SSCE5V082N1

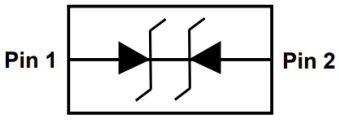
Ultra-low Capacitance Bidirectional Micro Packaged TVS Diodes for ESD Protection

Description

The SSCE5V082N1 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).

PIN configuration



Top View

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

Feature

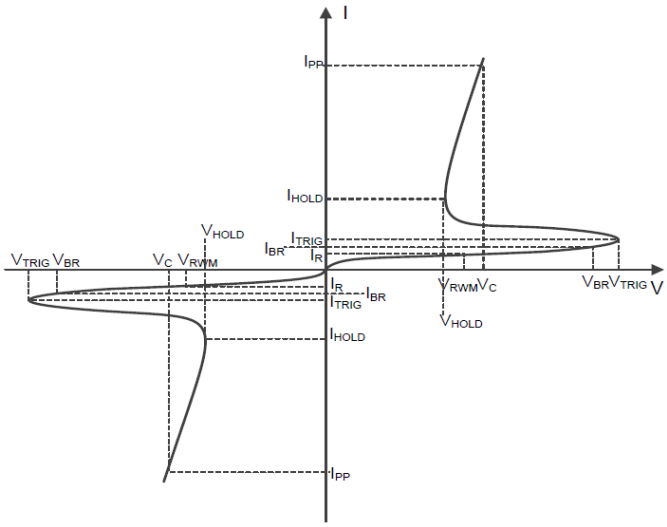
- 32W peak pulse power (t_P = 8/20μs)
- DFN1006-2L Package
- Working voltage: 5.0V
- Low clamping voltage
- Low capacitance(0.40pF) for high-speed interfaces
- Low clamping voltage: V_{CL} = 9.0V typ. @ I_{PP} = 16A (TLP)
- RoHS compliant
- Complies with following standards:
  -IEC61000-4-2(ESD) ±15kV(contact), ±20kV(air)
  -IEC61000-4-5 (Lightning) 3.5A (8/20μs)

Mechanical data

- Lead finish:100% matte Sn(Tin)
- Mounting position: Any
- Qualified max reflow temperature:260℃
- Device meets MSL 3 requirements
- Pure tin plating: 7 ~ 17 um
- Pin flatness:≤3mil

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
V_{TRIG}	Reverse Trigger Voltage
V_{TRIG}	Reverse Trigger Current
V_{HOLD}	Reverse Holding Voltage
I_{HOLD}	Reverse Holding Current



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	℃
Lead Solder Temperature − Maximum (10 Second Duration)	T_L	260	℃

Electrical Characteristics @T_A=25℃

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Peak Reverse Working Voltage	V_{RWM}				5	V
Breakdown Voltage	V_{BR}	I_T = 1mA	7.0	10		V
Reverse Leakage Current	I_R	V_{RWM} = 5V		<1	50	nA
Clamping Voltage[3)]	V_{CL}	I_{PP} = 1A, t_P = 8/20us		3.6	5.5	V
		I_{PP} = 3.5A, t_P = 8/20us		5.2	7	V
Clamping Voltage[1)]	V_{CL}	I_{PP} = 16A, t_P = 100ns		9		V
Dynamic resistance[1)]	R_{DYN}			0.3		Ω
Clamping Voltage[2)]	V_{CL}	V_{ESD} = 8kV		9		V
Junction Capacitance	C_J	V_R = 0V, f = 1MHz		0.4	0.55	pF

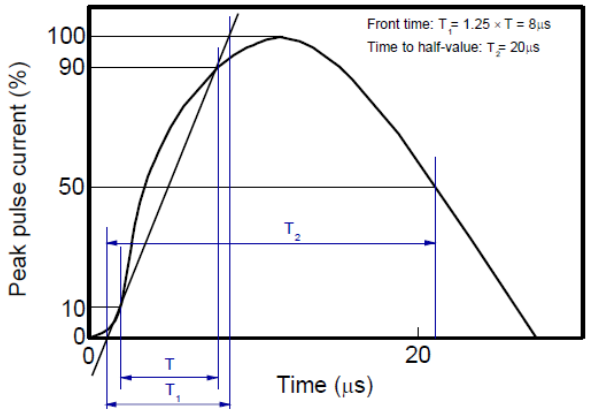
Notes:

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

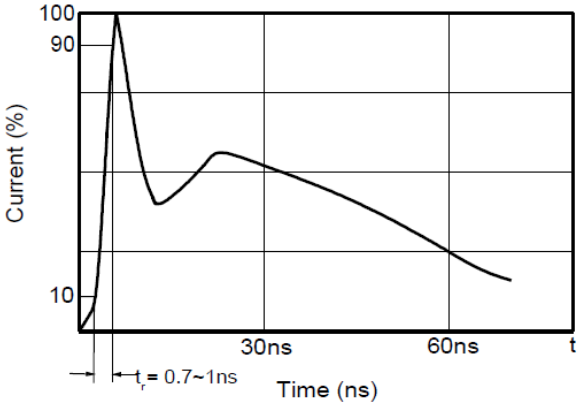
2) Contact discharge mode, according to IEC61000-4-2.

