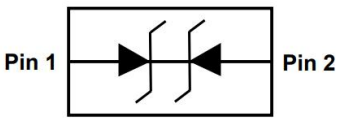
SSCE5V032N1

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

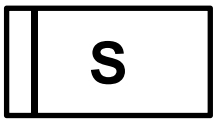
Description

The SSCE5V032N1 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 high-speed data lines. The SSCE5V032N1 has an ultra-low capacitance with a typical value at 0.2pF, and complies with the IEC 61000-4-2 (ESD) with ±20kV air and ±20kV 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.

PIN configuration



Top view



Marking

Feature

- 100W peak pulse power (t_P = 8/20μs)
- DFN1006-2L Package
- Working voltage: 5V
- Low clamping voltage
- Low capacitance
- Low leakage current
- RoHS compliant transient protection for high speed data lines to IEC61000-4-2(ESD)±20kV(air),±20kV(contact)

Applications

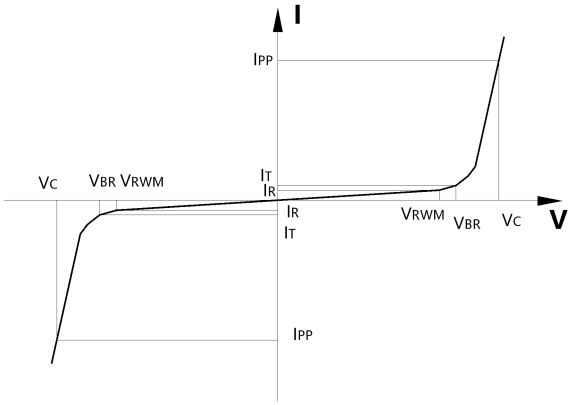
- DVI & HDMI Port Protection
- USB 2.0 and USB 3.0
- SATA and eSATA
- Serial and Parallel Ports
- Projection TV
- Notebooks, Desktops, Servers

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
C_J	Junction Capacitance



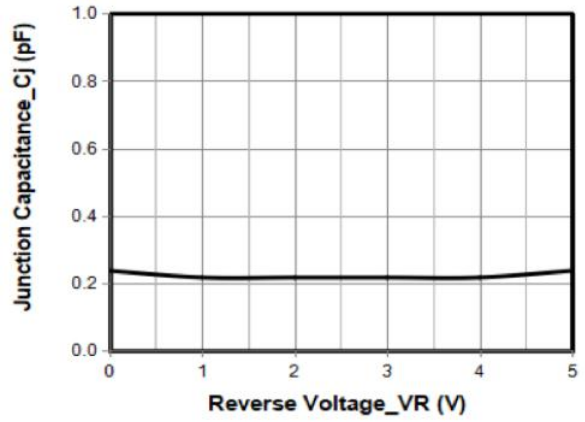
Absolute maximum rating @TA=25℃

Parameter	Symbol	Value	Unit
Peak Pulse Power（8/20μs）	P_{PP}	100	W
Peak Pulse Current（8/20μs）	I_{PP}	4	A
ESD Rating per IEC61000-4-2： Contact Air	V_{ESD}	20 20	KV
Storage Temperature	T_{STG}	-55/+150	℃
Operating Temperature	T_J	-55/+125	℃

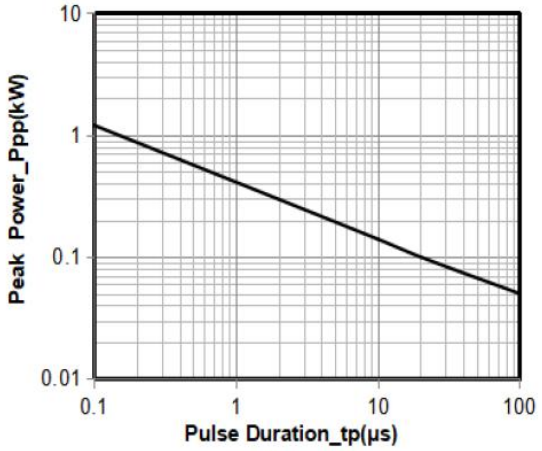
Electrical Characteristics @TA=25℃

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
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			1	μA
Clamping Voltage	V_C	I_{PP} = 1A, t_P = 8/20μs		12		V
Clamping Voltage	V_C	I_{PP}=4A, t_P = 8/20μs			25	V
Junction Capacitance	C_J	V_R=0V, f = 1MHz		0.2	0.4	pF

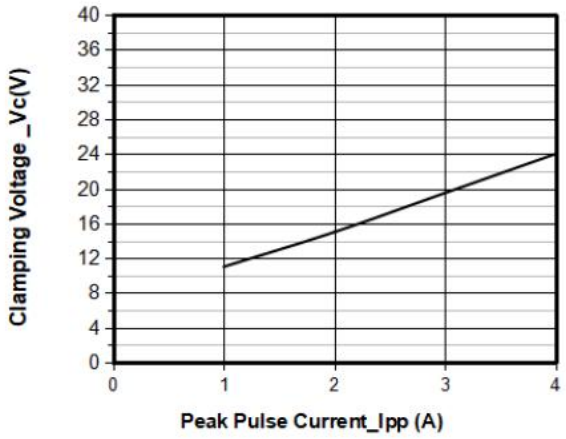
- **Typical Performance Characteristics**



