

产品规格书

Product Specification

功率型表贴式瞬态抑制二极管

Transient Voltage Suppressor (TVS) Diodes

型 号 (Part Number) : SM8S series

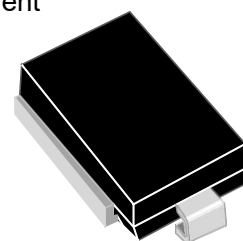
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版本Version	编写Compile	审 核 Auditing	批准Authorize
V1.0	Ward Yu	Jim Li	

一、简介 Introduction

Transient Voltage Suppressors (TVS) are semiconductor devices designed to provide protection against over voltage transients. When over voltage events occur, the silicon TVS activates from an very high impedance status to a very low impedance status by operating in the avalanche mode and uses a large junction area to absorb large transient currents in a fast response time, protecting Voltage sensitive electronics equipment from damaging. Boarden supplies unipolar and bipolar TVS devices with axial and SMD packages, with maximum working voltage 5V to 440V, maximum power dissipation from 400W-5000W.

二、特点 Features

- Glass passivated chip junction in DO-218AB Package
- Junction passivation optimized design passivated anisotropic rectifier technology
- $T_J = 175^{\circ}\text{C}$ capability suitable for high reliability and automotive requirement
- Available in uni-directional polarity only
- Low leakage current
- Low forward voltage drop
- High surge capability
- Meets ISO7637-2 surge specification (varied by test condition)
- Meets MSL level 1, per J-STD-020, LF maximum peak of 245°C
- AEC-Q101 qualified



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三、主要应用 Main applications

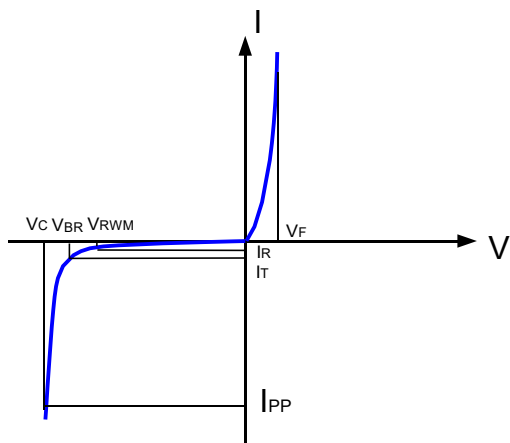
Used in sensitive electronics protection against voltage transients induced by inductive load switching and lighting, especially for automotive load dump protection application.

四、极限参数 Maximum Ratings ($T_{amb}=25^{\circ}\text{C}$ Unless Otherwise Specified)

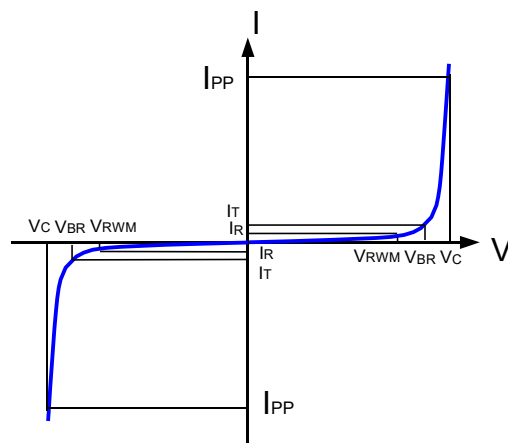
RATING	SYMBOL	VALUE	UNITS
Peak Pulse Power Dissipation with 10/1000 μs waveform	P_{PP}	6600	Watts
with 10/10000 μs waveform		5200	
Power dissipation on infinite heatsink at $T_C = 25^{\circ}\text{C}$ (fig. 1)	P_D	8.0	Watts
Peak pulse current with 10/1000 μs waveform	I_{PP}	See next table	
Peak Forward Surge Current, 8.3ms Single Half Sine-Wave	I_{FSM}	700	Amps
Operating junction and Storage Temperature Range	T_J, T_{STG}	-55 ~ 175	$^{\circ}\text{C}$

五、电参数 Electrical information (Tamb=25℃)

