SSCE3V381N7

Ultra Low Capacitance Array for ESD Protection

● Description

The SSCE3V381N7 is a transient voltage suppressor array designed to protect high speed data lines such as HDMI 1.4/2.0, USB 3.0/3.1, LVDS, and V-by-one from damaging ESD events. This device incorporates a number of surge rated, low capacitance steering diodes and a TVS in a single package. During transient conditions, the steering diodes direct the transient to either the positive side of the power supply line or to ground.

The SSCE3V381N7 provides a typical line-to-line capacitance of 0.2 pF and low insertion loss providing greater signal integrity making it ideally suited for HDMI 1.4/2.0 or USB 3.0/3.1 applications, such as Digital TVs, DVD players, computing, set-top boxes and MDDI applications in mobile computing devices.

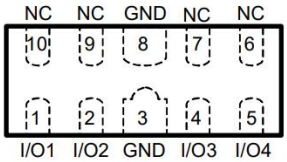
● Feature

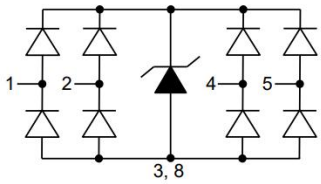
- ✧ Low capacitance: 0.2pF typical (I/O to I/O)
- ✧ DFN2510-10L Package
- ✧ Working voltage: 3.3V
- ✧ Low clamping voltage
- ✧ Low capacitance
- ✧ Complies with following standards:
  -IEC61000-4-2(ESD) ±15kV(contact),
  ±15kV(air)

● Mechanical data

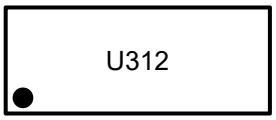
- ✧ Lead finish:100% matte Sn (Tin)
- ✧ Mounting position: Any
- ✧ Qualified max reflow temperature:260℃
- ✧ Device meets MSL 3 requirements
- ✧ Pure tin plating: 7 ~ 17 um
- ✧ Pin flatness: ≤3mil

● PIN configuration





Top View



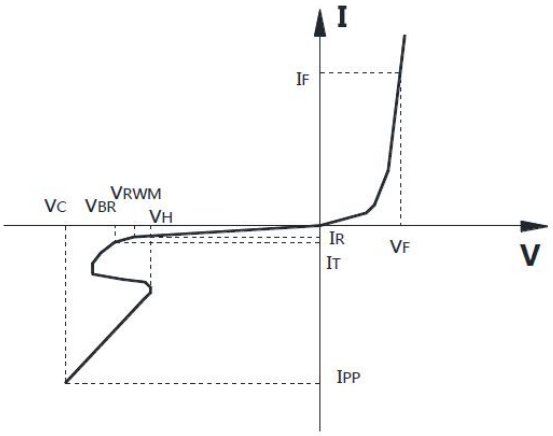
Marking

● Applications

- ✧ DVI & HDMI Port Protection
- ✧ Serial and Parallel Ports
- ✧ Projection TV
- ✧ Notebooks, Desktops, Server
- ✧ USB 1.1/2.0/3.0/4.0/OTG
- ✧ HDMI 1.3, HDMI 1.4 and HDMI 2.0

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}
V_H	Hold Voltage
I_H	Hold Current
P_{PP}	Peak Pulse Power
C_J	Junction Capacitance



Absolute maximum rating @T_A=25℃

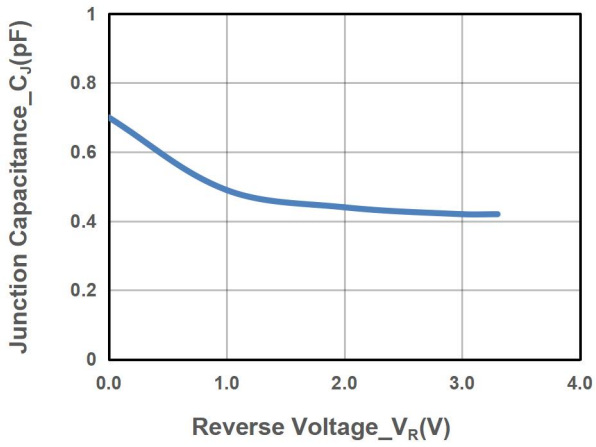
Parameter		Symbol	Value	Units
Peak Pulse Power（8/20us）		P_{PP}	56	W
Peak Pulse Current（8/20us）		I_{PP}	7	A
ESD Rating per IEC61000-4-2：	Contact Air	V_{ESD}	15 15	kV
Storage Temperature		T_{STG}	-55/+150	℃
Operating Temperature		T_J	-55/+125	℃