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

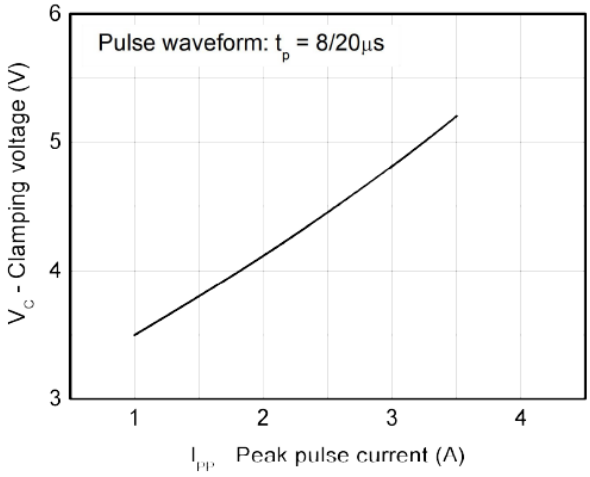
Typical Performance Characteristics



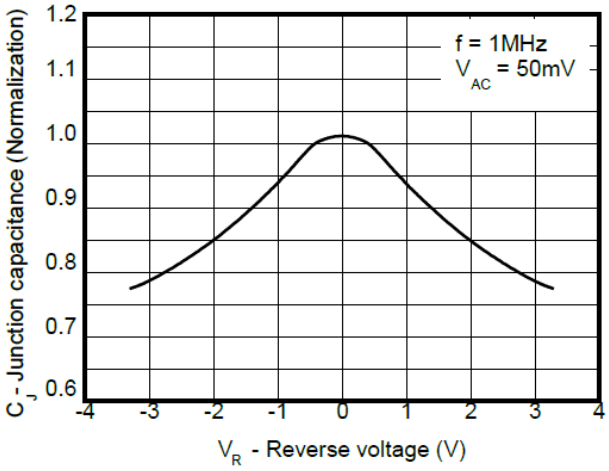
8/20μs waveform per IEC61000-4-5



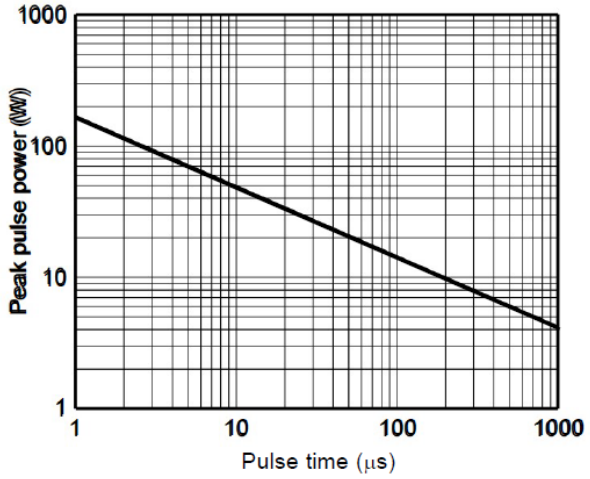
Contact discharge current waveform per IEC61000-4-2



