

ESD5451N

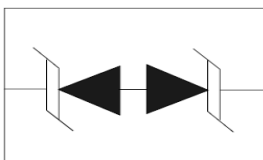
DESCRIPTION

ESD5451N is a low-capacitance Transient Voltage Suppressor (TVS) designed to provide electrostatic discharge (ESD) protection for data, control or power lines. With typical capacitance of 8pF only, ESD5451N is designed to protect parasitic-sensitive systems against over-voltage and over-current transient events. It complies with IEC 61000-4-2 (ESD), Level 4 ($\pm 15\text{kV}$ air, $\pm 8\text{kV}$ contact discharge), IEC 61000-4-4 (electrical fast transient - EFT) (40A, 5/50 ns), very fast charged device model (CDM) ESD and cable discharge event (CDE), etc.

ORDERING INFORMATION

- ◇ Package: DFN1006
- ◇ Material: RoHS compliant, Halogen free
- ◇ Packing: Tape & Reel
- ◇ Quantity per reel: 10,000pcs

CIRCUIT DIAGRAM



FEATURES

- ◇ Transient protection for high-speed data lines
 - IEC 61000-4-2 (ESD) $\pm 15\text{kV}$ (Air)
 - $\pm 8\text{kV}$ (Contact)
 - IEC 61000-4-4 (EFT) 40A (5/50 ns)
 - Cable Discharge Event (CDE)
- ◇ Package optimized for high-speed lines
- ◇ Ultra-small package (1.0mm×0.6mm×0.4mm)
- ◇ Protects one data, control or power line
- ◇ Low capacitance
- ◇ Low leakage current
- ◇ Low clamping voltage
- ◇ Each I/O pin can withstand over 1000 ESD strikes for $\pm 8\text{kV}$ contact discharge

MACHANICAL DATA

- ◇ DFN1006 package
- ◇ Flammability Rating: UL 94V-0
- ◇ Packaging: Tape and Reel
- ◇ High temperature soldering guaranteed: $260^{\circ}\text{C}/10\text{s}$
- ◇ Reel size: 7 inch

APPLICATIONS

- ◇ Portable Electronics
- ◇ Desktops, Servers and Notebooks
- ◇ Cellular Phones
- ◇ MP3 Ports
- ◇ Digital Ports
- ◇ Subscriber Identity Module (SIM) card

PIN CONFIGURATION



ESD5451N

ABSOLUTE MAXIMUM RATING

Symbol	Parameter	Value	Units
P_{PP}	Peak Pulse Power (8/20 μ s)	100	W
T_j	Operating Temperature	-55/+125	$^{\circ}$ C
T_{STG}	Storage Temperature	-55/+150	$^{\circ}$ C

ELECTRICAL CHARACTERISTICS ($T_{amb}=25^{\circ}$ C)

Symbol	Parameter	Test Condition	Min	Typ	Max	Units
V_{RWM}	Reverse Stand-Off Voltage				5.0	V
V_{BR}	Reverse Breakdown voltage	$I_T=1mA$	6.0			V
I_R	Reverse leakage current.	$V_{RWM}=5V$			1	μ A
I_{PP}	Peak Pulse Current	$t_p=8/20\mu s$			5	A
V_C	Clamping Voltage	$I_{PP}=1A, t_p=8/20\mu s$ $I_{PP}=5A, t_p=8/20\mu s$		13	9.5 15	V
C_J	Junction Capacitance	$V_R=0V, f=1MHz$		8	15	pF

