

Transient Voltage Suppressors Array for ESD Protection

Low Capacitance

SR05-4B

Description

The SR05-4B is designed to protect voltage sensitive components from ESD and transient voltage events. Excellent clamping capability, low leakage, and fast response time, make these parts ideal for ESD protection on designs where board space is at a premium.

Feature

- ◆ 350 Watts Peak Pulse Power per Line (tp=8/20µs)
- ◆ Protects four I/O lines
- ◆ Low clamping voltage
- ◆ Working voltages : 5V
- ◆ Low leakage current
- ◆ IEC61000-4-2 (ESD) ±15kV (air), ±8kV (contact)
- ◆ IEC61000-4-4 (EFT) 40A (5/50ns)
- ◆ IEC61000-4-5 (Lightning) 5A (8/20µs)

Applications

- ◆ USB 2.0 Power and Data Line Protection
- ◆ Video Graphics Cards
- ◆ Monitors and Flat Panel Displays
- ◆ Digit Video Interface (DVI)
- ◆ 10/100/1000 Ethernet
- ◆ Notebook Computers
- ◆ SIM Ports
- ◆ ATM Interfaces

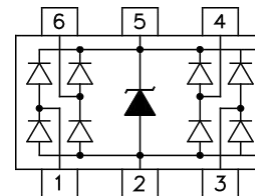
Mechanical Characteristics

Symbol	Parameter	Value	Units
T _L	Lead Soldering Temperature	260 (10sec)	°C
T _{STG}	Storage Temperature Range	-55 to +150	°C
T _{OP}	Operating Temperature Range	-55 to +150	°C
	IEC61000-4-2 (ESD)	Air Discharge Contact Discharge	±15 ±8 KV

SOT-26



Functional Diagram



Mechanical Characteristics

- ◆ JEDEC SOT-26 Package
- ◆ Molding Compound Flammability Rating : UL94V-0
- ◆ Weight 16.0 Milligrams (Approximate)
- ◆ Quantity Per Reel : 3,000pcs
- ◆ Reel Size : 7 inch
- ◆ Lead Finish : Lead Free

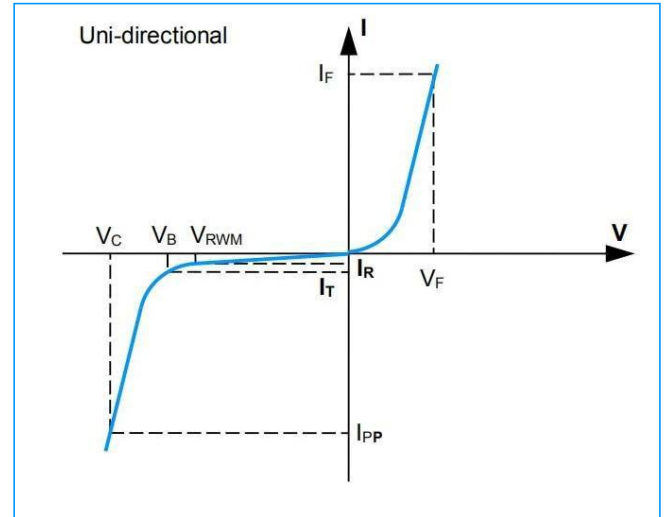
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Electrical Characteristics (@ 25°C Unless Otherwise Specified)

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



Electrical Characteristics (@ 25°C Unless Otherwise Specified)

