

Transient Voltage Suppressors Array for ESD Protection

SE05N9P11GJ

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: $\pm 30\text{kV}$
 - Contact discharge: $\pm 30\text{kV}$
 - IEC61000-4-5 (Lightning) 120A (8/20 μs)
- ◆ RoHS Compliant.

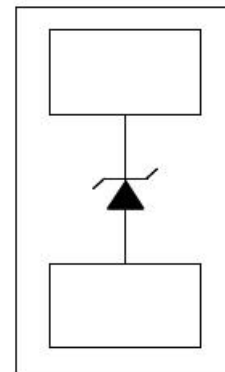
DFN1610-2L



Applications

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

PIN Configuration



Mechanical Characteristics

- ◆ DFN1610-2L package
- ◆ Case Material: "Green" Molding Compound.
- ◆ Moisture Sensitivity: Level 1 per J-STD-020.

Absolute Maximum Rating ($T_A=25^\circ\text{C}$, unless otherwise specified)

Symbol	Parameter	Value	Units
I_{PP}	Peak Pulse Current (8/20 μs)	120	A
V_{ESD}	ESD per IEC 61000-4-2(Air)	± 30	KV
	ESD per IEC 61000-4-2 (Contact)	± 30	
T_{OP}	Operating Temperature Range	-55 to +125	$^\circ\text{C}$
T_{STG}	Storage Temperature Range	-55 to +150	$^\circ\text{C}$

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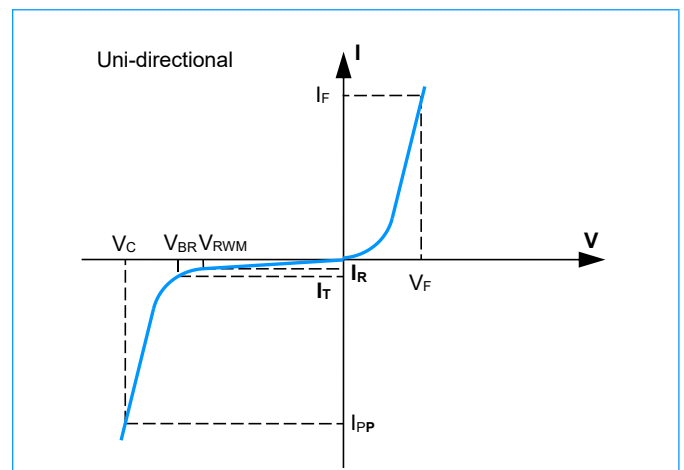
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Electrical Characteristics (@ $T_A=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Test Condition	Min	Typ	Max	Units
Reverse Working Voltage	V_{RWM}	--	--	--	5	V
Breakdown Voltage	V_{BR}	$I_T = 1\text{mA}$	5.8	--	--	V
Reverse Leakage Current	I_R	$V_{RWM}=5\text{V}$	--	--	1	μA
Clamping Voltage	V_C	$I_{PP}=10\text{A}$ (8/20 μs pulse)	--	7	--	V
		$I_{PP}=120\text{A}$ (8/20 μs pulse)	--	16	--	
Junction Capacitance	C_J	$V_R=0\text{V}$, $f=1\text{MHz}$	--	950	--	pF

Electrical Parameters ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter
I_{PP}	Maximum Reverse Peak Pulse Current
V_C	Clamping Voltage @ I_{PP}
V_{RWM}	Working Peak Reverse Voltage
I_R	Maximum Reverse Leakage Current @ V_{RWM}
V_{BR}	Breakdown Voltage @ I_T
I_T	Test Current
I_F	Forward Current
V_F	Forward Voltage @ I_F



Typical Performance Characteristics ($T_A=25^\circ\text{C}$ unless otherwise specified)