ELECTRICAL CHARACTERISTICS CURVE

Figure 1: Peak Pulse Power Vs Pulse Time

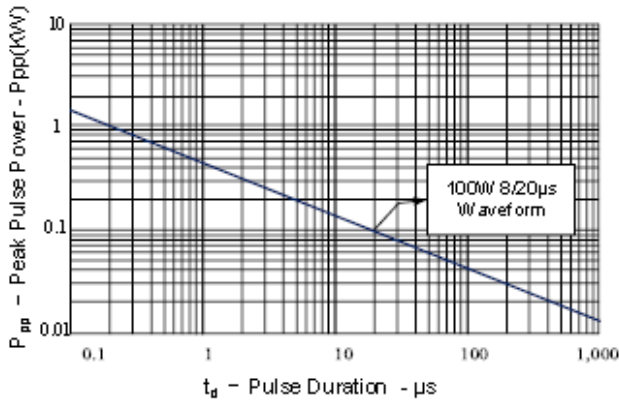


Figure 2: Power Derating Curve

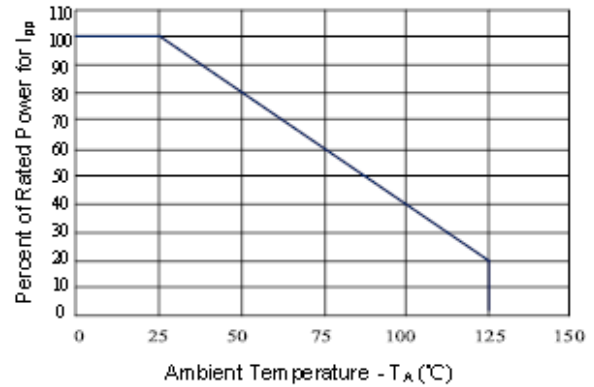


Figure 3: Clamping Voltage vs. Peak Pulse Current

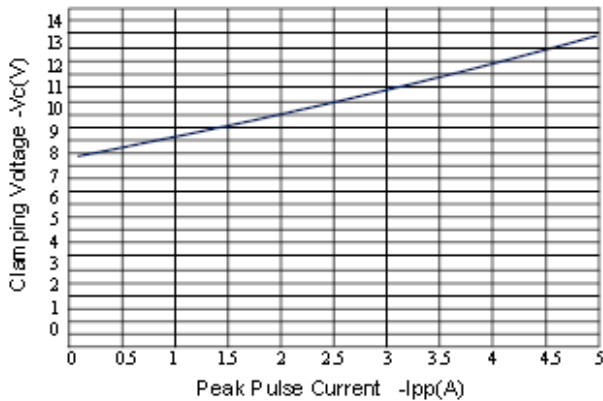


Figure 4: Normalized Junction Capacitance vs. Reverse Voltage

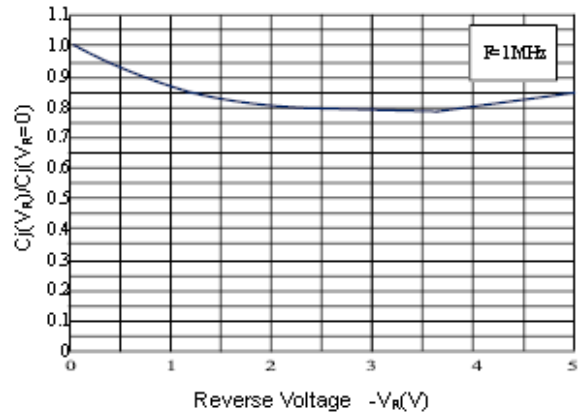


Figure 5: Pulse Waveform

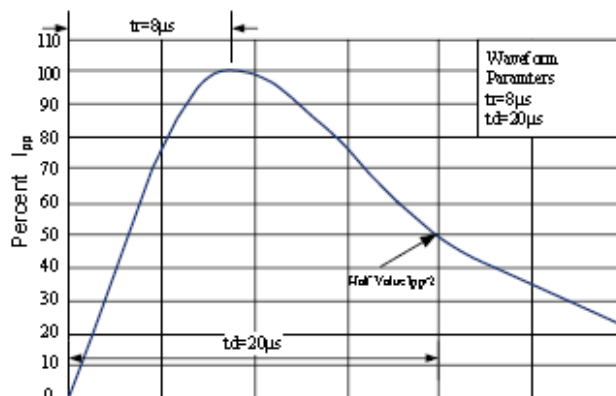
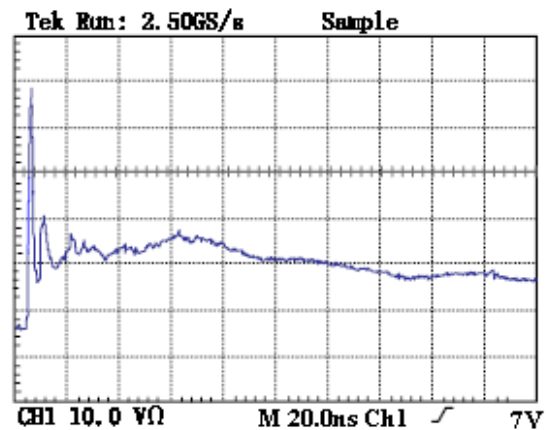
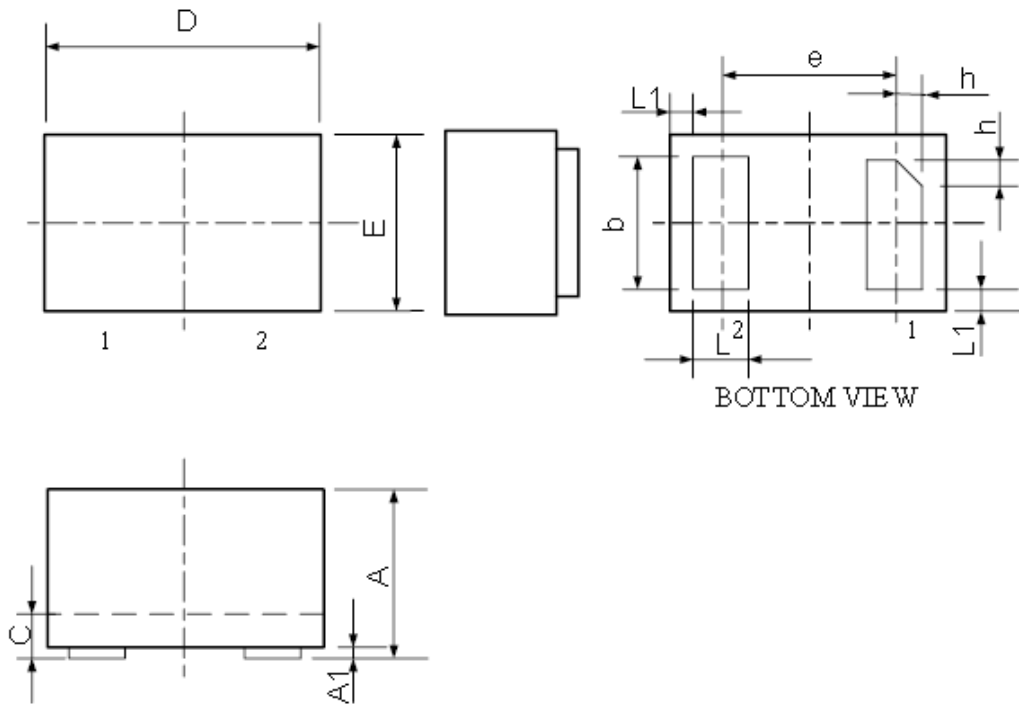


Figure 6: ESD Clamping (8kV Contact per IEC 61000-4-2)



ESD5451N

DFN1006 PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters	
	Minimum	Maximum
A	0.450	0.550
A1	0.000	0.050
b	0.45	0.55
C	0.12	0.18
D	0.950	1.050
e	0.65BSC	
E	0.550	0.650
L	0.200	0.300
L1	0.05REF	
h	0.07	0.17