Electrical Characteristics @T_A=25℃

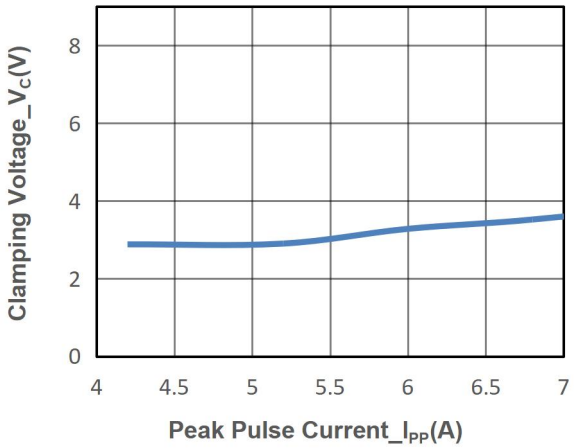
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Peak Reverse Working Voltage	V_{RWM}	Any I/O to Ground			3.3	V
Breakdown Voltage	V_{BR}	I_T = 1mA, Any I/O to Ground	5	7.5		V
Reverse Leakage Current	I_R	V_{RWM} = 3.3V		1	50	nA
Clamping Voltage	V_C	I_{PP} = 7A, t_P = 8/20μs		5.5	8	V
Hold Voltage	V_H	Any I/O pin to Ground		2		V
Hold Current	I_H	Any I/O pin to Ground		20		mA
Clamping Voltage(100ns Transmission Line Pulse,I/O Pin to GND)	V_{CL}	I_{TLP} = 16A		5.5	7	V
Dynamic resistance[1)]	R_{DYN}	I_{TLP} = 8A to 16A		0.3		Ω
Junction Capacitance	C_J	V_R = 0V, f = 1MHz, between I/O pins		0.2	0.4	pF
		VR =0V, f = 1MHz, any I/O pin to Ground		0.7	0.8	pF

Notes: TLP parameter: Z0 = 50Ω, tp = 100ns, tr = 1ns. RDYN is calculated from 8A to 16A.

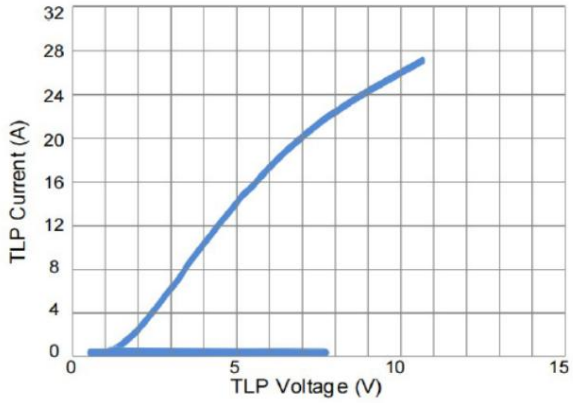
● Typical Performance Characteristics



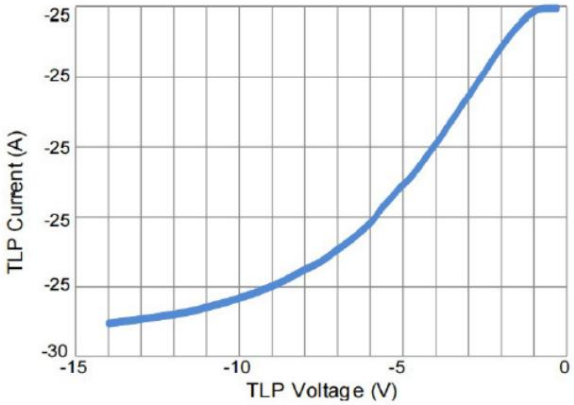
Junction Capacitance vs. Reverse Voltage



Clamping Voltage vs. Peak Pulse Current



Positive Transmission Line Pulse



Negative Transmission Line Pulse

● Package Information

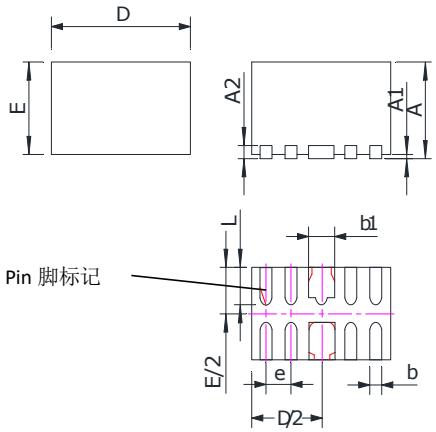
Ordering Information

Device	Package	Qty per Reel	Reel Size
SSCE3V381N7	DFN2510-10L	3000	7 Inch

Mechanical Data

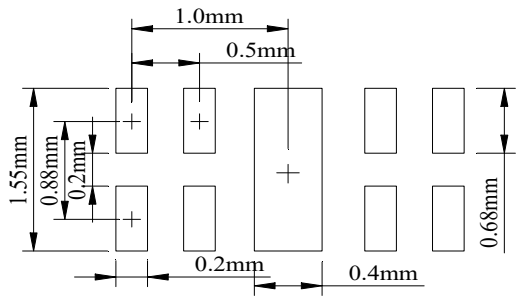
Case: DFN2510-10L

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



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