

Surface Mount Transient Voltage Suppressors (TVS)

SM8E Series
10V to 43V
8000W
DO-218AB

Description

The SM8E series is designed specifically to protect sensitive electronic equipment from voltage transients induced by lightning and other transient voltage events.

Features

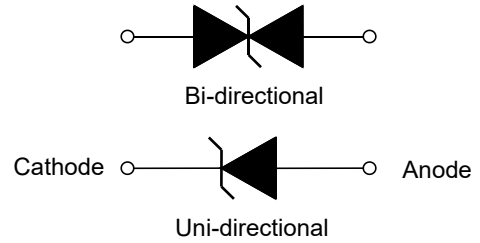
- ◆ Optimized glass passivated chip
- ◆ $T_J=175^{\circ}\text{C}$ capability suitable for high reliability and automotive requirement
- ◆ 8000W peak pulse power capability with a 10/1000 μs waveform, repetitive rate (duty cycle): 0.01 %
- ◆ Meet ISO7637-2 5a/5b and ISO 16750 load dump test (varied by test condition)
- ◆ Meet AEC-Q101 qualified
- ◆ Low leakage current
- ◆ Low forward voltage drop
- ◆ Excellent clamping capability
- ◆ Very fast response time
- ◆ RoHS compliant

Mechanical Data

- ◆ Case: DO-218AB
- ◆ Molding compound: UL94V-0 flammability


DO-218AB

Functional Diagram



Maximum Ratings ($T_C=25^{\circ}\text{C}$, RH=45%-75%, unless otherwise noted)

Parameter	Symbol	Value	Unit
Peak pulse power dissipation on 10/1000 μs waveform	P_{PPM}	8000	W
Peak pulse power dissipation on 10/10000 μs waveform		6000	W
Power dissipation on infinite heat sink at $T_C=25^{\circ}\text{C}$	P_D	8.5	W
Peak pulse current with 10/1000 μs waveform	$I_{PPM}^{(1)}$	See next table	A
Peak forward surge current, 8.3ms single half sine-wave	I_{FSM}	750	A
Operating junction and storage temperature range	T_J, T_{STG}	-55 to +175	$^{\circ}\text{C}$
Typical thermal resistance, junction to case	$R_{\theta JC}$	0.9	$^{\circ}\text{C}/\text{W}$

Note:

(1) Non-repetitive current pulse derated above $T_A=25^{\circ}\text{C}$.

