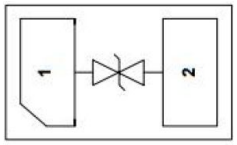
SSCT4V512N1

1-Line Bi-directional TVS Diode

Description

The SSCT4V512N1 is a bi-directional TVS diode, 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 data and power line. The SSCT4V512N1 complies with the IEC 61000-4-2 (ESD) with ±30 KV air and ±30 KV contact discharge. It is assembled into an ultra-small 1.0x0.6x0.5mm lead-free DFN package. The small size and high ESD surge protection make SSCT4V512N1 an ideal choice to protect cell phone, digital cameras, and many other portable applications.

PIN configuration



Top view

Features

- Ultra small package: 1.0x0.6x0.5mm
- Protects one date or power line
- Working voltage: 4.5V
- 2-pin leadless package
- Complies with following standards:
  -IEC61000-4-2(ESD)
  Air discharge:±30KV
  Contact discharge:±30KV
  -IEC61000-4-5(Lightning) 40A(8/20μs)
- RoHS Compliant

Applications

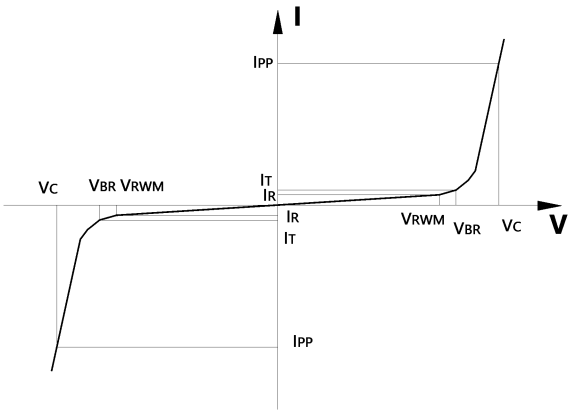
- Cellular Handsets and Accessories
- Notebooks and Handhelds
- Portable Instrumentation
- Digital Cameras
- Peripherals
- Audio Players
- Keypads, Side Keys, USB, LCD Displays

Mechanical Characteristics

- Package: DFN1006-2 (1.0×0.6×0.5mm)
- Lead Finish: NiPdAu
- Case Material: “Green” Molding Compound.
- UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 3 per J-STD-020

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_{PPP}	Peak Pulse Power
C	Junction Capacitance



Absolute maximum rating @T_A=25℃

Symbol	Parameter	Value	Units
P_{PPP}	Peak Pulse Power（8/20μs）	450	W
I_{PP}	Peak Pulse Current（8/20μs）	40	A
VESD	ESD Rating per IEC61000-4-2:Contact Air	±30 ±30	KV
T_{STG}	Storage Temperature	-55/+150	℃
T_J	Operating Temperature	-55/+125	℃

Electrical Characteristics @T_A=25℃

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Peak Reverse Working Voltage	V_{RWM}				4.5	V
Breakdown Voltage	V_{BR}	I_T = 1mA	4.8			V
Reverse Leakage Current	I_R	VRWM =4.5V,			0.1	μA
Clamping Voltage	V_C	I_{PP} =1A, t_P = 8/20μs			6	V
Clamping Voltage	V_C	I_{PP} =40A, t_P = 8/20μs		10	12	V
Junction Capacitance	C_J	VR = 0V, f = 1MHz,			75	pF

