SSCE3V382N1

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

✧ Description

The SSCE3V382N1 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 4.0 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

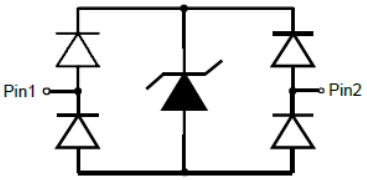
- ✧ Working voltage: 3.3V
- ✧ Low clamping voltage
- ✧ Low capacitance(0.40pF) for high-speed interfaces
- ✧ Low clamping voltage: VCL = 9.0V typ. @ IPP = 16A (TLP)
- ✧ Complies with following standards:
  - IEC 61000-4-2 (ESD) immunity test
    Air discharge: ±15kV
    Contact discharge: ±20kV
  - IEC61000-4-5 (Lightning) 3.5A (8/20μs)

● Mechanical data

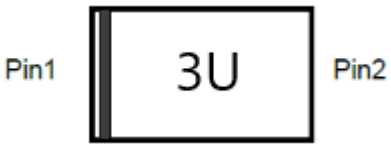
- ✧ Package: DFN1006-2L(1.0×0.6×0.5mm)
- ✧ Lead finish: 100% matte Sn (Tin)
- ✧ Device meets MSL 3 requirements
- ✧ Case Material: “Green” Molding Compound
- ✧ RoHS Compliant

● PIN configuration

DFN1006-2L (Bottom View)



Circuit Diagram



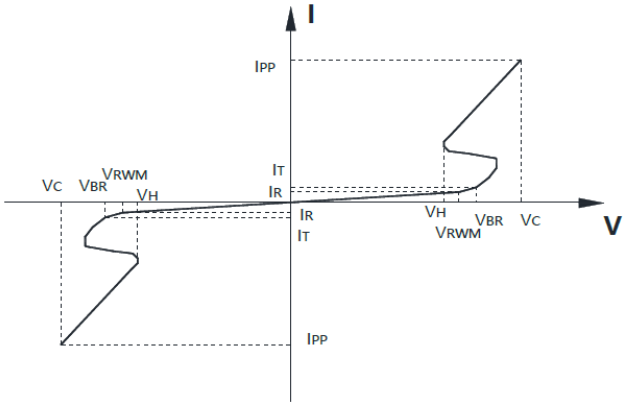
Marking

● Applications

- ✧ High Speed Line: USB1.0/2.0/3.0/4.0, 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

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℃

Parameter	Symbol	Value	Unit
Peak Pulse Power（8/20μs）	P_{PP}	32	W
Peak Pulse Current（8/20μs）	I_{PP}	3.5	A
ESD Rating per IEC61000-4-2： Contact Air	V_{ESD}	±15 ±20	kV
Storage Temperature	T_{STG}	-55/+150	℃
Operating Temperature	T_J	-55/+125	℃

Electrical Characteristics @T_A=25℃

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Peak Reverse Working Voltage	V_{RWM}				3.3	V
Breakdown Voltage	V_{BR}	I_T = 1mA	7.0	10.5		V
Reverse Leakage Current	I_R	V_{RWM} = 3.3V		1	50	nA
Clamping Voltage	V_C	I_{PP} = 1A, t_P = 8/20μs		3.6	5.5	V
Clamping Voltage	V_C	I_{PP} = 3.5A, t_P = 8/20μs		5.2	7	V
Clamping Voltage[1)]	V_{CL}	IPP=16A, tP = 100ns		9		V
Dynamic resistance[1)]	RDYN			0.3		Ω
Clamping Voltage[2)]	V_{CL}	VESD=8KV		9		V
Junction Capacitance	C_J	V_R = 0V, f = 1MHz		0.35	0.50	pF

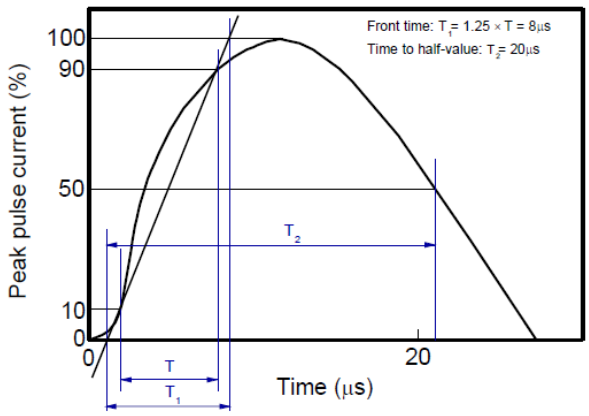
Notes:

1) TLP parameter: Z0 = 50Ω, tp = 100ns, tr = 2ns, averaging window from 60ns to 80ns. RDYN is calculated from 4A to 16A.