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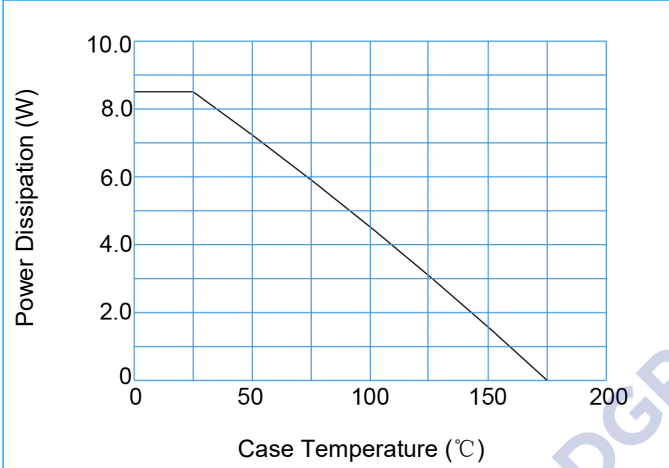
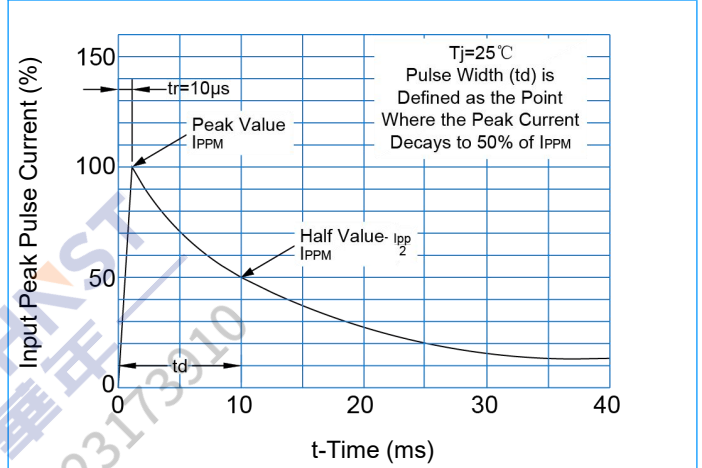
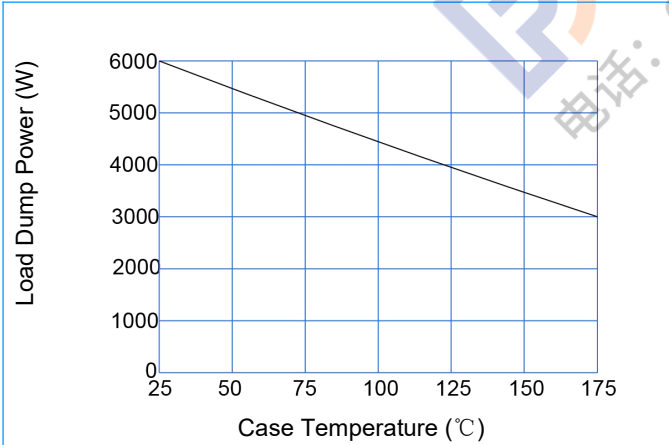
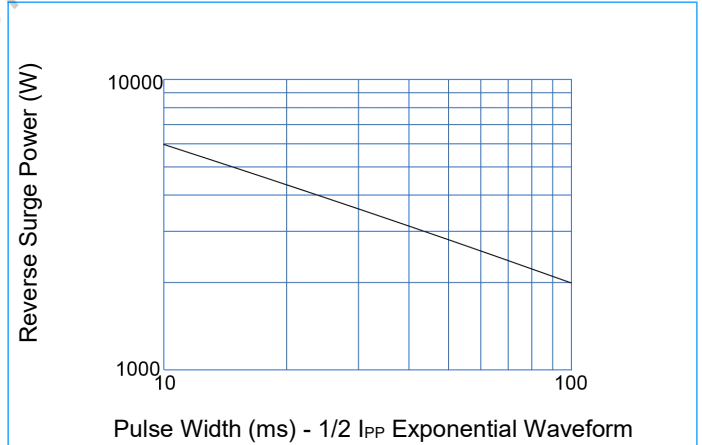
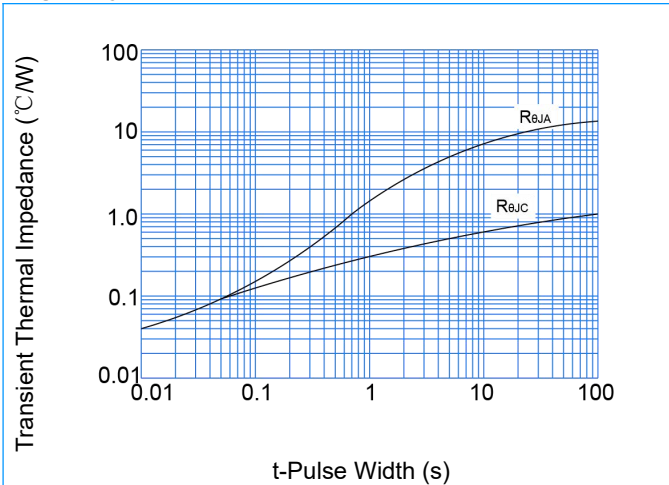
Electrical Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Part Number		Working Peak Reverse Voltage V_{RWM} (V)	Breakdown Voltage V_{BR} (V)		Test Current I_T (mA)	Maximum Reverse Leakage I_R @ V_{RWM} (μA)	Maximum I_R @ V_{RWM} $T_J=175^{\circ}\text{C}$ (μA)	Maximum Reverse Surge Current I_{PP} (A) ①	Maximum Clamping Voltage V_C @ I_{PP} (V)
Uni	Bi		Min.	Max.					
SM8E10AG	SM8E10CAG	10.0	11.1	12.3	5.0	10.0	150	471	17.0
SM8E11AG	SM8E11CAG	11.0	12.2	13.5	5.0	10.0	150	440	18.2
SM8E12AG	SM8E12CAG	12.0	13.3	14.7	5.0	10.0	150	402	19.9
SM8E13AG	SM8E13CAG	13.0	14.4	15.9	5.0	10.0	150	372	21.5
SM8E14AG	SM8E14CAG	14.0	15.6	17.2	5.0	10.0	150	345	23.2
SM8E15AG	SM8E15CAG	15.0	16.7	18.5	5.0	10.0	150	328	24.4
SM8E16AG	SM8E16CAG	16.0	17.8	19.7	5.0	10.0	150	308	26.0
SM8E17AG	SM8E17CAG	17.0	18.9	20.9	5.0	10.0	150	290	27.6
SM8E18AG	SM8E18CAG	18.0	20.0	22.1	5.0	10.0	150	274	29.2
SM8E20AG	SM8E20CAG	20.0	22.2	24.5	5.0	10.0	150	247	32.4
SM8E22AG	SM8E22CAG	22.0	24.4	26.9	5.0	10.0	150	225	35.5
SM8E24AG	SM8E24CAG	24.0	26.7	29.5	5.0	10.0	150	205	38.9
SM8E26AG	SM8E26CAG	26.0	28.9	31.9	5.0	10.0	150	190	42.1
SM8E28AG	SM8E28CAG	28.0	31.1	34.4	5.0	10.0	150	176	45.4
SM8E30AG	SM8E30CAG	30.0	33.3	36.8	5.0	10.0	150	165	48.4
SM8E33AG	SM8E33CAG	33.0	36.7	40.6	5.0	10.0	150	150	53.3
SM8E36AG	SM8E36CAG	36.0	40.0	44.2	5.0	10.0	150	138	58.1
SM8E40AG	SM8E40CAG	40.0	44.4	49.1	5.0	10.0	150	124	64.5
SM8E43AG	SM8E43CAG	43.0	47.8	52.8	5.0	10.0	150	115	69.4

