SSCE5V081N7

4-line Ultra Low Capacitance Array for ESD Protection

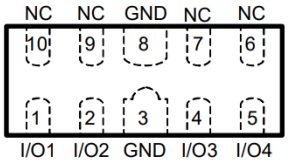
Description

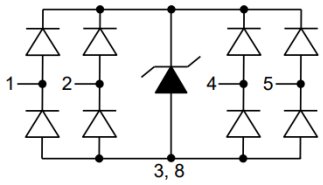
The SSCE5V081N7 is an ultra low capacitance TVS array, utilizing leading monolithic silicon technology to provide fast response time and low ESD clamping voltage, making this device an ideal solution for protecting voltage sensitive high-speed data lines.

The SSCE5V081N7 has an ultra-low capacitance with a typical value at 0.7pF, and complies with the IEC 61000-4-2 (ESD) with ±15kV air and ±15kV contact discharge. It is assembled into a 10-pin 2.5x1.0x0.5mm lead-free DFN package. The flow through style package allows for easy PCB layout and matched trace lengths necessary to maintain consistent impedance between high speed differential lines such as USB 3.0 and HDMI.

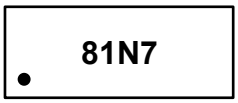
The small size, ultra-low capacitance and high ESD surge protection make SSCE5V081N7 an ideal choice to protect HDMI, MDDI, USB 3.0 and other high speed ports.

PIN configuration





Top view(Pin configuration)



Marking

Feature

- 56W peak pulse power (t_P = 8/20us)
- DFN2510-10L Package
- Working voltage: 5V
- Low clamping voltage
- Low capacitance
- Low leakage current
- RoHS compliant
- Complies with following standards:
  - IEC 61000-4-2 (ESD) immunity test
    - Air discharge: ±15kV
    - Contact discharge: ±15kV
  - IEC61000-4-5 (Surge) 8A (8/20us)

Applications

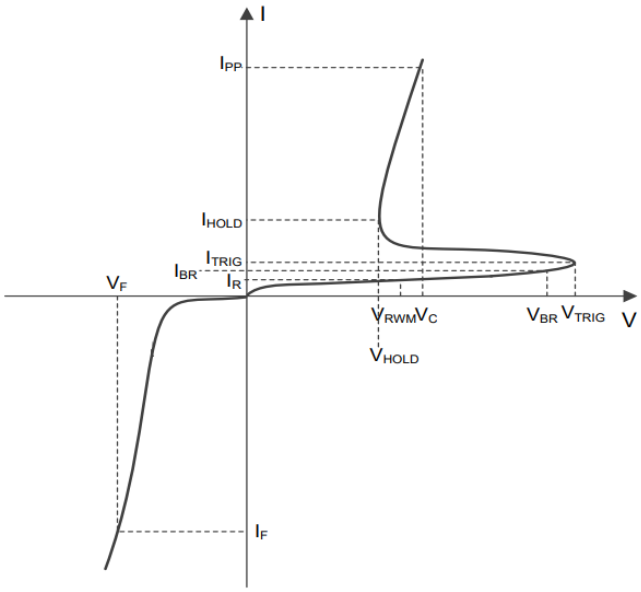
- USB 2.0 and USB 3.1
- SATA and eSATA
- DVI
- Portable Electronics and Notebooks
- HDMI 1.3, HDMI 1.4

Mechanical data

- Lead finish:100% matte Sn(Tin)
- Mounting position: Any
- Qualified max reflow temperature:260℃
- Device meets MSL 1 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
C_J	Junction Capacitance



