



## SSCE24V12L1

Ultra-low Capacitance Bidirectional Micro Packaged TVS Diodes for ESD Protection

### ● Description

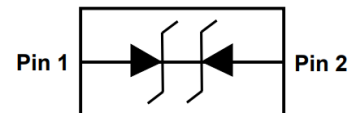
The SSCE24V12L1 is a bi-directional TVS diode, utilizing leading monolithic silicon technology to provide fast response time and low ESD clamping voltage, making this device an ideal solution for protecting voltage sensitive high-speed data lines.

The SSCE24V12L1 has an ultra-low capacitance with a typical value at 0.3pF, and complies with the IEC 61000-4-2 (ESD) standard with  $\pm 15\text{kV}$  air and  $\pm 12\text{kV}$  contact discharge. It is assembled into an ultra-small 0.6x0.3x0.3mm lead-free DFN package. The small size, ultra-low capacitance and high ESD surge protection make SSCE24V12L1 an ideal choice to protect cell phone, digital video interfaces, HDMI, DVI, USB2.0, USB3.0, and other high-speed ports.

### ● Feature

- ✧ 90W peak pulse power ( $t_P = 8/20\mu\text{s}$ )
- ✧ DFN0603-2L Package
- ✧ Working voltage: 24V
- ✧ Low clamping voltage
- ✧ Low capacitance: 0.3pF typical
- ✧ Low leakage current
- ✧ RoHS compliant
- ✧ Complies with following standards:
  - IEC 61000-4-2 (ESD) immunity test  
Air discharge:  $\pm 15\text{kV}$   
Contact discharge:  $\pm 12\text{kV}$
  - IEC61000-4-5 (Lightning) 2A (8/20 $\mu\text{s}$ )

### ● PIN configuration



Top View



Marking

### ● Applications

- ✧ DVI & HDMI Port Protection
- ✧ USB Ports
- ✧ SATA and eSATA
- ✧ Serial and Parallel Ports
- ✧ Display Ports
- ✧ MDDI Ports
- ✧ Notebooks, Desktops, Servers

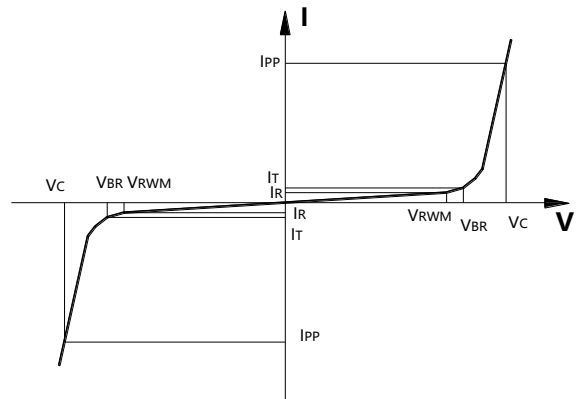
### ● Mechanical data

- ✧ Lead finish: 100% matte Sn (Tin)
- ✧ Mounting position: Any
- ✧ Qualified max reflow temperature: 260°C
- ✧ Device meets MSL 3 requirements
- ✧ Pure tin plating: 7 ~ 17  $\mu\text{m}$
- ✧ Pin flatness:  $\leq 3\text{mil}$



● **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)**

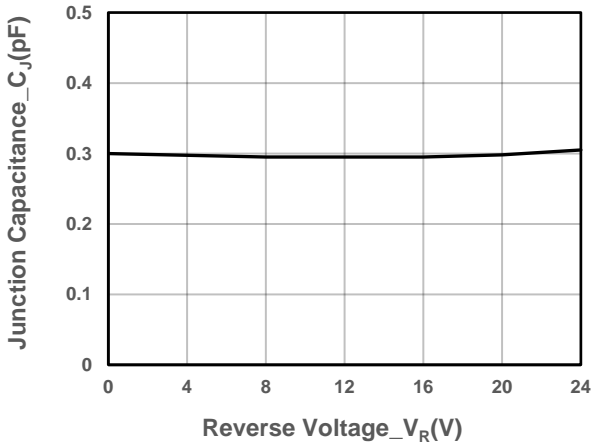
Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20 $\mu\text{s}$ )	$P_{PP}$	90	W
Peak Pulse Current (8/20 $\mu\text{s}$ )	$I_{PP}$	2	A
ESD Rating per IEC61000-4-2:	Contact	10	kV
	Air	15	
Storage Temperature	$T_{STG}$	-55/+150	$^\circ\text{C}$
Operating Temperature	$T_J$	-55/+125	$^\circ\text{C}$