Type	V _{RMW}	V _{BR} MIN	V _{BR} MAX	I _T	V _C MAX	I _{PP} MAX	I _R	I _R @T _J =175℃
Number	(V)	(V)	(V)	(mA)	(V)	(A)	(uA)	(uA)
SM8S10	10.0	11.1	13.6	5.0	18.8	351	5	250
SM8S10CA	10.0	11.1	12.3	5.0	17.0	388	5	150
SM8S11	11.0	12.2	14.9	5.0	20.1	328	5	150
SM8S11CA	11.0	12.2	13.5	5.0	18.2	363	5	150
SM8S12	12.0	13.3	16.3	5.0	22.0	300	5	150
SM8S12CA	12.0	13.3	14.7	5.0	19.9	332	5	150
SM8S13	13.0	14.4	17.6	5.0	23.8	277	5	150
SM8S13A	13.0	14.4	15.9	5.0	21.5	307	5	150
SM8S14	14.0	15.6	19.1	5.0	25.8	256	5	150
SM8S14CA	14.0	15.6	17.2	5.0	23.2	284	5	150
SM8S15	15.0	16.7	20.4	5.0	26.9	245	5	150
SM8S15CA	15.0	16.7	18.5	5.0	24.4	270	5	150
SM8S16	16.0	17.8	21.8	5.0	28.8	229	5	150
SM8S16CA	16.0	17.8	19.7	5.0	26.0	254	5	150
SM8S17	17.0	18.9	23.1	5.0	30.5	216	5	150
SM8S17CA	17.0	18.9	20.9	5.0	27.6	239	5	150
SM8S18	18.0	20.0	24.4	5.0	32.2	205	5	150
SM8S18CA	18.0	20.0	22.1	5.0	29.2	226	5	150
SM8S20	20.0	22.2	27.1	5.0	35.8	184	5	150
SM8S20CA	20.0	22.2	24.5	5.0	32.4	204	5	150
SM8S22	22.0	24.4	29.8	5.0	39.4	168	5	150
SM8S22CA	22.0	24.4	26.9	5.0	35.5	186	5	150
SM8S24	24.0	26.7	32.6	5.0	43.0	153	5	150
SM8S24CA	24.0	26.7	29.5	5.0	38.9	170	5	150



Uni-Directional TVS



Bi-Directional TVS

V_{RWM} - Reverse Stand-Off Voltage - Working Peak Reverse Voltage

V_{BR} - Breakdown Voltage - Maximum current that flows through the TVS at a specified test current (I_T)

I_T - Test Current - Test Current

V_C - Clamping Voltage - Peak voltage measured across the suppressor at 10/1000 pulse waveform

I_{PP} - Peak Pulse Current - Maximum Reverse Peak Pulse Current at 10/1000 pulse waveform

P_{PP} - Peak Pulse Power Dissipation - Max power dissipation

I_R - Reverse Leakage Current - Current measured at V_{RWM}

V_F - Forward Voltage - Drop for Uni-directional

六、热参数 Thermal Characteristics (T_{amb}=25°C)

PARAMETER	SYMBOL	VALUE	UNIT
Typical thermal resistance, junction to case	R _{θJC}	0.90	°C/W

七、典型电特性曲线 Typical electrical characters applications

Fig 1. Power Derating Curve

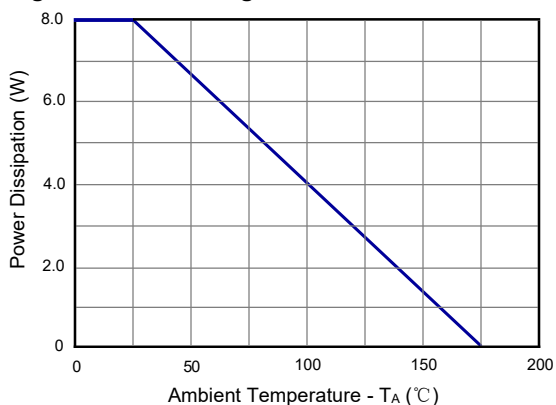


Fig 2. Pulse Waveform

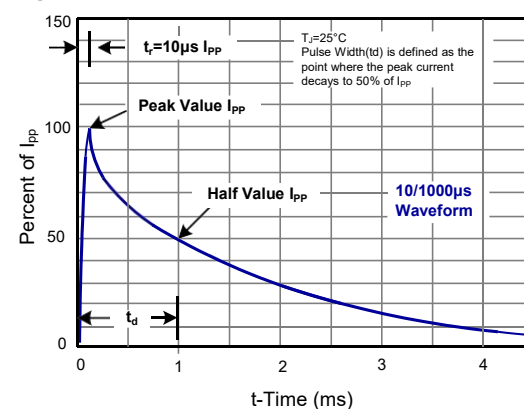


Fig 3. Load Dump Power Characteristics
(10 ms Exponential Waveform)