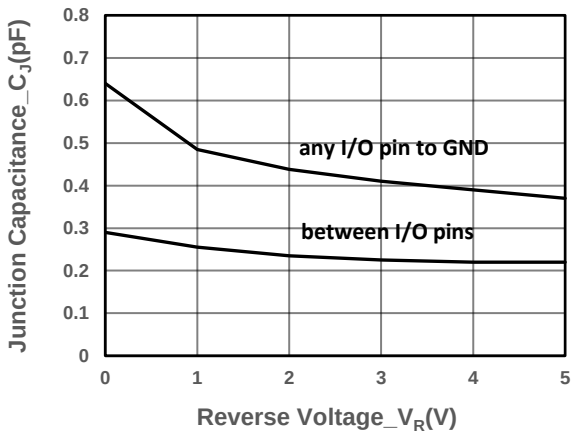
Absolute maximum rating @TA=25℃

Parameter	Symbol	Value	Units
Peak Pulse Power（t_P= 8/20us）	P_{PP}	56	W
Peak Pulse Current（t_P= 8/20us）	I_{PP}	8	A
ESD Rating per IEC61000-4-2： Contact Air	V_{ESD}	15 15	KV
Storage Temperature	T_{STG}	-55/+150	℃
Operating Temperature	T_J	-55/+125	℃

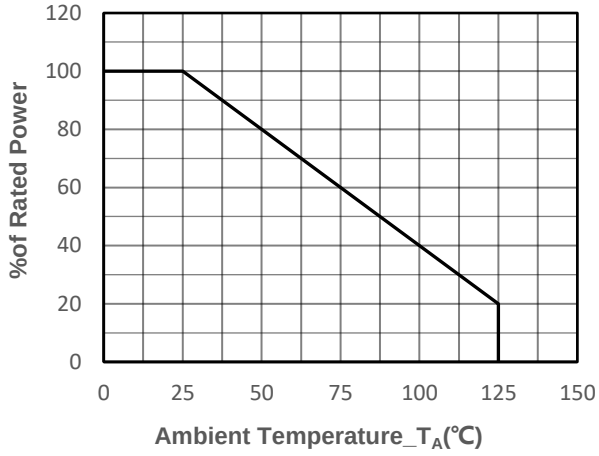
Electrical Characteristics @TA=25℃

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Peak Reverse Working Voltage	V_{RWM}	Any I/O to GND			5	V
Breakdown Voltage	V_{BR}	I_T = 1mA Any I/O to GND	6	7.5	9	V
Reverse Leakage Current	I_R	V_{RWM} =5V			0.1	μA
Forward Voltage	V_F	I_F = 15mA		0.85	1.2	V
Clamping Voltage	V_C	I_{PP} =4A, t_P = 8/20μs		3		V
Clamping Voltage	V_C	I_{PP}=8A, t_P = 8/20μs		4	7	V
Junction Capacitance	C_J	V_R = 0V, f = 1MHz, between I/O pins		0.3	0.5	pF
		V_R = 0V, f = 1MHz, any I/O pin to GND		0.7	0.9	pF
		V_R = 2V, f = 1MHz, any I/O pin to GND		0.45	0.6	pF

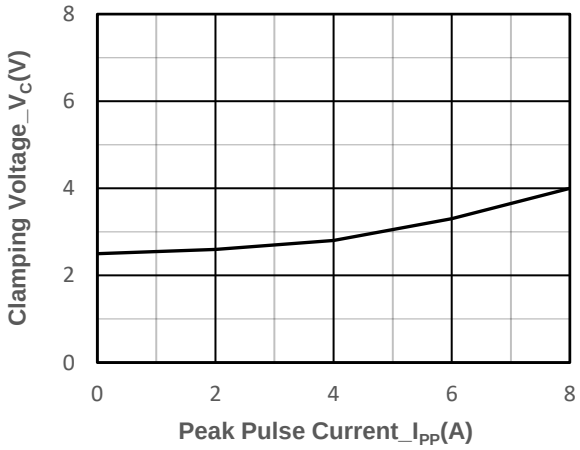
- **Typical Performance Characteristics**