Symbol	Test Condition	Minimum	Typical	Maximum	Units
V_{RWM}	—	—	—	5.0	V
I_R	$V_{RWM} = 5V, T = 25^\circ C$ Between I/O and GND	—	—	1.0	μA
V_{BR}	$I_T = 1mA$ Between I/O and GND	6.0	—	—	V
V_{C1}	$I_{PP} = 1A, t_p = 8/20\mu s$ Between I/O and GND	—	8.5	12	V
V_{C1}	$I_{PP} = 5A, t_p = 8/20\mu s$ Between I/O and GND	—	12	16	V
V_{C2}	$I_{PP} = -1A, t_p = 8/20\mu s$ Between I/O and GND	—	1.8	—	V
V_{C2}	$I_{PP} = -5A, t_p = 8/20\mu s$ Between I/O and GND	—	5.0	—	V
C_{J1}	$V_R = 0V, f = 1MHz$ Between I/O and I/O	—	0.3	0.4	pF
C_{J2}	$V_R = 0V, f = 1MHz$ Between I/O and GND	—	0.6	0.8	pF

Characteristic Curves

Fig1. 8/20μs Pulse Waveform

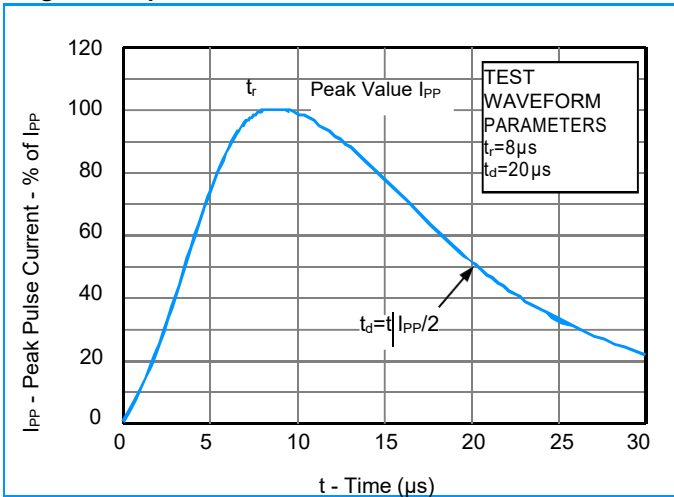


Fig2. ESD Pulse Waveform (according to IEC 61000-4-2)

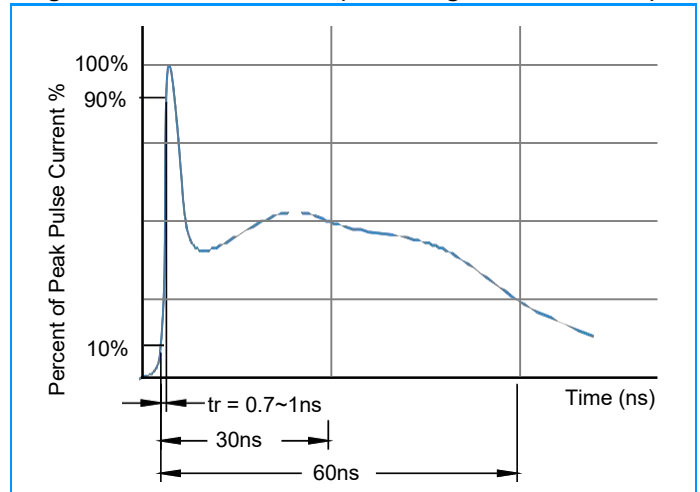
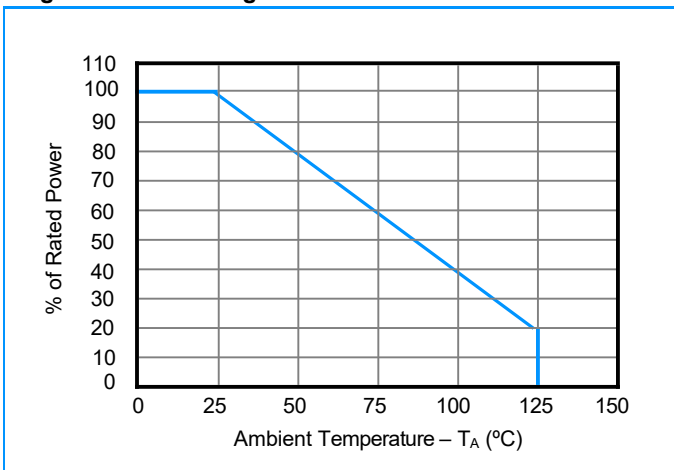


