



SSCE3V382L1

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

● Description

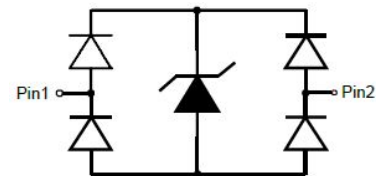
The SSCE3V382L1 is designed with SSC Punch-Through process TVS technology to protect voltage sensitive components from ESD. Excellent clamping capability, low leakage, and fast response time provide best in class protection on designs that are exposed to ESD. Because of its small size, it is suited for use in cellular phones, MP3 players, digital cameras and many other portable applications where board space comes at a premium. 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 super speed, VGA, DVI, HDMI, SDI and other high speed line applications.

It has been specifically designed to protect sensitive components which are connected to data and transmission lines from overvoltage caused by ESD (electrostatic discharge), and EFT (electrical fast transients).

● Feature

- ◇ 34W peak pulse power ($t_P = 8/20\mu s$)
- ◇ DFN0603-2L Package
- ◇ Working voltage: 3.3V
- ◇ Low clamping voltage
- ◇ Low capacitance ($< 0.30pF$) for high-speed interfaces
- ◇ Low clamping voltage: $V_{CL} = 9.0V$ typ. @ $IPP = 16A$ (TLP)
- ◇ RoHS compliant
- ◇ Complies with following standards:
 - IEC61000-4-2(ESD) $\pm 15KV$ (contact), $\pm 20KV$ (air)
 - IEC61000-4-5 (Lightning) 4A (8/20 μs)

● PIN configuration



DFN0603-2L



Marking

● Applications

- ◇ High Speed Line : USB1.0/2.0/3.0/3.1, VGA, DVI, SDI
- ◇ High Definition Multi-Media Interface (HDMI1.3/1.4/2.0)
- ◇ Serial and Parallel Ports
- ◇ Notebooks, Desktops, Servers
- ◇ Cellular handsets and accessories
- ◇ Portable instrumentation
- ◇ Peripherals

● Mechanical data

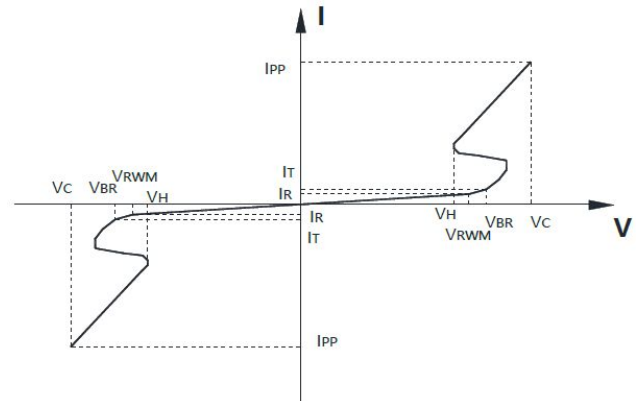
- ◇ Lead finish: 100% matte Sn(Tin)
- ◇ Mounting position: Any
- ◇ Qualified max reflow temperature: 260°C
- ◇ Device meets MSL 1 requirements
- ◇ Pure tin plating: 7 ~ 17 μm
- ◇ Pin flatness: $\leq 3mil$



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● 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	Junction Capacitance



● Absolute maximum rating @TA=25°C

Symbol	Parameter	Value	Units
P_{PP}	Peak Pulse Power (8/20 μ S)	34	W
ESD Rating per IEC61000-4-2:	Contact	15	KV
	Air	20	
T_{STG}	Storage Temperature	-55/+150	°C
T_J	Operating Temperature	-55/+150	°C
T_L	Lead Solder Temperature – Maximum (10 Second Duration)	260	°C