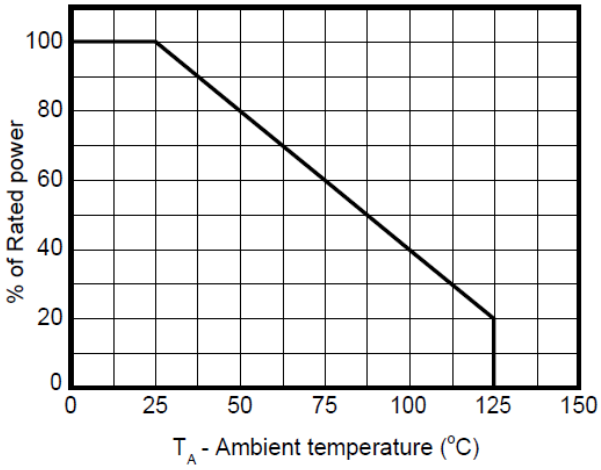
Clamping voltage vs. Peak pulse current



Capacitance vs. Reverse voltage

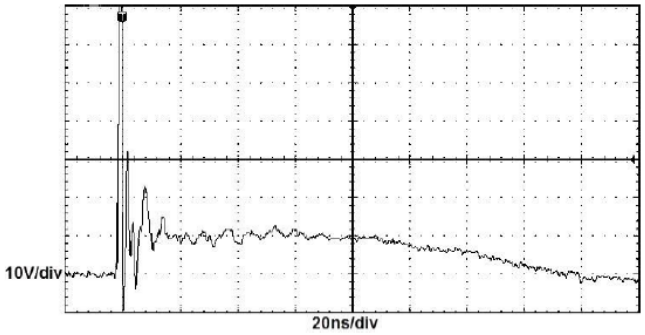


Non-repetitive peak pulse power vs. Pulse time



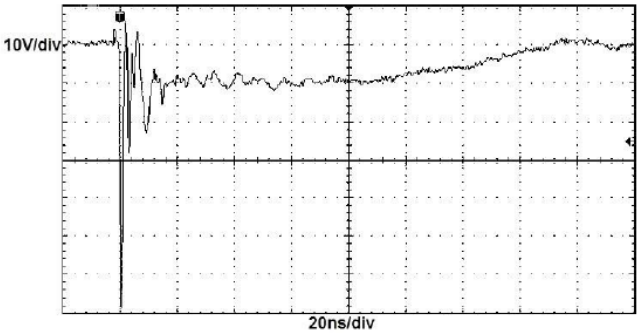
Power derating vs. Ambient temperature

- **Typical Performance Characteristics**



ESD clamping

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



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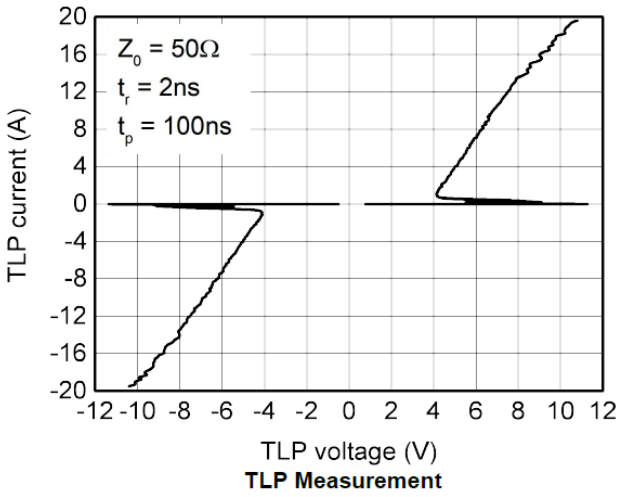


TLP Measurement

Package Information

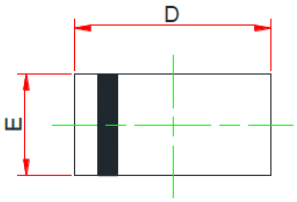
Ordering Information

Device	Package	Qty per Reel	Reel Size
SSCE5V082N1	DFN1006-2L	10000	7 Inch

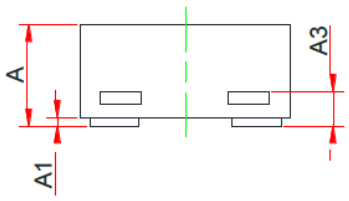
Mechanical Data

Case: DFN1006-2L

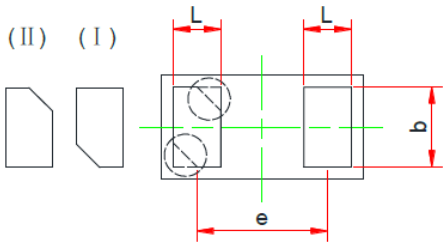
Case Material: Molded Plastic. UL Flammability



Top View



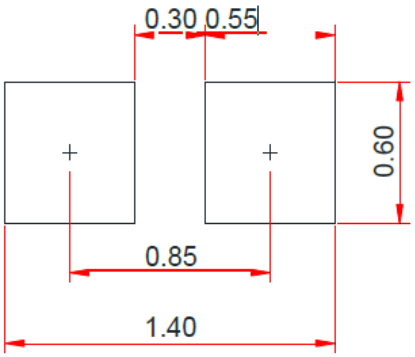
Side View



Bottom View

DIM	Millimeters		
	Min	Nom	Max
A	0.340	0.450	0.530
A1	0.000	0.020	0.050
A3	0.125REF		
D	0.950	1.000	1.080
E	0.550	0.600	0.680
b	0.450	0.500	0.550
L	0.200	0.250	0.300
e	0.650BSC		

Recommended Pad outline (Unit: mm)



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