Semiteh Electronics

TVS16D5501V

General description :

1- Line Uni- directional TVS Diode

The TVS16D5501V 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 data and power line. The TVS16D5501V complies with the IEC 61000-4-2 (ESD) standard with ±30kV air and ±30kV contact discharge. It is assembled into an ultra-small 1.6x1.0x0.5mm lead-free DFN package. The small size and high ESD surge protection make TVS16D5501V an ideal choice to protect cell phone, digital cameras, audio players and many other portable applications.

DFN1610-2

MARKING : 72

PIN CONFIGURATION

CATHODE ANODE

Features :

- Ultra small package: 1.6x1.0x0.5mm
- Protects one data or power line
- Low clamping voltage
- 2-pin leadless package
- Complies with following standards:
  - IEC 61000-4-2 (ESD) immunity test
    Air discharge: ±30kV
    Contact discharge: ±30kV
  - IEC61000-4-4 (EFT) 80A (5/50ns)
  - IEC61000-4-5 (Lightning) 80A (8/20μs)
- RoHS Compliant

Applications :

- Mobile Phones
- Battery Protection
- Power Line Protection
- Vbat pin for Mobile Devices
- Hand Held Portable Applications

Mechanical Characteristics :

- Package: DFN1610-2
- Case Material: “Green” Molding Compound.
- UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020

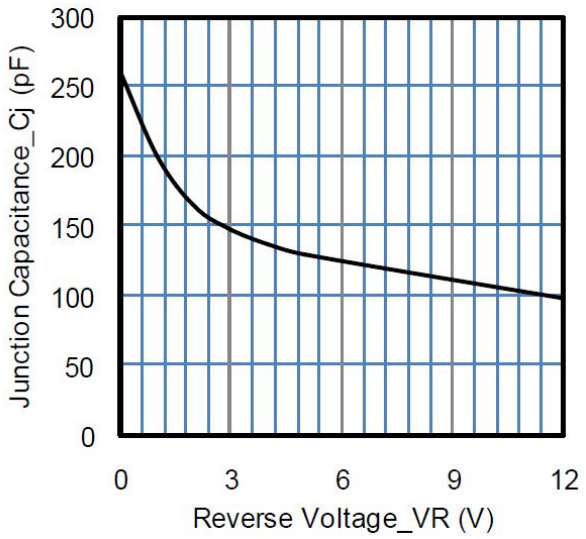
Absolute Maximum Ratings (T_A=25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20μs)	Ppk	1500	W
Peak Pulse Current (8/20μs)	Ipp	65	A
ESD per IEC 61000−4−2 (Air) ESD per IEC 61000−4−2 (Contact)	VESD	±30 ±30	kV
Operating Temperature Range	TJ	−55 to +125	°C
Storage Temperature Range	Tstg	−55 to +150	°C

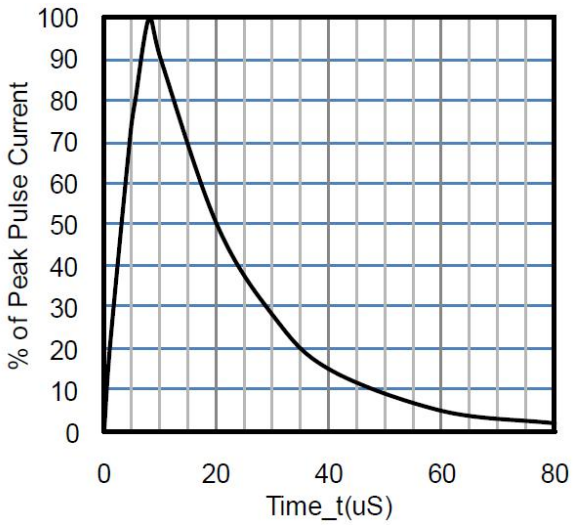
Electrical Characteristics (T_A=25°C unless otherwise specified)						
Parameter	**Symbol**	**Min**	**Typ**	**Max**	**Unit**	**Test Condition**
Reverse Working Voltage	V_{RWM}			12	V	
Breakdown Voltage	V_{BR}	12.5	13.5	15.5	V	IT = 1mA
Reverse Leakage Current	I_R			0.5	μ A	VR = 12V
Forward Voltage	V_F		1.0	1.2	V	IF = 10mA
Clamping Voltage	V_C			16	V	IPP = 10A (8 x 20μs pulse)
Clamping Voltage	V_C			23	V	IPP = 65A (8 x 20□μ s pulse)
Junction Capacitance	C_J		250		pF	VR = 0V, f = 1MHz