● Electrical Characteristics @TA=25°C

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Peak Reverse Working Voltage	V_{RWM}				3.3	V
Breakdown Voltage	V_{BR}	$I_T = 1\text{mA}$	7.0	10.5		V
Reverse Leakage Current	I_R	$V_{RWM} = 3.3\text{V}, T = 25^\circ\text{C}$		1	50	nA
Clamping Voltage	V_C	$I_{PP} = 1\text{A}, t_P = 8/20\mu\text{s}$		4.5		V
		$I_{PP} = 4\text{A}, t_P = 8/20\mu\text{s}$		5.5	7	V
Clamping Voltage ¹⁾	V_{C2}	$I_{PP} = 16\text{A}, t_P = 100\text{ns}$		9		V
Dynamic resistance ¹⁾	R_{DYN}			0.25		Ω
Junction Capacitance	C_J	$V_R = 0\text{V}, f = 1\text{MHz}$		0.30	0.45	pF

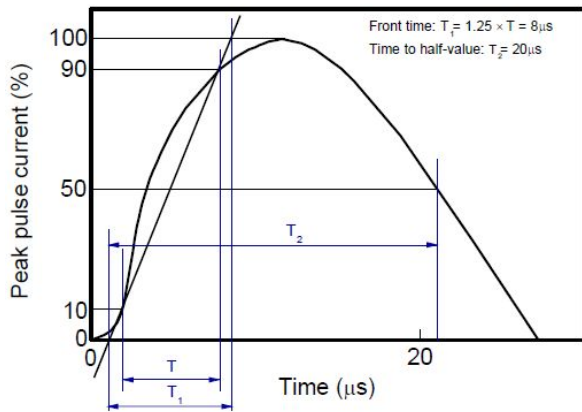
Notes:

1) TLP parameter: $Z_0 = 50\ \Omega$, $t_p = 100\text{ns}$, $t_r = 2\text{ns}$, averaging window from 60ns to 80ns. R_{DYN} is calculated from 4A to 16A.

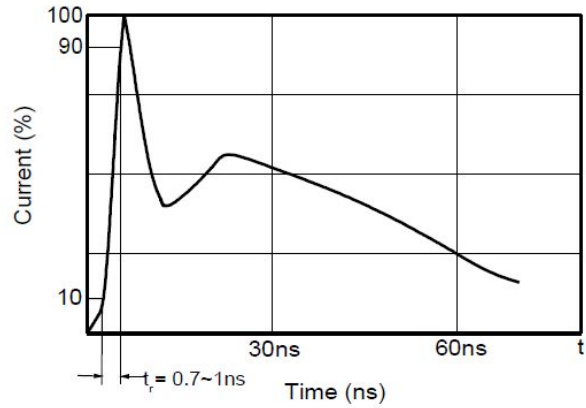


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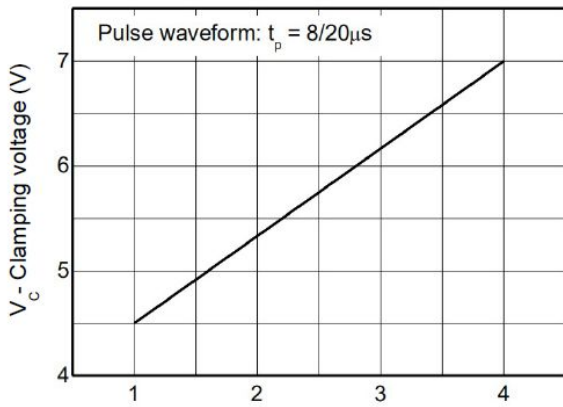
● Typical Performance Characteristics