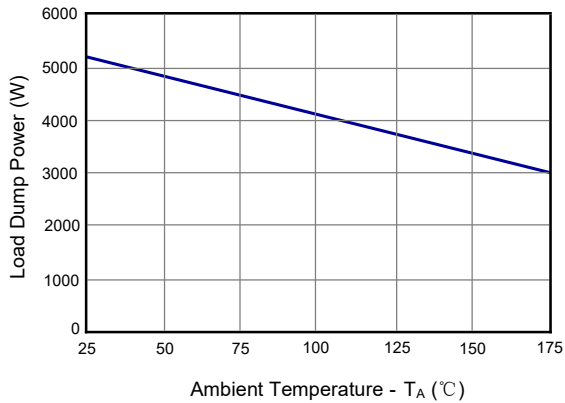


Fig 4. Reverse Power Capability

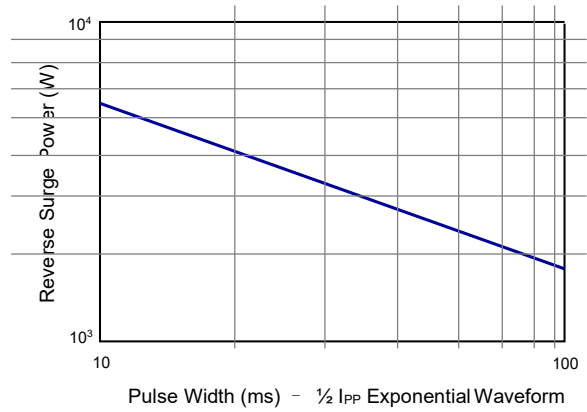


Fig 5. Typical Transient Thermal Impedance

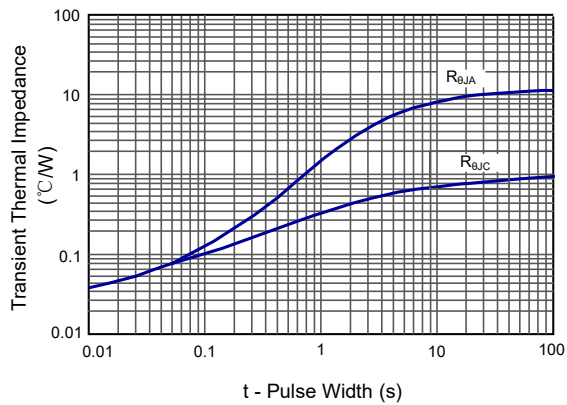
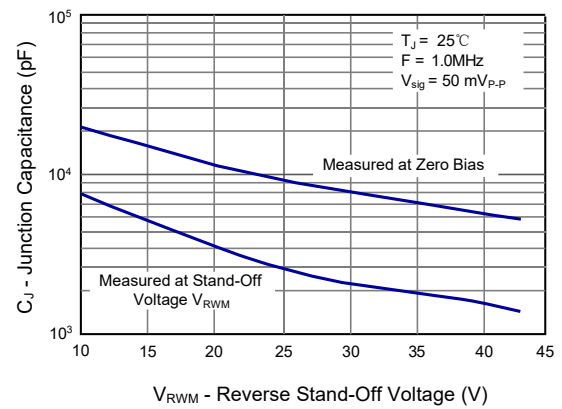
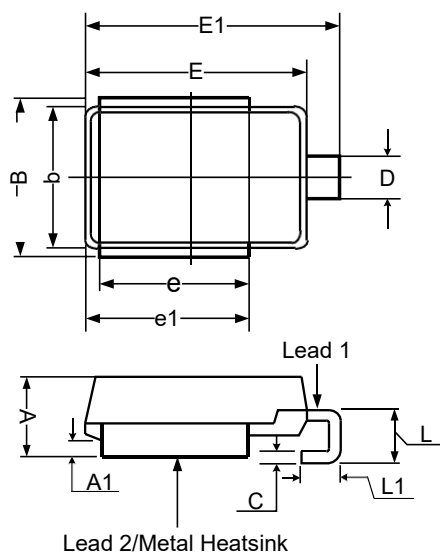


Fig 6. Typical Junction Capacitance

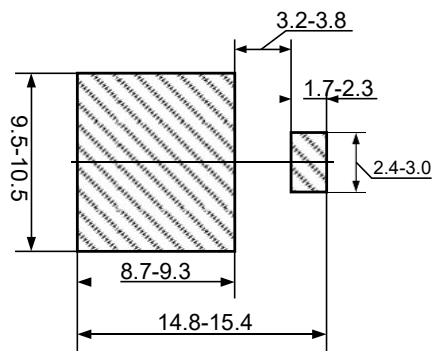


八、外观尺寸 Shape and Dimensions

DO-218AB



Mounting Pad Layout



Unit (mm)