

# Transient Voltage Suppressors 7KW DO-218AB AEC-Q101

SM8SW-A Series

MERITEK

## FEATURE

- Glass passivated chip
- 7KW peak pulse power capability with a 10/1000 $\mu$ s waveform repetitive rate (duty cycle): 0.01 %
- Excellent clamping capability
- Fast response time
- Molding compound meets UL 94V-0 flammability rating
- IEC 61000-4-2 ESD:  $\pm$ 30KV (Air),  $\pm$ 30KV (Contact)
- Meet ISO 7637-2 5a/5b and ISO 16750 load dump test
- AEC-Q101 qualified



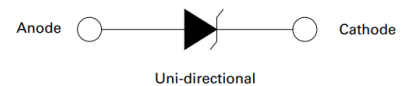
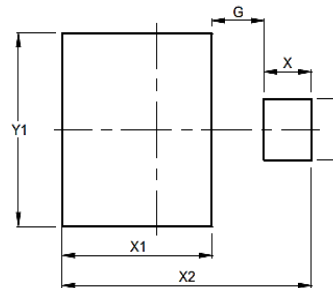
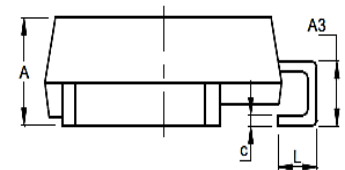
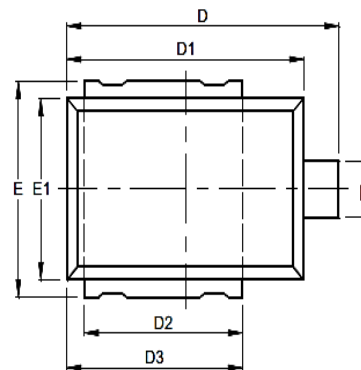
## ELECTRICAL CHARACTERISTICS

Parameter	Symbols	Value	Unit
Peak power dissipation with a 10/1000 $\mu$ s waveform Note 1	$P_{PP}$	7000	W
Peak pulse current with a 10/1000 $\mu$ s waveform Note 1	$I_{PP}$	See Table below	A
Power dissipation on infinite heatsink at $T_L = 25^\circ\text{C}$	$P_D$	8.0	W
Peak forward surge current, 8.3 ms single half sine-wave	$I_{FSM}$	1000	A
Operating junction and storage temperature range	$T_J, T_{stg}$	-55 to +175	$^\circ\text{C}$

- Note:
1. Non-repetitive current pulse per Fig.2 and derated above  $T_A=25^\circ\text{C}$  per Fig.1
  2. Rating at  $25^\circ\text{C}$ , ambient temperature unless otherwise specified. Single phase, half wave, 60 Hz, resistive or inductive load. For capacitive load, derate current by 20%.

## DIMENSIONS

Item	DO-218AB	
	Min. (mm)	Max. (mm)
A	4.80	5.20
A3	2.50	3.50
b	2.50	2.90
c	0.50	0.70
D	15.0	16.0
D1	13.3	13.7
D2	8.70	9.30
D3	9.70	10.3
E	9.50	10.5
E1	8.20	8.60
L	1.70	2.70
G	3.30	-
X	3.00	-
X1	9.50	-
X2	15.8	-
Y	3.00	-
Y1	11.0	-



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## ELECTRICAL CHARACTERISTICS