- **Typical Performance Characteristics(T_A=25°C unless otherwise Specified)**

Figure 1: Peak Pulse Power Vs Pulse Time

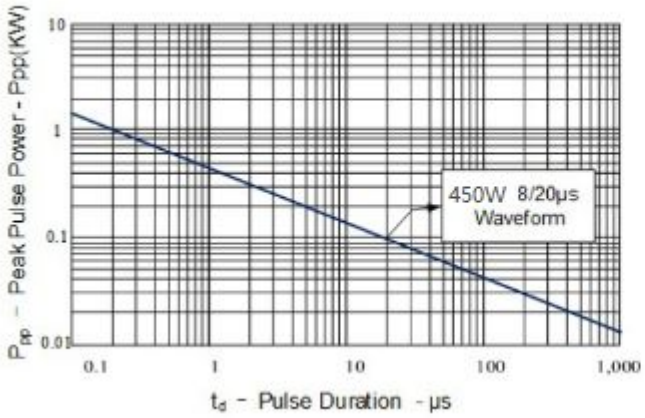


Figure 2: Power Derating Curve

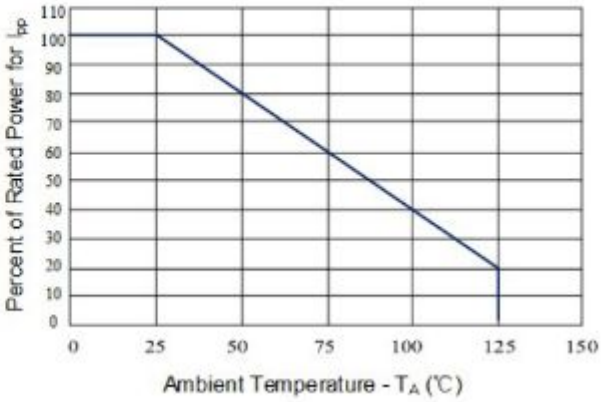


Figure 3: Clamping Voltage vs. Peak Pulse Current

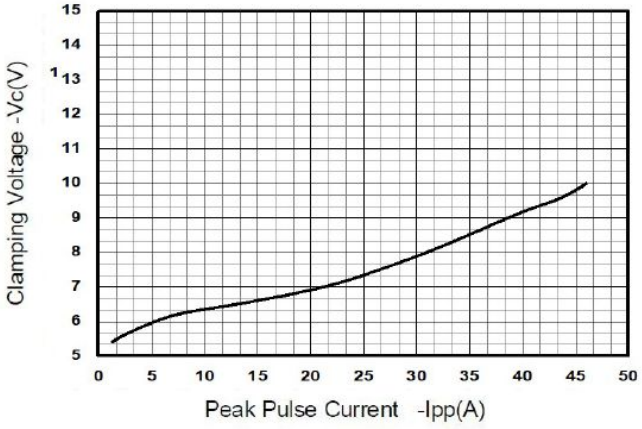


Figure 4: Normalized Junction Capacitance vs. Reverse Voltage

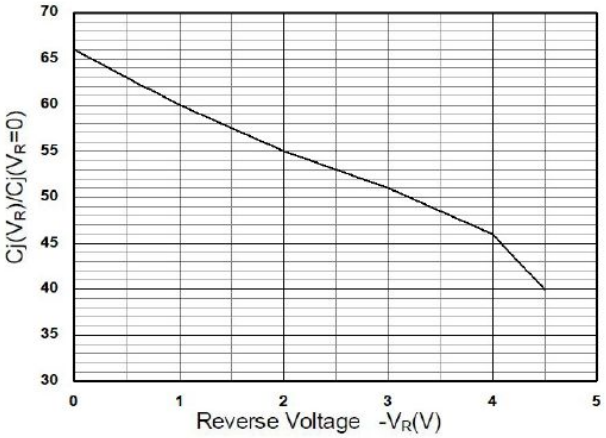


Figure 5: Pulse Waveform

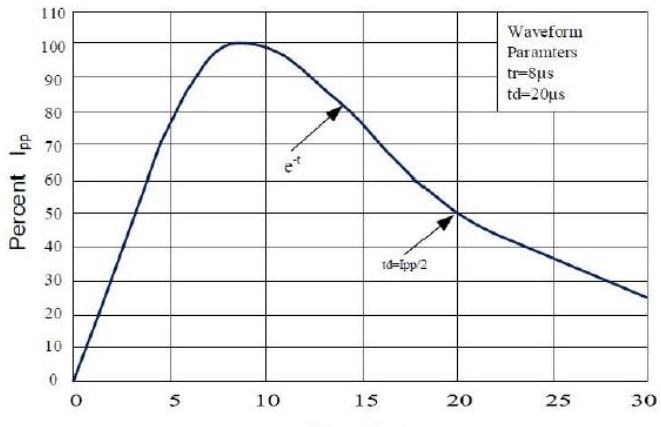
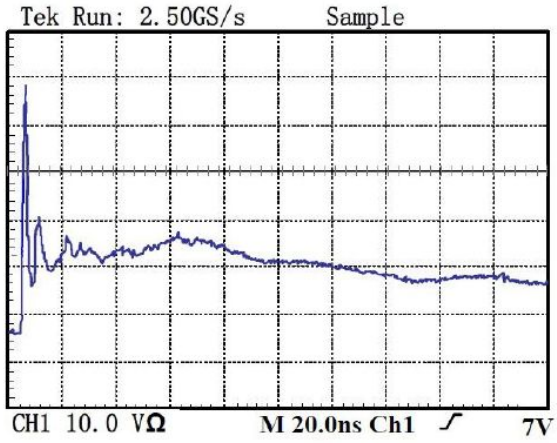
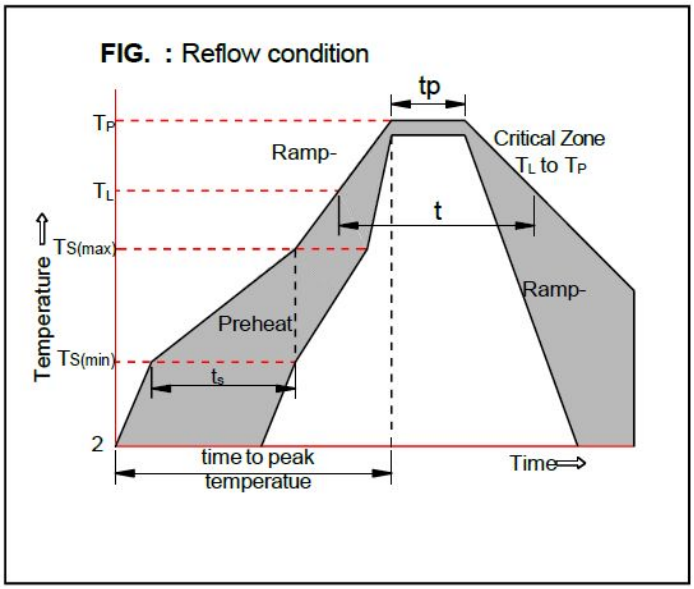