8/20μs waveform per IEC61000-4-5

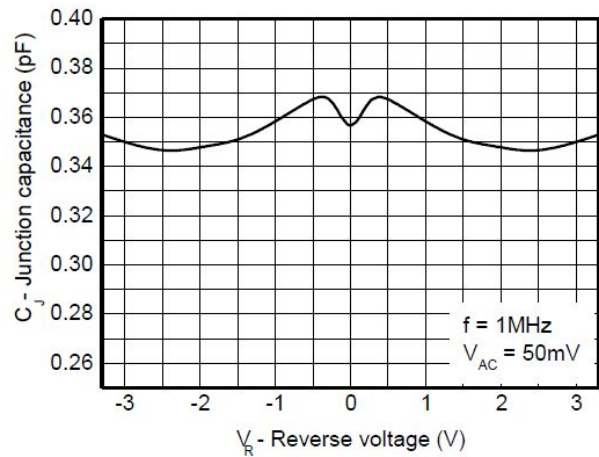


Contact discharge current waveform per IEC61000-4-2

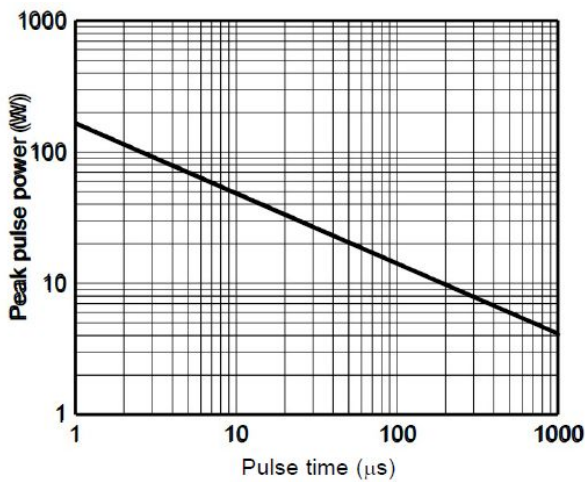


I_{PP} - Peak pulse current (A)