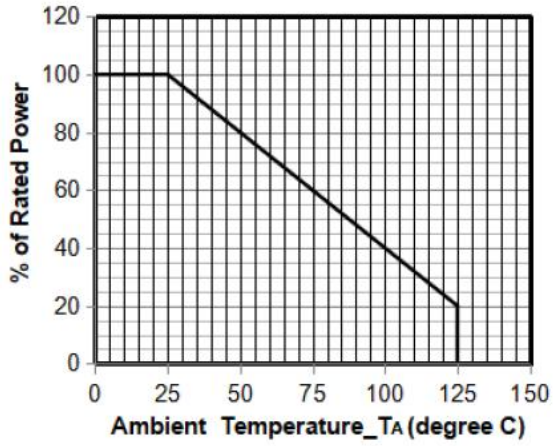
Junction Capacitance vs. Reverse Voltage



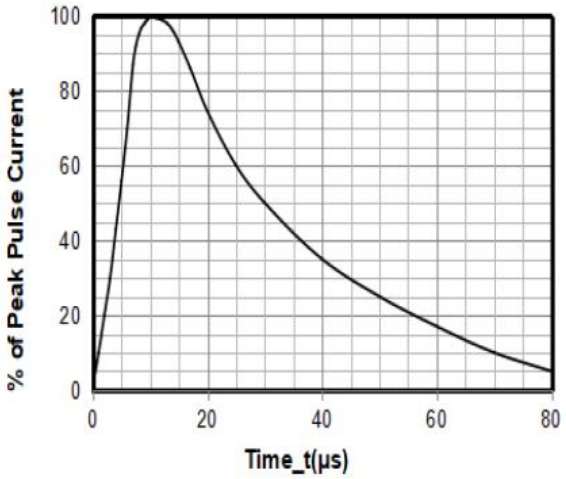
Peak Pulse Power vs. Pulse Time



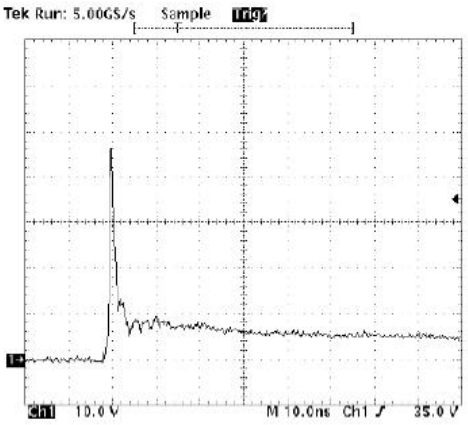
Clamping Voltage vs. Peak Pulse Current



Power Derating Curve



8 X 20μs Pulse Waveform



Note：Data is taken with a 10x attenuator

ESD Clamping Voltage

8 kV Contact per IEC61000-4-2

- **Package Information**

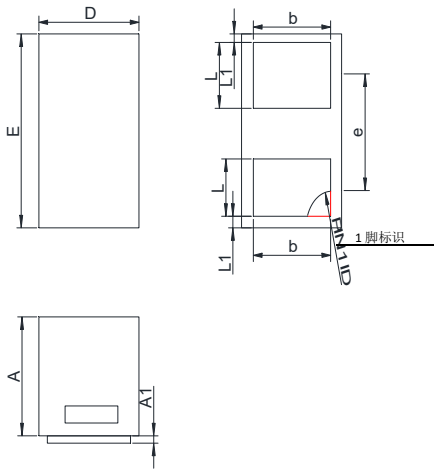
Ordering Information

Device	Package	Qty per Reel	Reel Size
SSCE5V032N1	DFN1006-2L	10000	7 Inch

Mechanical Data

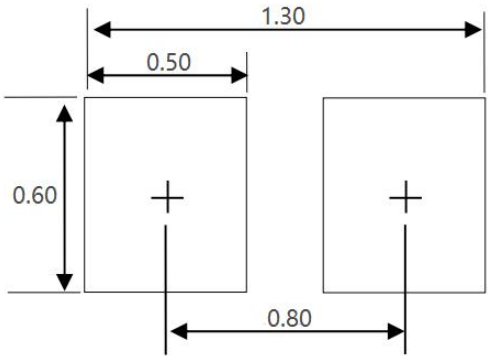
Case:DFN1006-2L

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

- **History Version**

V1.0	First edition	2019-06-08
V2.0	Modify package size	2020-05-10
V3.0	Modify the company logo	2020-07-15
V4.0	Modify the product capacitance value	2021-03-26
V4.1	1.Add marking Icon 2.Update typical performance characteristics	2022-04-27

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.