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

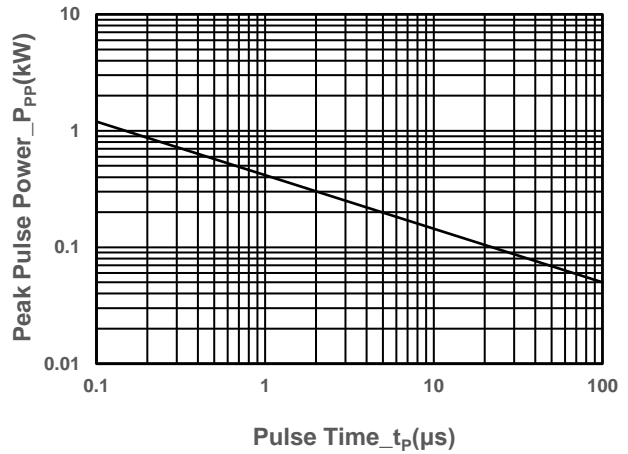
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Peak Reverse Working Voltage	$V_{RWM}$				24	V
Breakdown Voltage	$V_{BR}$	$I_T = 1\text{mA}$	26.3			V
Reverse Leakage Current	$I_R$	$V_{RWM} = 24\text{V}$			0.2	$\mu\text{A}$
Clamping Voltage	$V_C$	$I_{PP} = 1\text{A}$ , $t_P = 8/20\mu\text{s}$			40	V
Clamping Voltage	$V_C$	$I_{PP} = 2\text{A}$ , $t_P = 8/20\mu\text{s}$			45	V
Junction Capacitance	$C_J$	$V_R = 0\text{V}$ , $f = 1\text{MHz}$		0.3	0.5	pF



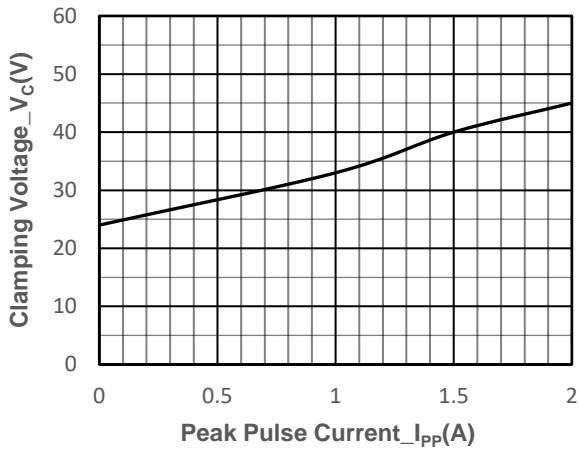
● Typical Performance Characteristics ( $T_A = 25^\circ\text{C}$  unless otherwise noted)



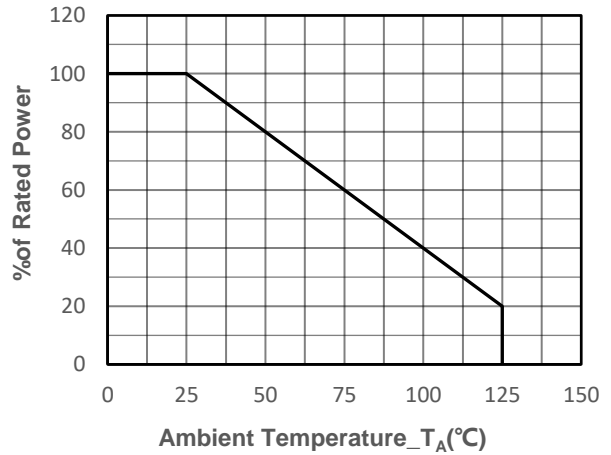
Junction Capacitance vs. Reverse Voltage