Fig3. Power Derating Curve

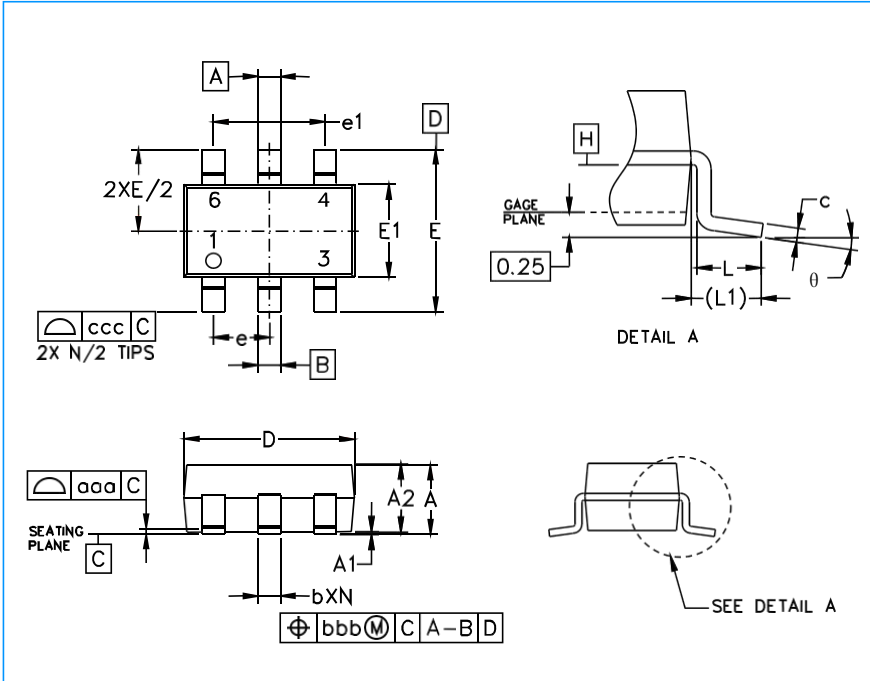


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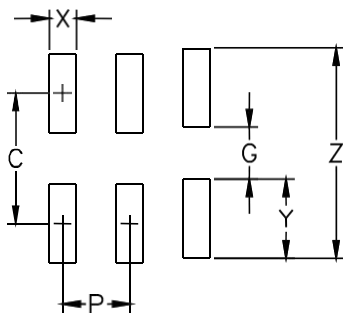
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SOT-26 Package Outline & Dimensions



Symbol	Inches			Millimeters		
	Min.	Nom.	Max.	Min.	Nom.	Max.
A	0.035	-	0.057	0.90	-	1.45
A1	0.000	-	0.006	0.00	-	0.15
A2	0.035	0.045	0.051	0.90	1.15	1.30
b	0.010	-	0.020	0.25	-	0.50
c	0.003	-	0.009	0.08	-	0.22
D	0.110	0.114	0.122	2.80	2.90	3.10
E1	0.060	0.063	0.069	1.50	1.60	1.75
E	0.110 BSC			2.80 BSC		
e	0.037 BSC			0.95 BSC		
e1	0.075 BSC			1.90 BSC		
L	0.012	0.018	0.024	0.30	0.45	0.60
L1	(0.024)			(0.60)		
θ	0°	-	10°	0°	-	10°
aaa	0.004			0.10		
bbb	0.008			0.20		
ccc	0.008			0.20		

Soldering Footprint



Symbol	Inches	Millimeters
C	(0.098)	(2.50)
G	0.055	1.40
P	0.037	0.95
X	0.024	0.60
Y	0.043	1.10
Z	0.141	3.60