Fig1. Junction Capacitance vs. Reverse Voltage

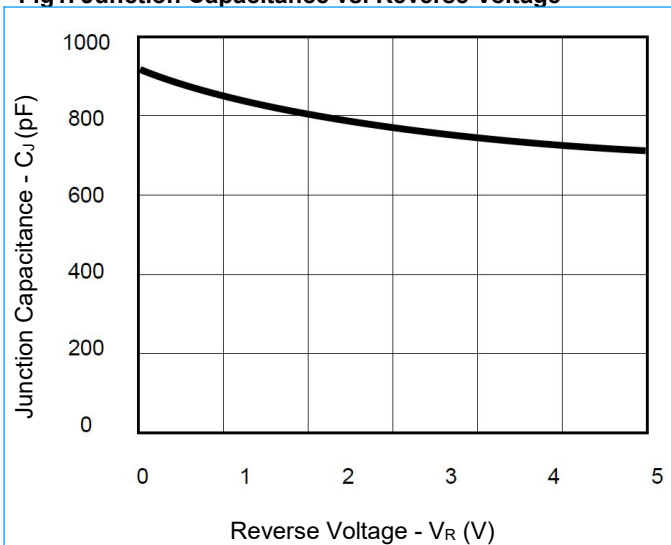
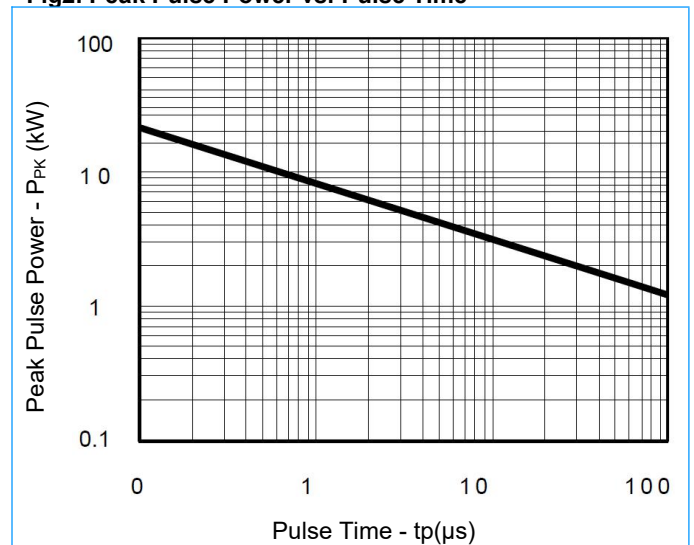


Fig2. Peak Pulse Power vs. Pulse Time



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Typical Performance Characteristics ($T_A=25^\circ\text{C}$ unless otherwise specified) (Continue)

Fig3. Clamping Voltage vs. Peak Pulse Current

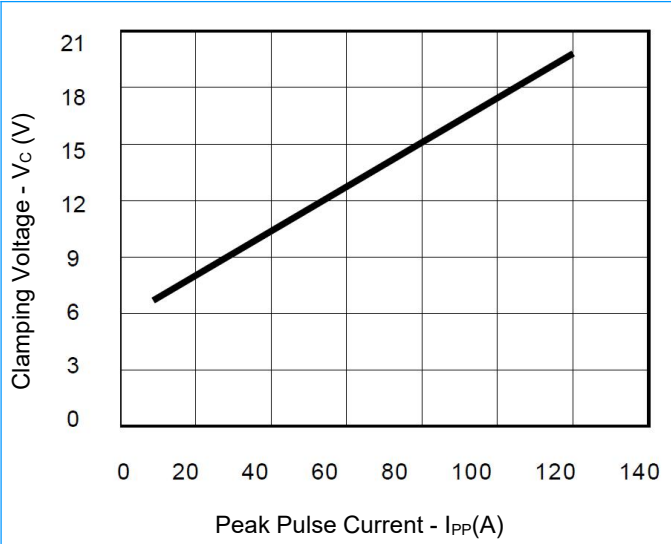


Fig4. Power Derating Curve

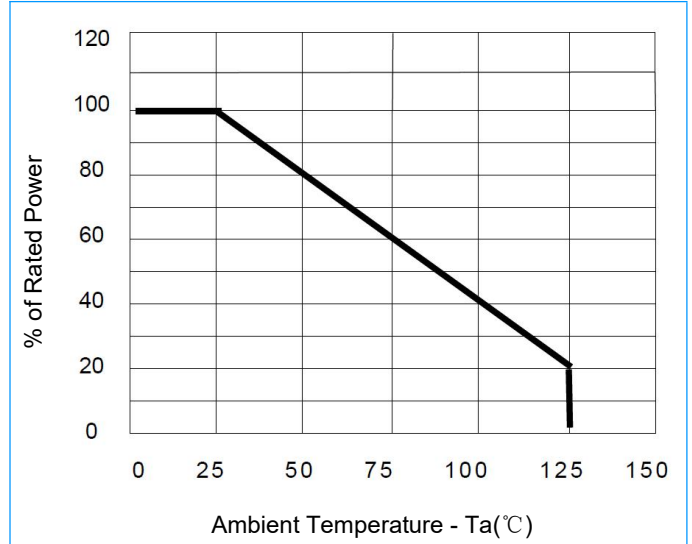
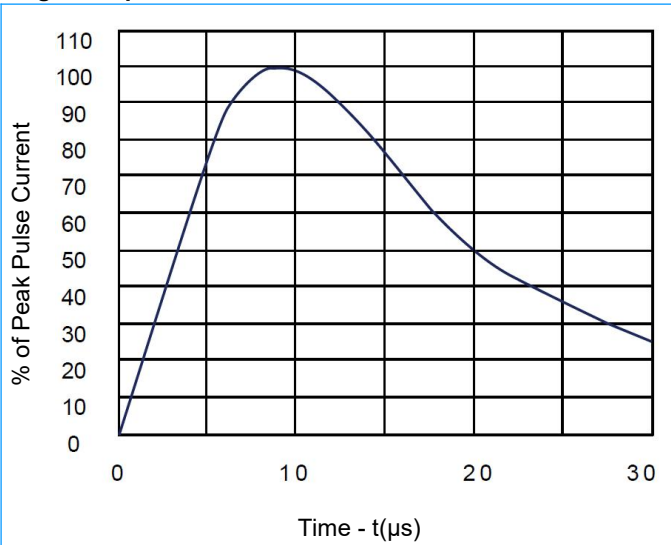