Figure 6: ESD Clamping(8kV Contact per IEC 61000-4-2)



- **Soldering Parameters**

Reflow Condition		**Pb-Free assembly (see as bellow)**
Pre Heat	-Temperature Min (Ts(min))	+150℃
	-Temperature Max(Ts(max))	+200℃
	-Time (Min to Max) (ts)	60-190 secs.
Average ramp up rate (Liquid us Temp (T_L) to peak)		5℃/sec. Max
Ts(max) to TL - Ramp-up Rate		5℃/sec. Max
Reflow	-Temperature(T_L)(Liquid us)	+217℃
	-Temperature(t_L)	60-150 secs.
Peak Temp (Tp)		+260(+0/-5)℃
Time within 5℃ of actual Peak Temp (tp)		40 secs. Max
Ramp-down Rate		5℃/sec. Max
Time 25℃ to Peak Temp (T_P)		8 min. Max
Do not exceed		+280℃



- **Package Information**

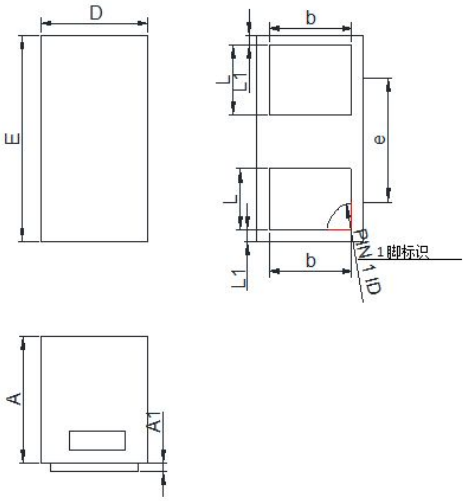
Ordering Information

Device	Package	Qty per Reel	Reel Size
SSCT4V512N1	DFN1006-2L	10000	7 Inch

Mechanical Data

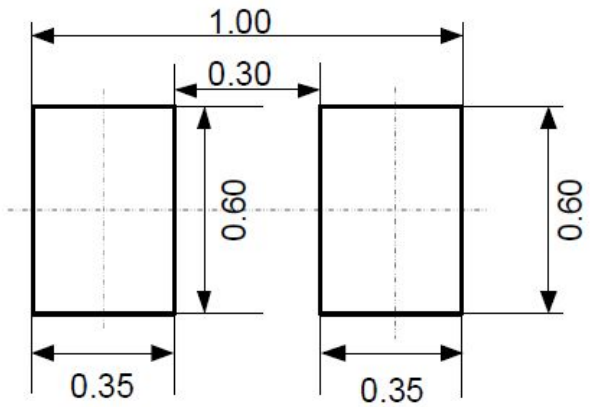
Case: DFN1006-2L

Case Material: Molded Plastic. UL Flammability



DIM	Millimeters	
	Min	Max
A	0.45	0.55
A1	0.00	0.05
D	0.55	0.65
E	0.95	1.05
b	0.45	0.60
e	0.65TYP	
L	0.2	0.3
L1	0.05REF	

Suggested Land Pattem



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