pulse Waveform



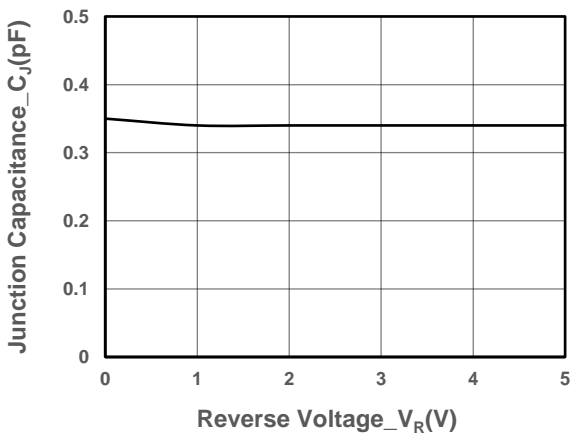
Peak Pulse Power vs. Pulse Time



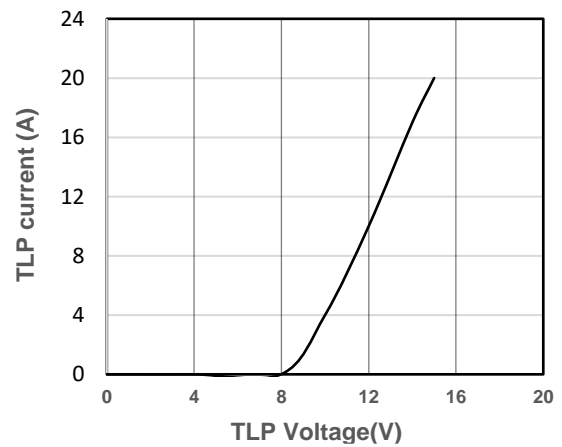
Clamping Voltage vs. Peak Pulse Current



Power derating vs. Ambient temperature



Junction Capacitance vs. Reverse Voltage

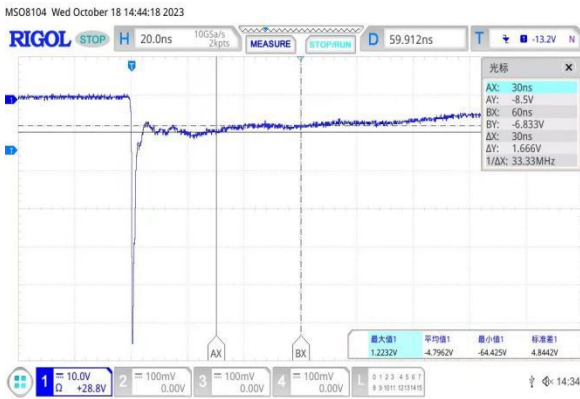


TLP Measurement

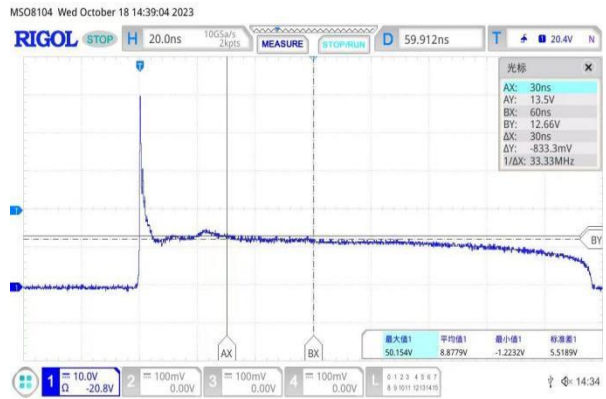


# SSCE5V0C1N1

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



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



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



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## ● Package Information

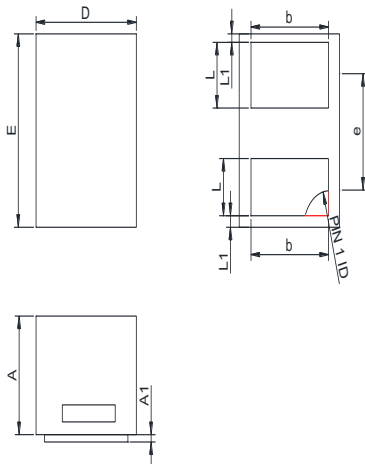
### Ordering Information

Device	Package	Qty per Reel	Reel Size
SSCE5V0C1N1	DFN1006-2L	10000	7 Inch

### Mechanical Data

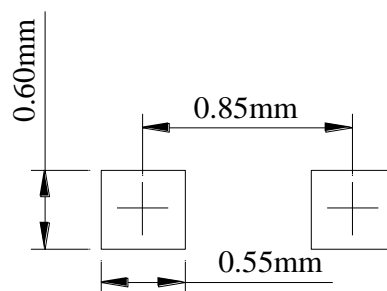
Case: DFN1006-2L

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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