SSCE5V031N1

1-Line Uni-directional low Capacitance TVS Diode

● Description

The SSCE5V031N1 is an uni-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 high-speed data lines. The SSCE5V031N1 has an ultra-low capacitance with a typical value at 0.4pF, and complies with the IEC 61000-4-2 (ESD) with ±20kV air and ±15kV contact discharge. It is assembled into an ultra-small 1.0x0.6x0.5mm lead-free DFN package.

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.

● Features

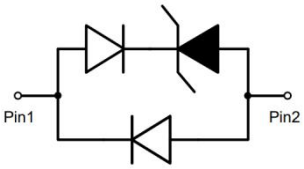
- ✧ 64W peak pulse power (t_P = 8/20μs)
- ✧ DFN1006-2L Package
- ✧ Working voltage:5V
- ✧ Low Leakage Current
- ✧ Low capacitance
- ✧ Low clamping voltage
- ✧ Response Time is Typically<1ns
- ✧ Complies with following standards:
  - -IEC61000-4-2(ESD) ±15kV(contact), ±20kV(air)
  - - IEC61000-4-4 (EFT) 40A (5/50ns)
  - -IEC61000-4-5(Lightning) 4A(8/20μs)

● Mechanical Characteristics

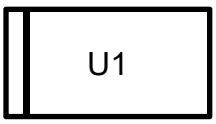
- ✧ Package: DFN1006-2L (1.0×0.6×0.5mm)
- ✧ Case Material: “Green” Molding Compound.
- ✧ UL Flammability Classification Rating 94V-0
- ✧ Moisture Sensitivity: Level 3 per J-STD-020

● PIN configuration

DFN1006-2L (Bottom View)



Circuit Diagram



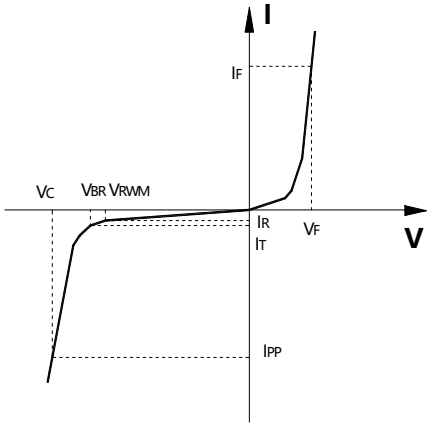
Marking (Top View)

● Applications

- ✧ DVI & HDMI Port Protection
- ✧ USB 2.0 and USB 3.0
- ✧ SATA and eSATA
- ✧ Serial and Parallel Ports
- ✧ Projection TV
- ✧ Notebooks, Desktops, Servers
- ✧ Digital cameras

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



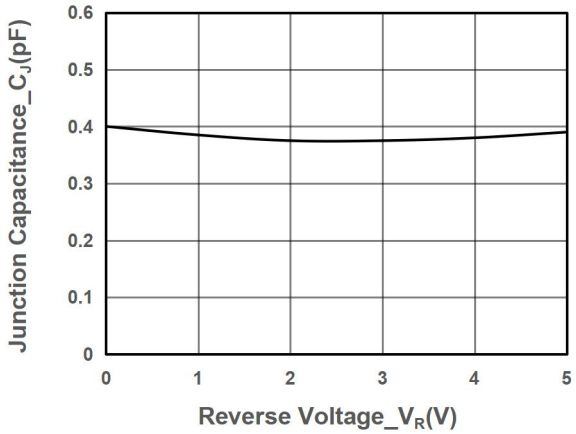
Absolute maximum rating (T_A=25℃ unless otherwise noted)

Parameter	Symbol	Value	Units
Peak Pulse Power（8/20μs）	P_{PP}	64	W
Peak Pulse Current（8/20μs）	I_{PP}	4	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	℃