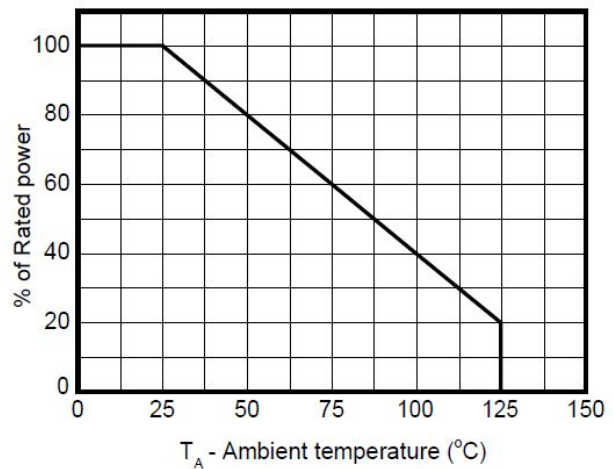
Clamping voltage vs. Peak pulse current



Capacitance vs. Reverse voltage



Non-repetitive peak pulse power vs. Pulse time

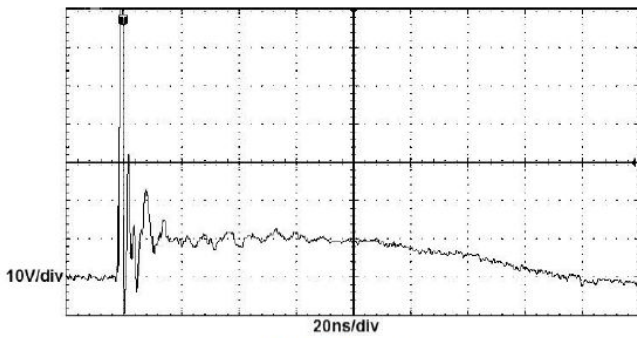


Power derating vs. Ambient temperature

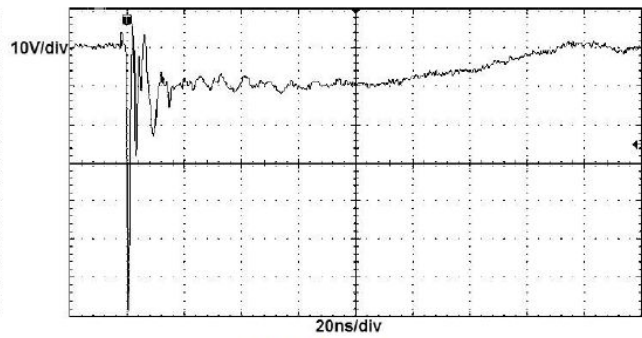


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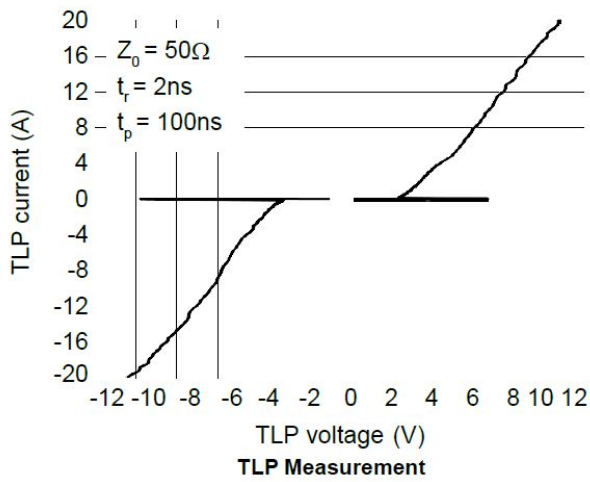
- Typical Performance Characteristics



ESD clamping
(+8kV contact discharge per IEC61000-4-2)



ESD clamping
(-8kV contact discharge per IEC61000-4-2)





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- **Package Information**

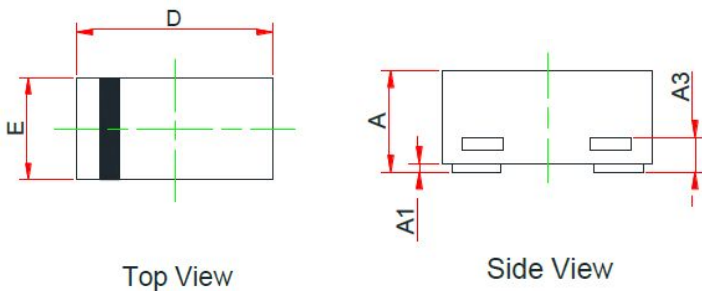
Ordering Information

Device	Package	Qty per Reel	Reel Size
SSCE3V382L1	DFN0603-2L	10000	7 Inch

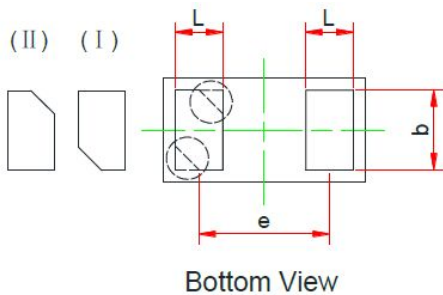
Mechanical Data

Case:DFN0603-2L

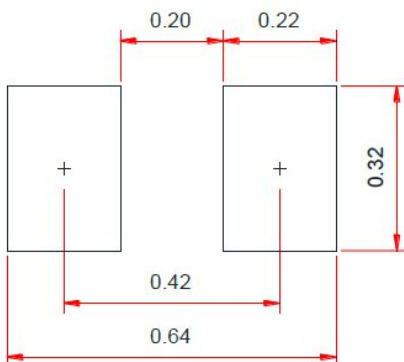
Case Material: Molded Plastic. UL Flammability



DIM	Millimeters		
	Min	Max	Max
A	0.230	-	0.340
A1	0.000	-	0.050
A3	0.102REF		
D	0.550	0.600	0.670
E	0.250	0.300	0.370
b	0.215	-	0.295
L	0.115	-	0.195
e	0.40BSC		



Recommended Pad outline (Unit: mm)





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