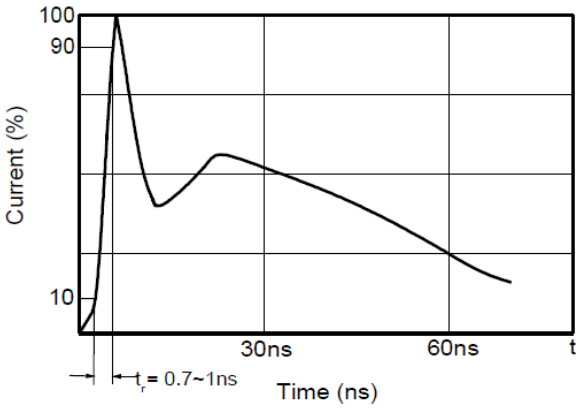
2) Contact discharge mode, according to IEC61000-4-2.

3) Non-repetitive current pulse, according to IEC61000-4-5.

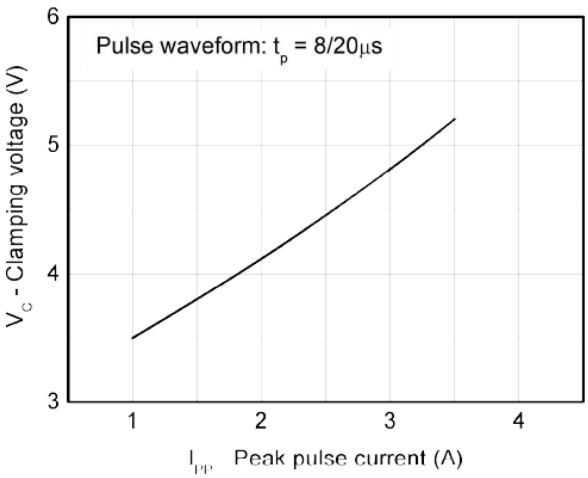
Typical Performance Characteristics



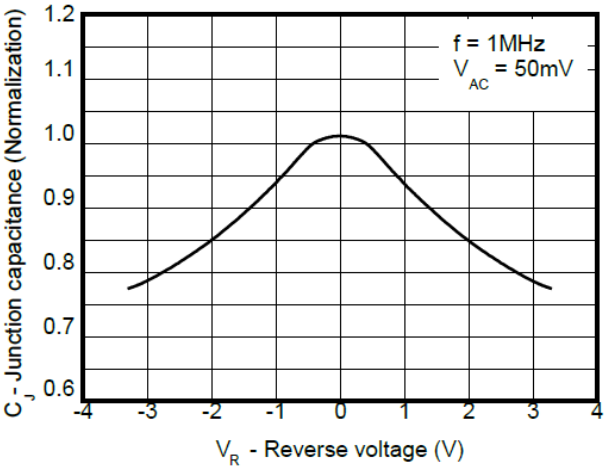
8/20μs Pulse Waveform



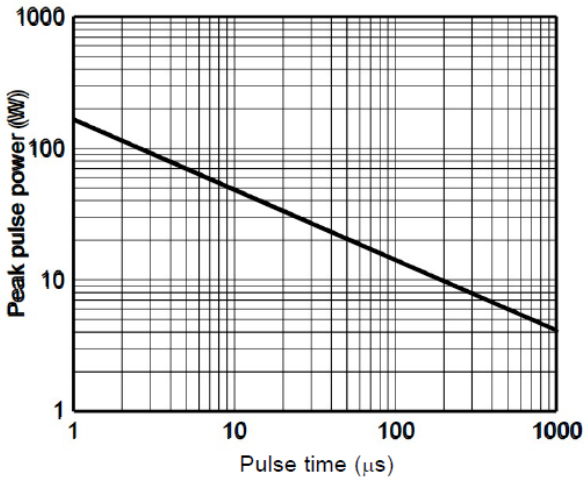
Peak Pulse Power vs. Pulse Time



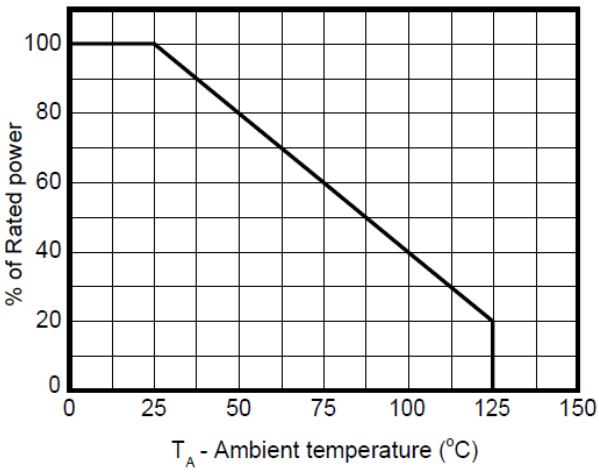
Clamping voltage vs. Peak pulse current



Capacitance vs. Reverse voltage

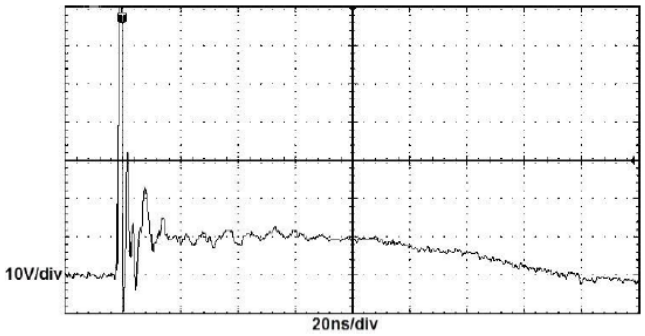


Non-repetitive peak pulse power vs. Pulse time



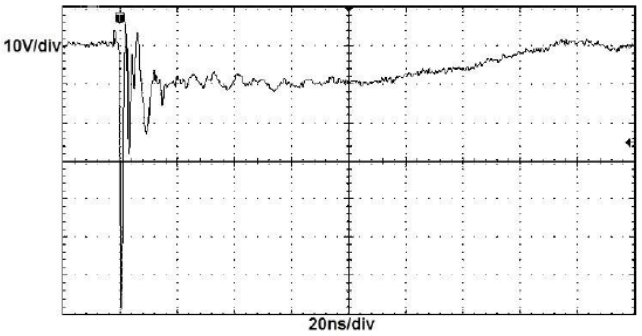
Power derating vs. Ambient temperature

- **Typical Performance Characteristics**



ESD clamping