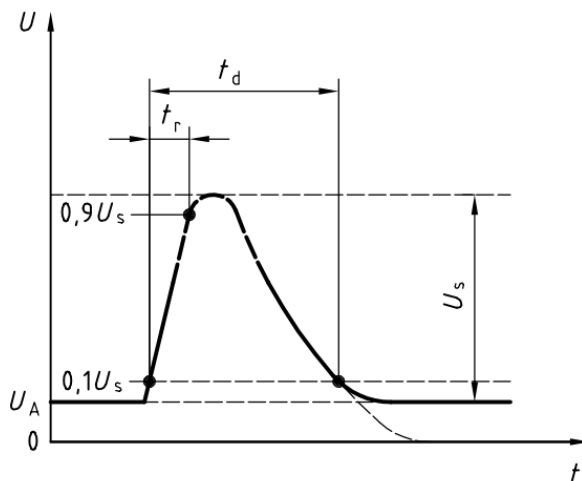
SM8SW-A Series (Uni)	Breakdown Voltage @ 5mA I <sub>T</sub>		Working Peak Reverse Voltage V <sub>RWM</sub> (V)	Reverse Leakage Current @ V <sub>RWM</sub> I <sub>R</sub> (uA)max	Reverse Leakage Current T <sub>J</sub> =150°C @ V <sub>RWM</sub> I <sub>R</sub> (uA)max	Maximum Reverse Surge Current I <sub>PP</sub> (A)	Maximum Clamping Voltage @ I <sub>PP</sub> V <sub>C</sub> (V)
	V <sub>BR</sub> Min(V)	V <sub>BR</sub> Max(V)					
SM8SW14A	15.6	17.2	14	10.0	50	301	23.2
SM8SW15A	16.7	18.5	15	10.0	50	286	24.4
SM8SW16A	17.8	19.7	16	10.0	50	269	26.0
SM8SW17A	18.9	20.9	17	10.0	50	253	27.6
SM8SW18A	20.0	22.1	18	2.0	50	240	29.2
SM8SW20A	22.2	24.5	20	2.0	50	216	32.4
SM8SW22A	24.4	26.9	22	2.0	50	197	35.5
SM8SW24A	26.7	29.5	24	2.0	50	180	38.9
SM8SW26A	28.9	31.9	26	2.0	50	167	42.1
SM8SW28A	31.1	34.4	28	2.0	50	154	45.4
SM8SW30A	33.3	36.8	30	2.0	50	144	48.4
SM8SW33A	36.7	40.6	33	2.0	50	132	53.3
SM8SW36A	40.0	44.2	36	2.0	50	121	58.1
SM8SW40A	44.4	49.1	40	2.0	50	108	64.5
SM8SW43A	47.8	52.8	43	2.0	50	101	69.4

Note:

1. Surge current waveform is defined at 10/1000uS waveform

2. For all types maximum VF = 1.8 V at IF = 100 A measured on 8.3 ms single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minute

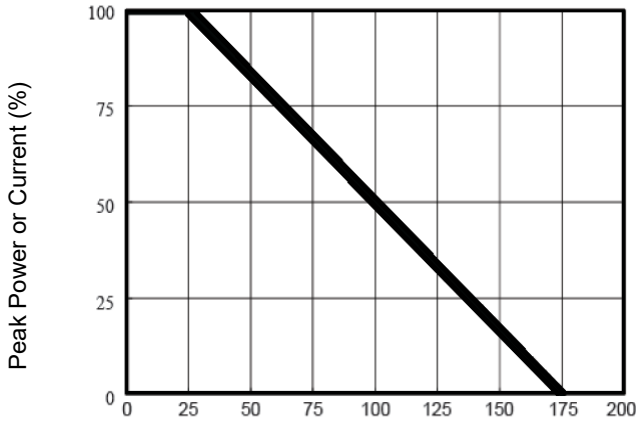
## LOAD DUMP TEST WAVE FORM



Parameter	12V system	24V system
U <sub>s</sub>	65V to 87V	123V to 174V
R <sub>i</sub>	0.5Ω to 4Ω	1Ω to 8Ω
t <sub>d</sub>	40 ms to 400 ms	100 ms to 350 ms
t <sub>r</sub>	(10 <sub>-5</sub> )ms	