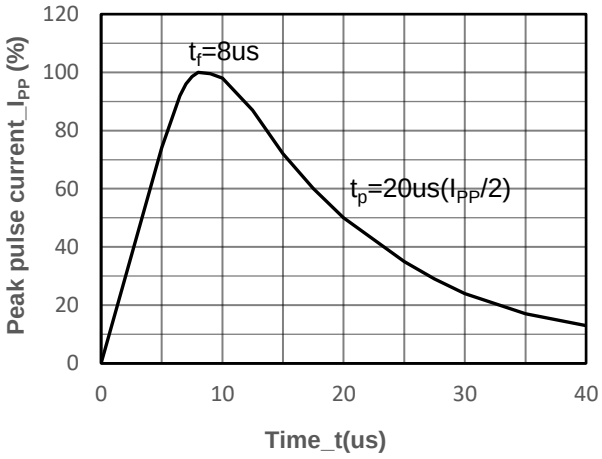
Junction Capacitance vs. Reverse Voltage



Power derating vs. Ambient temperature



Clamping Voltage vs. Peak Pulse Current



8/20us Pulse Waveform

- **Package Information**

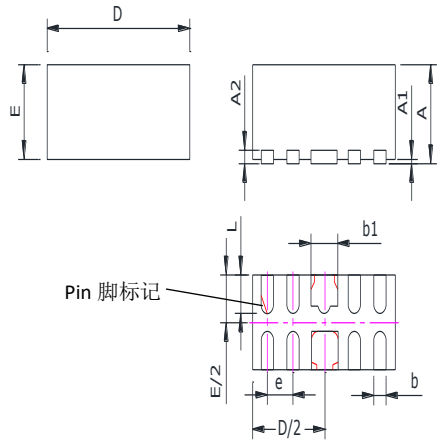
Ordering Information

Device	Package	Qty per Reel	Reel Size
SSCE5V081N7	DFN2510-10L	3000	7 Inch

Mechanical Data

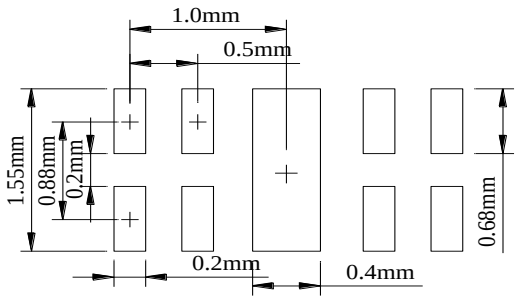
Case:DFN2510-10L

Case Material: Molded Plastic. UL Flammability



DIM	Millimeters	
	Min	Max
A	0.45	0.65
A1	0.05REF	
A2	0.15REF	
b	0.15	0.25
b1	0.30	0.50
D	2.424	2.576
E	0.924	1.076
e	0.50REF	
L	0.30	0.45

Recommended Pad outline



DISCLAIMER

AFSEMI RESERVES THE RIGHT TO MAKE CHANGES WITHOUT FURTHER NOTICE TO ANY PRODUCTS HEREIN TO IMPROVE RELIABILITY, FUNCTION OR DESIGN. AFSEMI DOES NOT ASSUME ANY LIABILITY ARISING OUT OF THE APPLICATION OR USE OF ANY PRODUCT OR CIRCUIT DESCRIBED HEREIN; NEITHER DOES IT CONVEY ANY LICIENCE UNDER ITS PATENT RIGHTS, NOR THE RIGHTS OF OTHERS.

THE GRAPHS PROVIDED IN THIS DOCUMENT ARE STATISTICAL SUMMARIES BASED ON A LIMITED NUMBER OF SAMPLES AND ARE PROVIDED FOR INFORMATIONAL PURPOSE ONLY. THE PERFORMANCE CHARACTERISTICS LISTED IN THEM ARE NOT TESTED OR GUARANTEED. IN SOME GRAPHS, THE DATA PRESENTED MAY BE OUTSIDE THE SPECIFIED OPERATING RANGE (E.G,. OUTSIDE SPECIFIED POWER SUPPLY RANGE) AND THEREFORE OUTSIDE THE WARRANTED RANGE.