



SSCE3V332L1

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

● Description

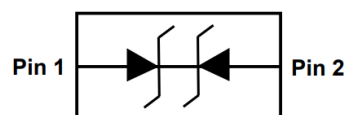
The SSCE3V332L1 is a bi-directional TVS diode, utilizing leading monolithic silicon technology to provide fast response time and low ESD clamping voltage, making this device an ideal solution for protecting voltage sensitive high-speed data lines.

The SSCE3V332L1 has an ultra-low capacitance with a typical value at 0.25pF, and complies with the IEC 61000-4-2 (ESD) standard with $\pm 25\text{kV}$ air and $\pm 20\text{kV}$ 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 SSCE3V332L1 an ideal choice to protect cell phone, digital video interfaces, HDMI, DVI, USB2.0, USB3.0, and other high-speed ports.

● Feature

- ✧ 88W peak pulse power ($t_P = 8/20\mu\text{s}$)
- ✧ DFN0603-2L Package
- ✧ Working voltage: 3.3V
- ✧ Low clamping voltage
- ✧ Low capacitance: 0.25pF typical
- ✧ Low leakage current
- ✧ RoHS compliant
- ✧ Complies with following standards:
 - IEC 61000-4-2 (ESD) immunity test
 - Air discharge: $\pm 25\text{kV}$
 - Contact discharge: $\pm 20\text{kV}$
 - IEC61000-4-5 (Lightning)4A (8/20 μs)

● 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

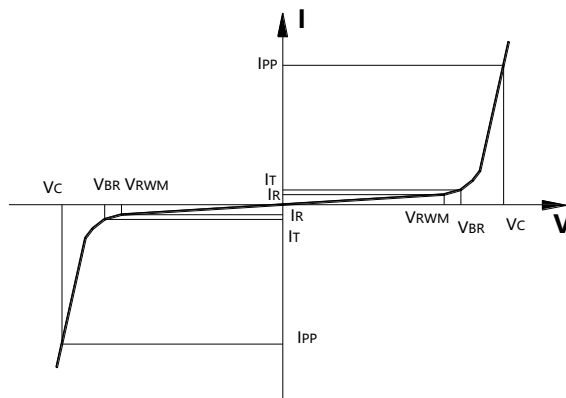
● Mechanical data

- ✧ 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 μm
- ✧ 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)

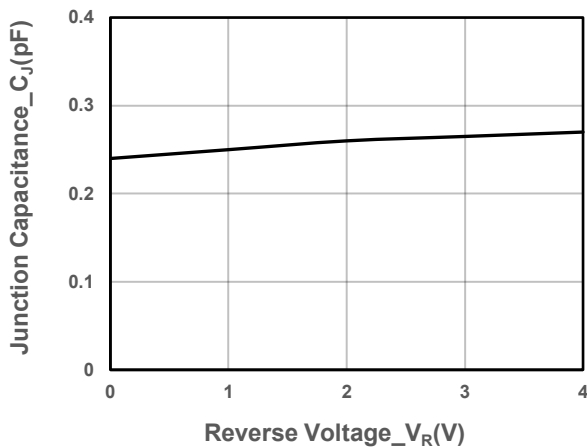
Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20 μs)	P_{PP}	88	W
Peak Pulse Current (8/20 μs)	I_{PP}	4	A
ESD Rating per IEC61000-4-2: Contact Air	V_{ESD}	20 25	kV
Storage Temperature	T_{STG}	-55/+150	$^{\circ}\text{C}$
Operating Temperature	T_J	-55/+125	$^{\circ}\text{C}$

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

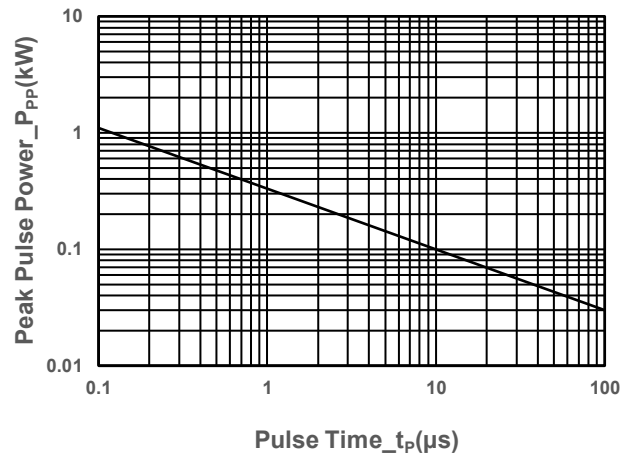
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Peak Reverse Working Voltage	V_{RWM}				3.3	V
Breakdown Voltage	V_{BR}	$I_T = 1\text{mA}$	4.8			V
Reverse Leakage Current	I_R	$V_{RWM} = 3.3\text{V}$			0.1	μA
Clamping Voltage	V_C	$I_{PP} = 1\text{A}$, $t_P = 8/20\mu\text{s}$		11.5	13	V
Clamping Voltage	V_C	$I_{PP} = 4\text{A}$, $t_P = 8/20\mu\text{s}$		17	22	V
Junction Capacitance	C_J	$V_R = 0\text{V}$, $f = 1\text{MHz}$		0.25	0.4	pF