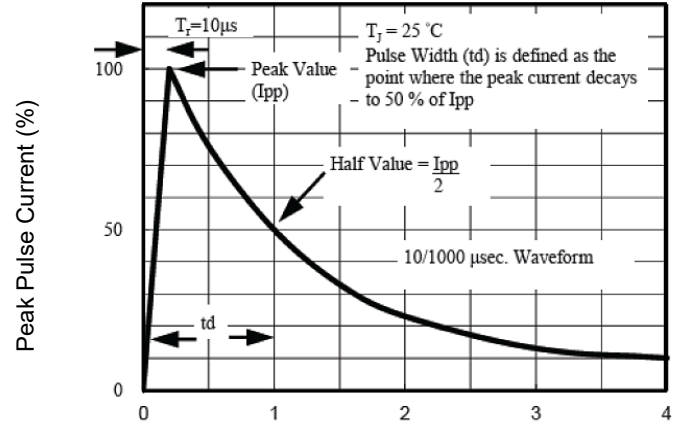
### CHARACTERISTICS CURVES

Fig.1 Pulse Derating Curve



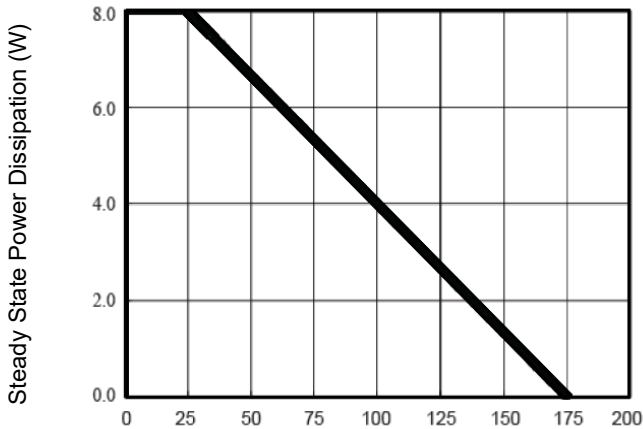
$T_A$ , Ambient Temperature ( $^{\circ}\text{C}$ )

Fig.2 Pulse Waveform



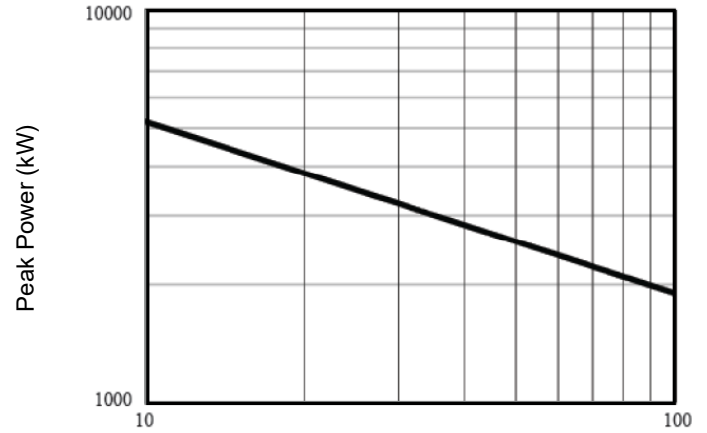
Time ( $\mu\text{s}$ )

Fig.3 Steady State Power Derating Curve



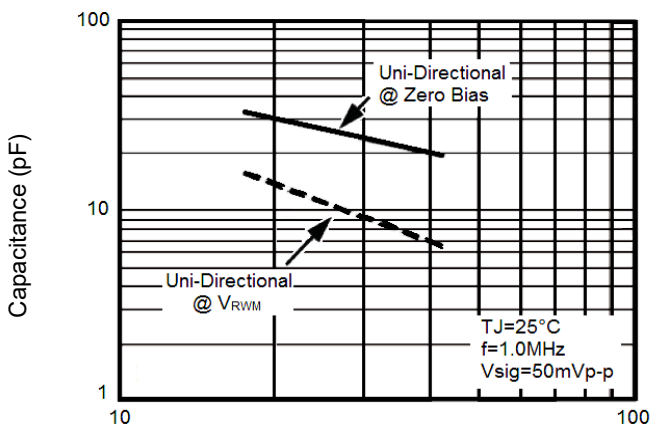
$T_L$ , Lead Temperature ( $^{\circ}\text{C}$ )

Fig.4 Peak Pulse Power Rating Curve



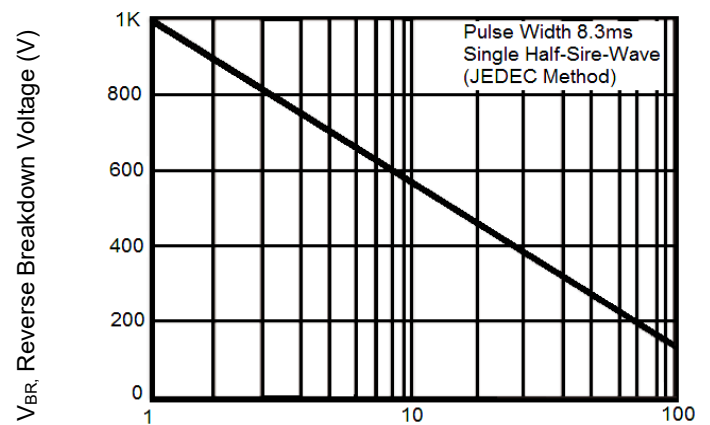
$t_d$ , Pulse Width (ms)