Typical Performance Characteristics (TA=25℃ unless otherwise Specified)

Fig1.Junction Capacitance vs. Reverse Vo ltage

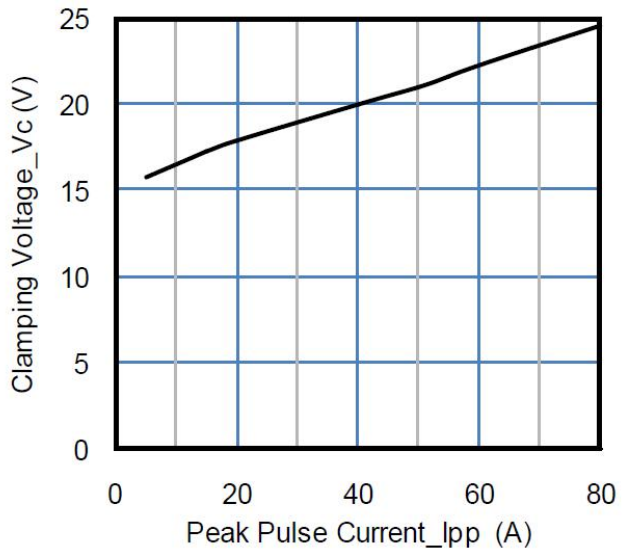


F i g 2. 8 X 20uS Pulse Waveform



Typical Performance Characteristics (TA=25℃ unless otherwise Specified)