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



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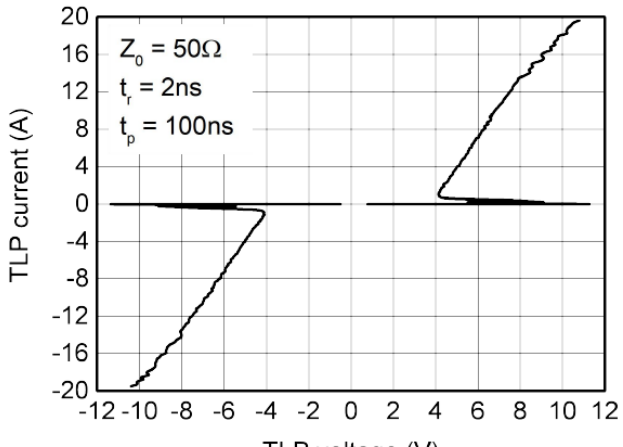


TLP Measurement

Package Information

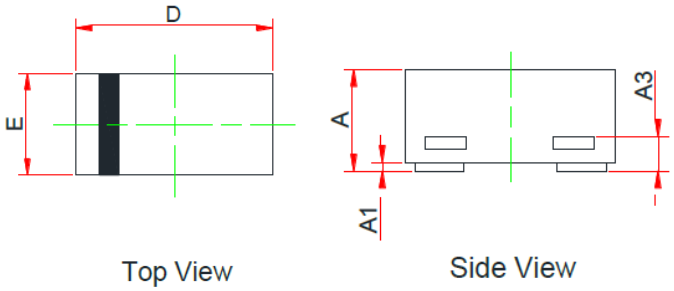
Ordering Information

Device	Package	Qty per Reel	Reel Size
SSCE3V382N1	DFN1006-2L	10000	7 Inch

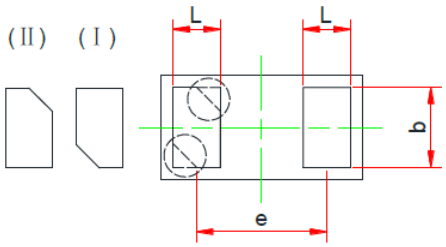
Mechanical Data

Case: DFN1006-2L

Case Material: Molded Plastic. UL Flammability



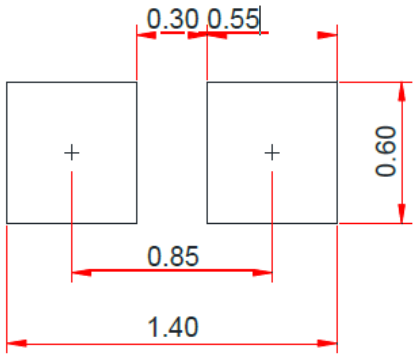
Top View Side View



Bottom View

DIM	Millimeters		
	Min	Typ	Max
A	0.34	0.45	0.53
A1	0.00	0.02	0.05
A3	0.125REF		
D	0.95	1.00	1.08
E	0.55	0.60	0.68
b	0.45	0.5	0.55
L	0.20	0.25	0.3
e	0.65BSC		

Recommended Pad outline(Unit: mm)



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