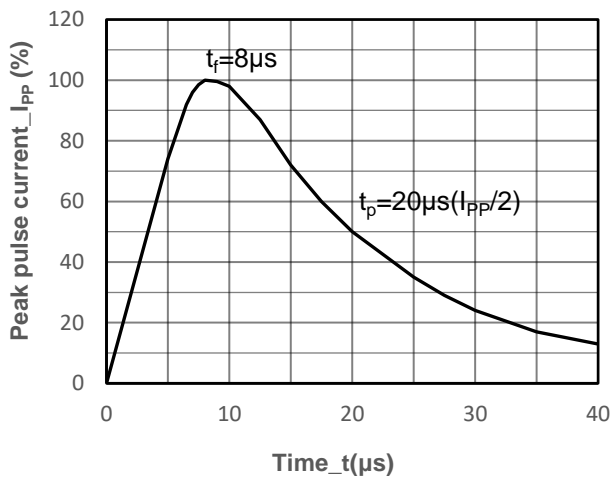
Peak Pulse Power vs. Pulse Time



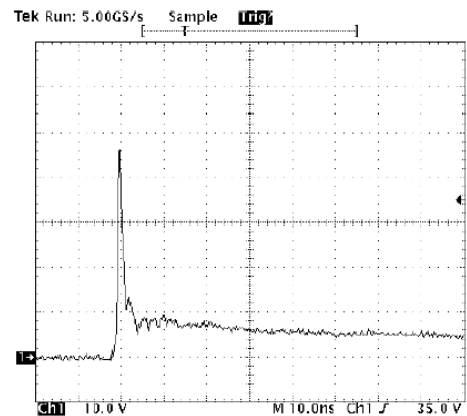
Clamping Voltage vs. Peak Pulse Current



Power derating vs. Ambient temperature



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



ESD Clamping Voltage

8 kV Contact per IEC61000-4-2



## ● Package Information

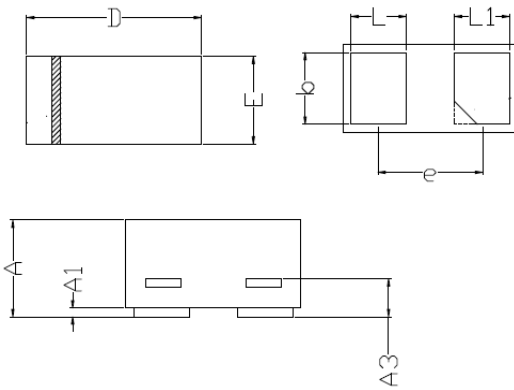
### Ordering Information

Device	Package	Qty per Reel	Reel Size
SSCE24V12L1	DFN0603-2L	15000	7 Inch

### Mechanical Data

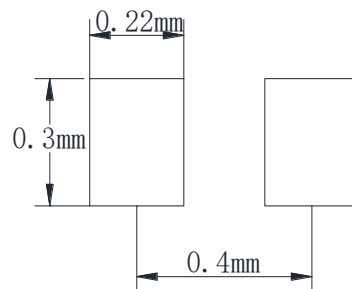
Case: DFN0603-2L

Case Material: Molded Plastic. UL Flammability



DIM	Millimeters	
	Min	Max
A	0.230	0.330
A1	0.000	0.050
A3	0.102REF	
D	0.550	0.650
E	0.250	0.350
b	0.215	0.275
L	0.12	0.23
L1	0.12	0.23
e	0.40BSC	

### Recommended Pad outline





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