Notes:

- Surge current waveform is defined at 10/1000 μs waveform.
- For all types maximum $V_F = 1.8\text{ V}$ at $I_F = 100\text{ A}$ measured on 8.3 ms single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minute maximum.

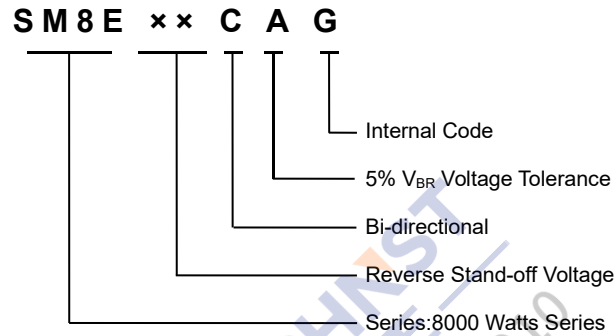
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Ratings And Characteristics Curves ($T_A=25^{\circ}\text{C}$, unless otherwise noted)
Fig. 1: Power Derating Curve

Fig. 2: Pulse Waveform

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

Fig. 4: Reverse Power Capability

Fig. 5: Typical Transient Thermal Impedance


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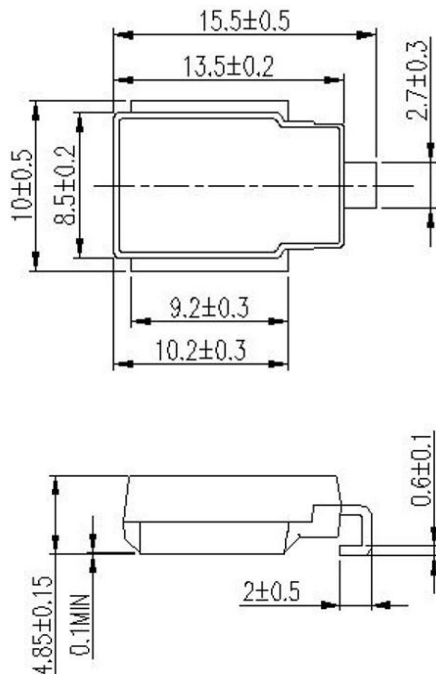
Part Numbering



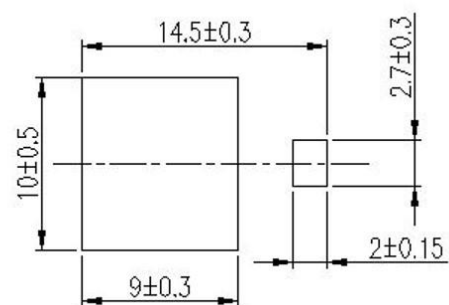
Packaging

Part Number	Component Package	Quantity	Packaging Option
SM8E Series	DO-218AB	750 PCS	13" diameter plastic tape and reel, anode towards the sprocket hole

Package Outline Dimensions (Unit: millimeters)



Recommended Mounting Pad Layout



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