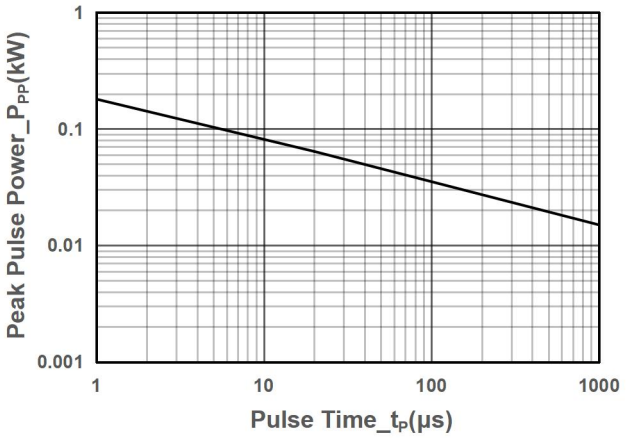
Electrical Characteristics (T_A=25℃ unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Peak Reverse Working Voltage	V_{RWM}				5	V
Breakdown Voltage	V_{BR}	I_T = 1mA	6			V
Reverse Leakage Current	I_R	V_{RWM} = 5V		0.03	0.2	μA
Forward Voltage	V_F	I_F = 15mA			1.2	V
Clamping Voltage	V_C	I_{PP} = 1A, t_P = 8/20μs			10	V
Clamping Voltage	V_C	I_{PP} = 4A, t_P = 8/20μs			16	V
Junction Capacitance	C_J	V_R = 0V, f = 1MHz		0.4	0.8	pF

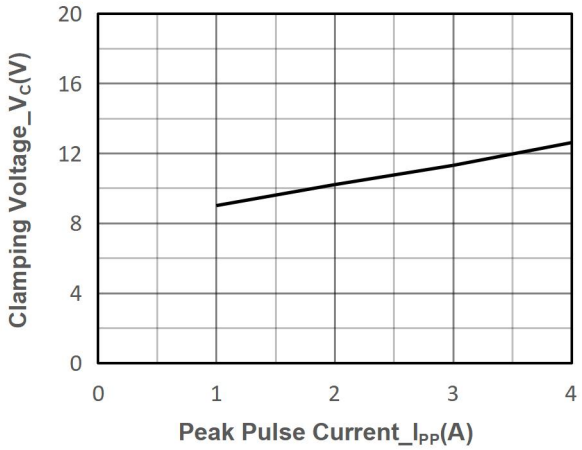
- **Typical Performance Characteristics (T_A=25℃ unless otherwise noted)**



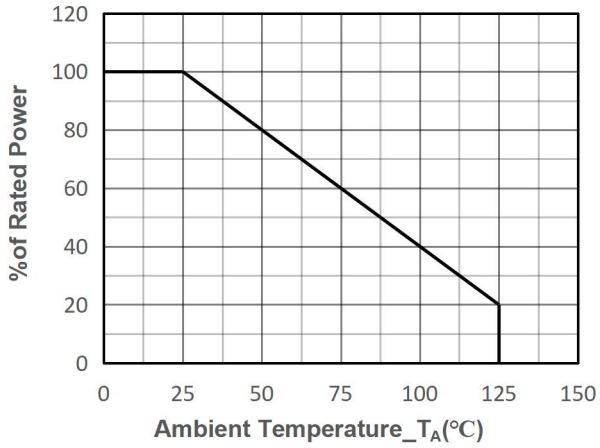
Junction Capacitance vs. Reverse Voltage