Fig3 .Clamping Voltage vs. Peak Pulse Cu rrent



F i g4.Power Derating Cur ve

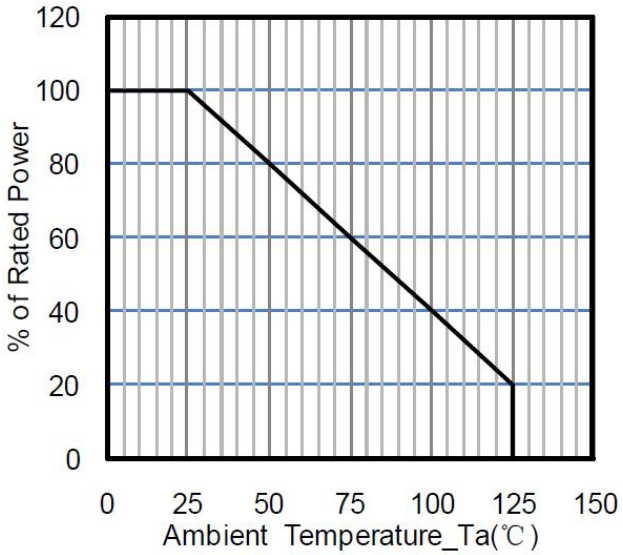


Fig 5. ESD Clamping Voltage
Positive 8 kV Contact per IEC61000−4−2

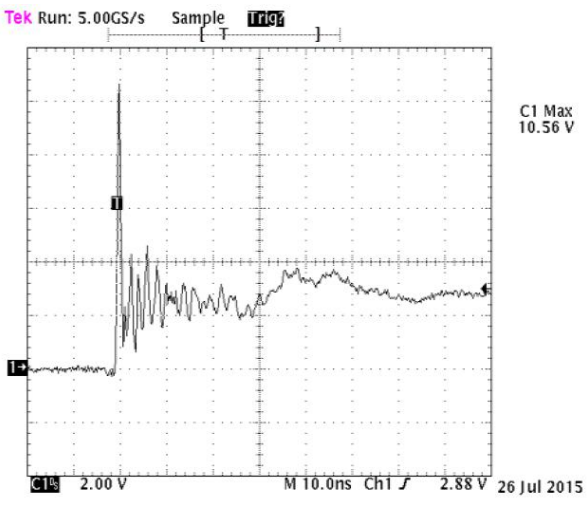
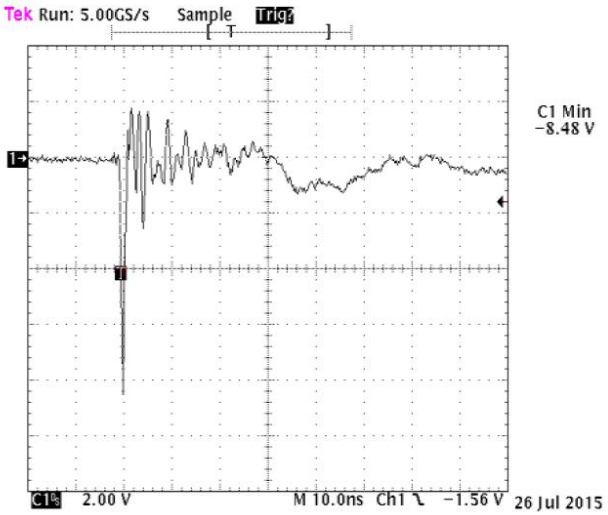
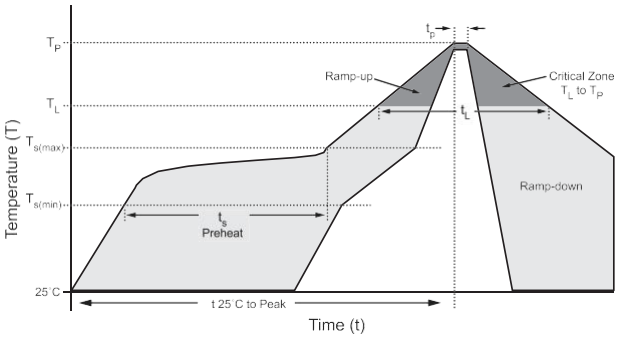


Fig 6. ESD Clamping Voltage
Negative 8 kV Contact per IEC61000−4−2

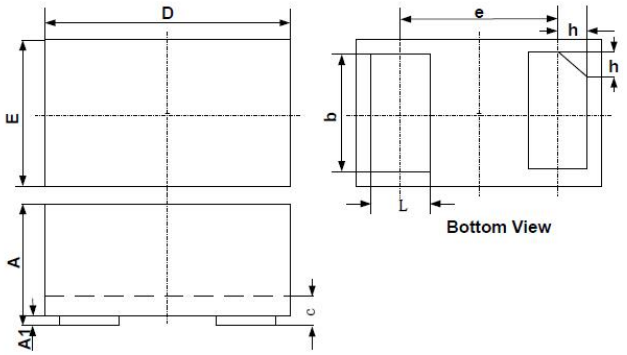


SOLDERING PARAMETERS

Reflow Condition		Lead–free assembly
Pre Heat	Temperature Min (Ts(min))	150°C
	Temperature Max (Ts(max)	200°C
	Time (min to max) (ts)	60 – 180 secs
Average ramp up rate (Liquidus Temp (T_L) to peak		3°C/second max
T_S(max)to T_L - Ramp-up Rate		3°C/second max
Reflow	Temperature (T_L) (Liquidus)	217°C
	Time (min to max) (t_L)	60 – 150 seconds
Peak Temperature (T_P)		260°C
Time within 5°C of actual peak Temperature (tp)		20 – 40 seconds
Ramp-down Rate		6°C/second max
Time 25°C to peak Temperature (T_P)		8 minutes Max.
Do not exceed		260°C

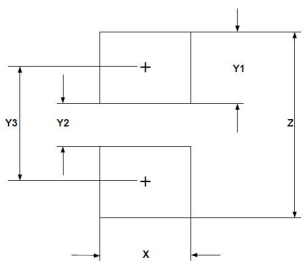


DFN1610-2 Package Outline Drawing



SYM	DIMENSIONS					
	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.45	0.50	0.55	0.018	0.020	0.022
A1	0.00	0.02	0.05	0.000	0.001	0.002
b	0.75	0.80	0.85	0.030	0.032	0.034
c	0.10	0.15	0.20	0.004	0.006	0.008
D	1.55	1.60	1.65	0.062	0.064	0.066
e	1.10 BSC			0.044 BSC		
E	0.95	1.00	1.05	0.038	0.040	0.042
L	0.35	0.40	0.45	0.014	0.016	0.018
h	0.15	0.20	0.25	0.006	0.008	0.010

Suggested Land Pattern



SYM	DIMENSIONS	
	MILLIMETERS	INCHES
X	1.00	0.040
Y1	0.62	0.025
Y2	0.60	0.024
Y3	1.22	0.049
Z	1.85	0.074