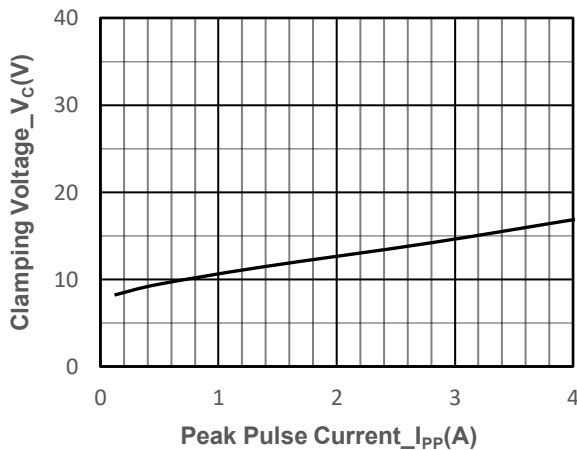
● Typical Performance Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise noted)



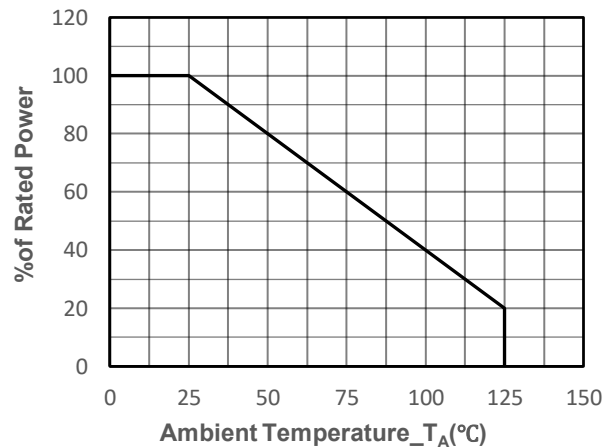
Junction Capacitance vs. Reverse Voltage



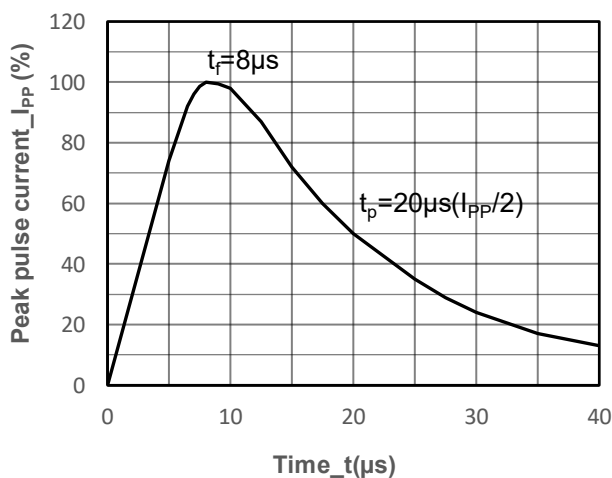
Peak Pulse Power vs. Pulse Time



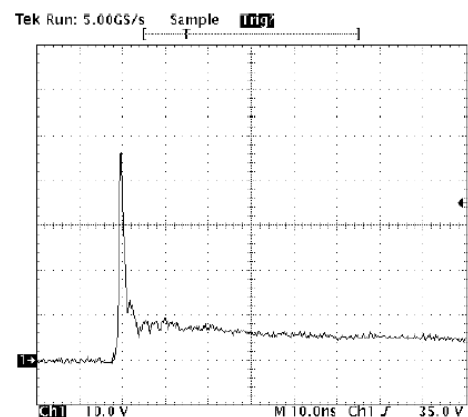
Clamping Voltage vs. Peak Pulse Current



Power derating vs. Ambient temperature



8/20 μs Pulse Waveform



ESD Clamping Voltage

8 kV Contact per IEC61000-4-2



● Package Information

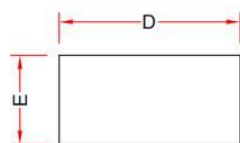
Ordering Information

Device	Package	Qty per Reel	Reel Size
SSCE3V332L1	DFN0603-2L	15000	7 Inch

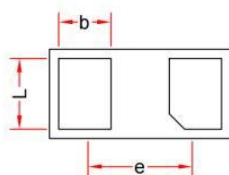
Mechanical Data

Case: DFN0603-2L

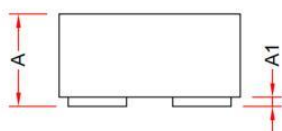
Case Material: Molded Plastic. UL Flammability



TOP VIEW



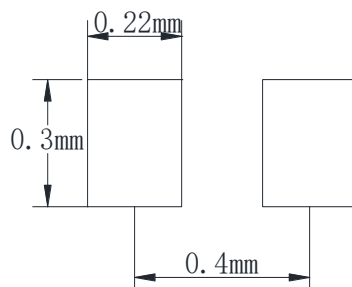
BOTTOM VIEW



TOP VIEW

DIM	Millimeters		
	Min	Nom	Max
A	0.230	0.30	0.35
A1	0.00	0.03	0.05
b	0.115	0.19	0.25
D	0.55	0.6	0.67
E	0.25	0.30	0.37
L	0.18		0.30
e	0.35Ref		

Recommended Pad outline





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