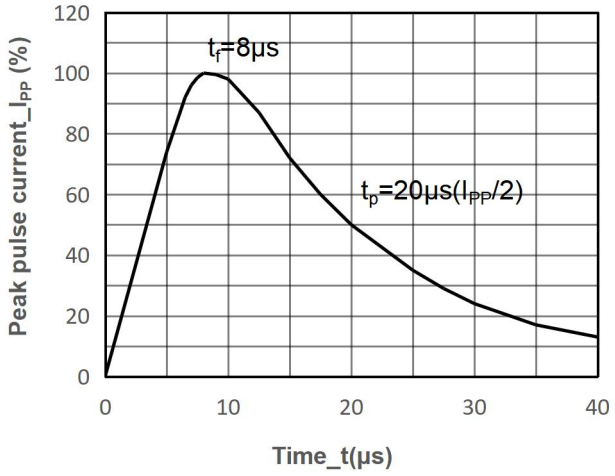
Peak Pulse Power vs. Pulse Time



Clamping Voltage vs. Peak Pulse Current



Power derating vs. Ambient temperature



8/20μs Pulse Waveform

Package Information

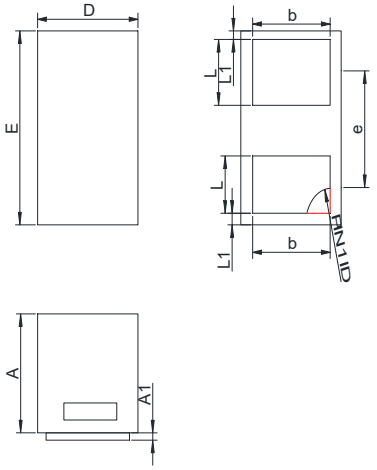
Ordering Information

Device	Package	Qty per Reel	Reel Size
SSCE5V031N1	DFN1006-2L	10000	7 Inch

Mechanical Data

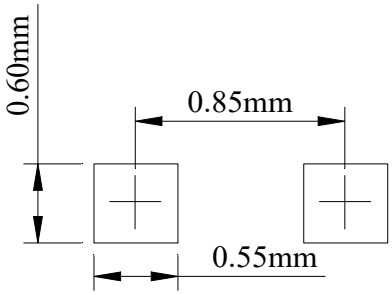
Case: DFN1006-2L

Case Material: Molded Plastic. UL Flammability

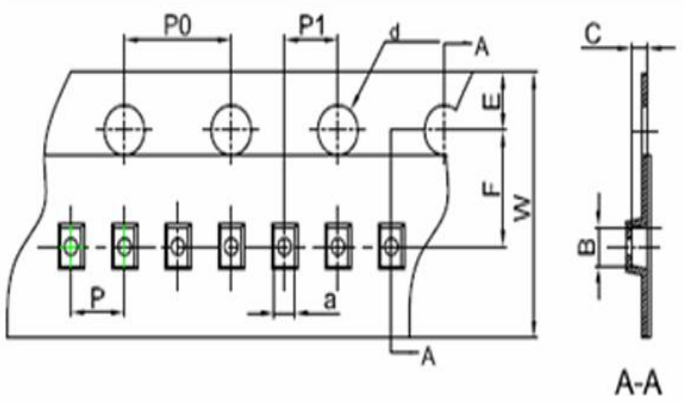


DIM	Millimeters	
	Min	Max
A	0.45	0.55
A1	0.00	0.05
D	0.55	0.65
E	0.95	1.05
b	0.45	0.60
e	0.65TYP	
L	0.2	0.3
L1	0.05REF	

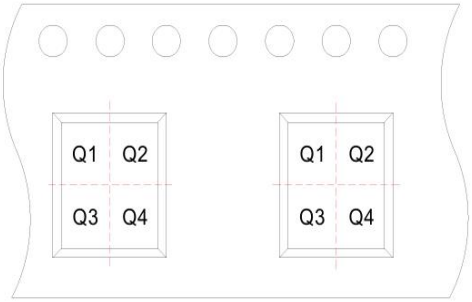
Recommended Pad outline (Unit: mm)



Type and Reel Information-DFN1006-2L

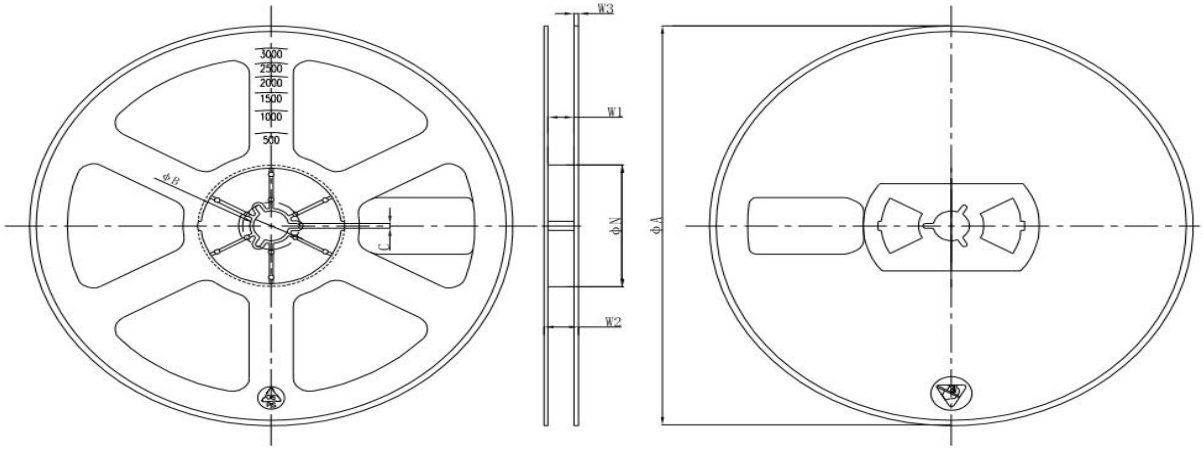


DIM	Millimeters
	Typ
a	0.68
B	1.14
C	0.58
d	Φ1.55
E	1.75
F	3.50
P0	4.00
P	2.00
P1	2.00
W	8.00



User direction of feed

Pin 1 Quadrant：Q1&Q2



ΦA	ΦN	ΦB	C	W1	W2	W3
178mm	54mm	13.2mm	2.2mm	9.5mm	13_{max}mm	1.4mm

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