Fig.5 Typical Junction Capacitance



$V_{BR}$ , Reverse Breakdown Voltage (V)

Fig.6 Maximum Non-Repetitive Surge Current



Number of Cycles at 60 Hz

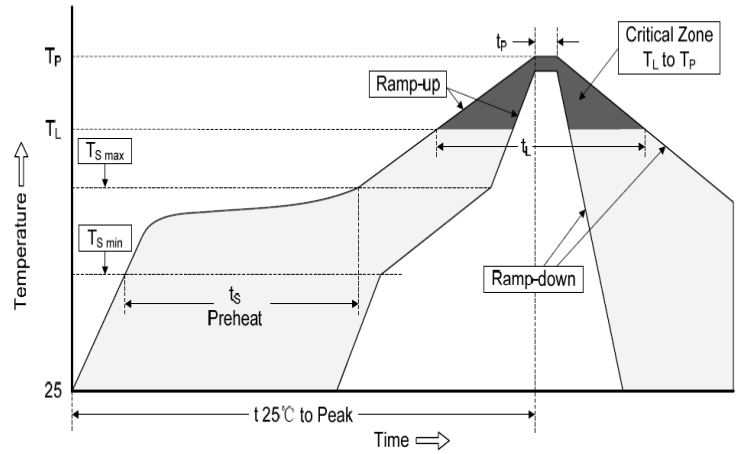
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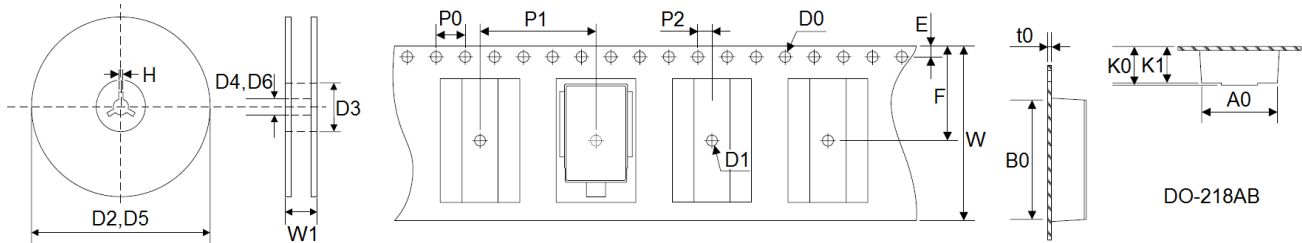
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## SOLDERING RECOMMENDATION

Reflow Condition		
Pre Heat	Temp. Min $T_{s(min)}$	150°C
	Temp. Max $T_{s(max)}$	200°C
	Time (min to max) ( $t_s$ )	60s ~ 180s
Average ramp up rate ( $T_L$ to $T_P$ )		3°C/s max
Ramp-up rate ( $T_{s(max)}$ to $T_L$ )		3°C/s max
Reflow	Temp. ( $T_L$ )	217°C
	Time (min to max) ( $t_L$ )	60-150s max
Peak Temperature ( $T_P$ )		260°C
Time within 5°C of $T_P$ ( $t_p$ )		20-40s
Ramp-down Rate		6°C/s max
Time 25°C to Peak Temperature		8 minutes max



## PACKAGING SPECIFICATIONS



Tape Dimension (mm)												
W	P0	P1	P2	D0	D1	E	F	A0	B0	K0	K1	t0
±0.20	±0.10	±0.10	±0.10	±0.05	±0.25	±0.10	±0.25	±0.10	±0.10	±0.10	±0.10	±0.05
24.00	4.00	16.00	2.00	1.55	1.50	1.75	13.25	11.0	16.7	5.90	5.60	0.40

7in Reel Dimension (mm)					13in Reel Dimension (mm)				
D2	D3	D4	W1	Quantity	D5	D6	H	W2	Quantity
±2.0	Min	±0.5	±2.0		±2.0	±0.5	±1.0	±2.0	
178.0	50.0	13.0	29.0	150	330.0	13.5	2.5	29.0	700

\*Specifications subject to change without notice