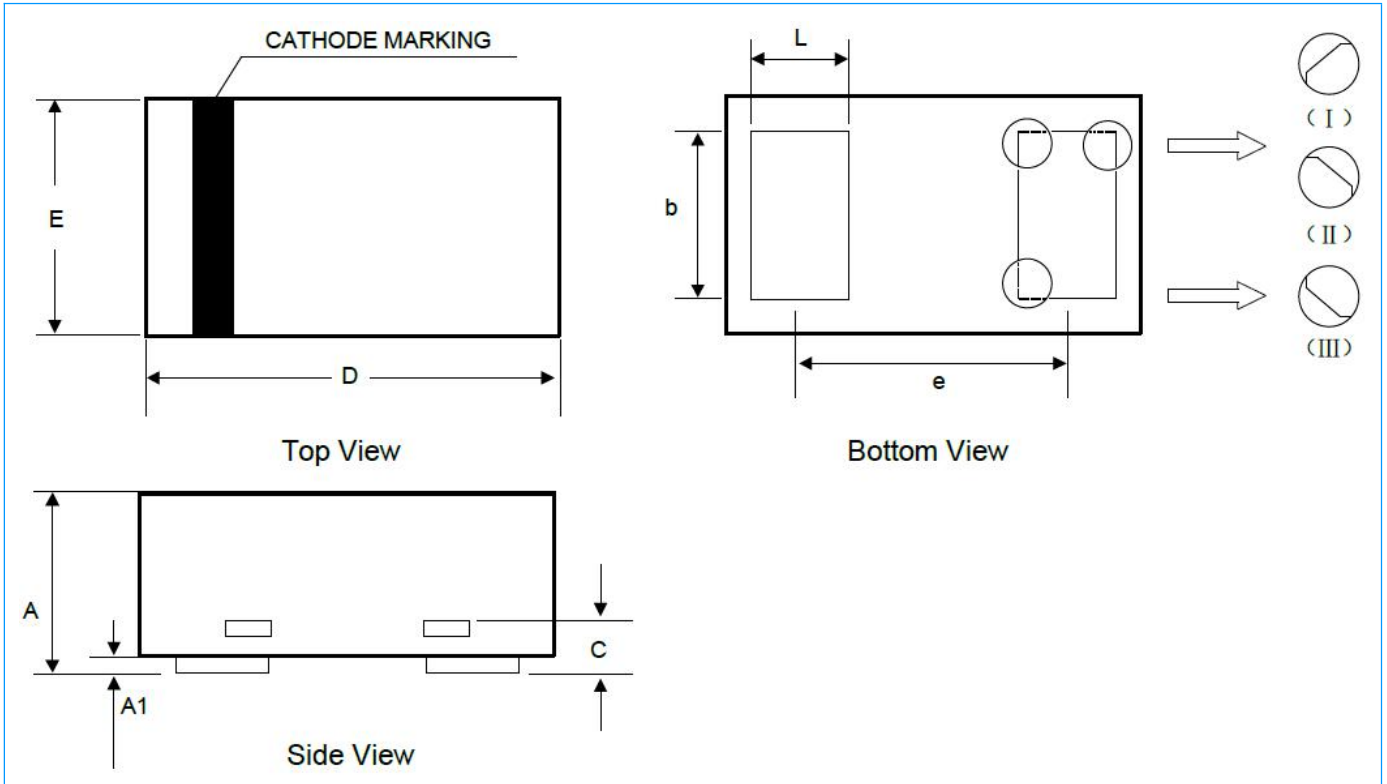
Fig5. 8/20 μs Pulse Waveform



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DFN1610-2L Package Outline Drawing



Symbol	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

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Packaging Quantity

Part Number	Packaging Option	Quantity
SE05N9P11GJ	Tape & Reel	3000 PCS

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