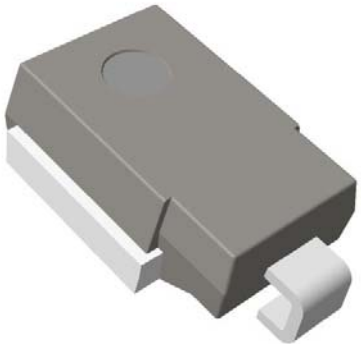
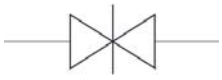
Surface Mount Transient Voltage Suppressors



DO-218AB

Uni-directional

Bi-directional



Features

- T_J = 175 °C capability suitable for high reliability and automotive requirement
- 6600 W peak pulse power capability with a 10/1000 μs waveform, repetitive rate (duty cycle):0.01 %
- Meet ISO 7637-2 5a/5b and ISO 16750 load dump test (varied by test condition)
- Part no. with suffix “Q” means AEC-Q101 qualified
- Low leakage current
- Low forward voltage drop
- Excellent clamping capability
- Very fast response time
- RoHS compliant

Applications

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

Mechanical Data

- Case: DO-218AB
- Molding compound: UL94V-0 flammability
- Polarity: Heatsink is anode

■Maximum Ratings (T_a=25℃ Unless otherwise specified）

PARAMETER	SYMBOL	UNIT	Value
Peak power dissipation with a 10/1000μs waveform	P_{PPM}	W	6600
Peak power dissipation with a 10/10,000μs waveform	P_{PPM}	W	5200
Peak pulse current with a 10/1000μs waveform（1）	I_{PPM}	A	See Next Table
Power dissipation on infinite heatsink at T_L = 25 °C(Fig 1)	P_D	W	8.0
Typical thermal resistance, junction to case	$R_{\theta JC}$	°C/W	0.9
Peak forward surge current 8.3 ms single half sine-wave	I_{FSM}	A	700
Operating junction and storage temperature range	T_J, T_{STG}	°C	- 55 to +175

Note:

(1) Non-repetitive current pulse per Fig.2 and derated above T_A= 25 °C

■Thermal Characteristics （T_a=25℃ Unless otherwise specified）

Part Number		Breakdown Voltage V_{BR} @IT			Maximum Reverse Leakage IR @V_{RWM} (uA)	Maximum IR @VRWM T_J=175 (uA)	Working Peak Reverse Voltage V_{RWM} (V)	Maximum Reverse Surge Current I_{PP} (A) (Fig.2)	Maximum Clamping Voltage VC @I_{PP} (V)
Uni	Bi	Min (V)	Max (V)	IT (mA)					
SM8S10AQ	-	11.10	12.30	5.0	15	250	10	388.00	17.0
SM8S11AQ	-	12.20	13.50	5.0	10	150	11	363.00	18.2
SM8S12AQ	-	13.30	14.70	5.0	10	150	12	332.00	19.9
SM8S13AQ	-	14.40	15.90	5.0	10	150	13	307.00	21.5
SM8S14AQ	SM8S14CAQ	15.60	17.20	5.0	10	150	14	284.00	23.2
SM8S15AQ	SM8S15CAQ	16.70	18.50	5.0	10	150	15	270.00	24.4
SM8S16AQ	SM8S16CAQ	17.80	19.70	5.0	10	150	16	254.00	26.0
SM8S17AQ	SM8S17CAQ	18.90	20.90	5.0	10	150	17	239.00	27.6
SM8S18AQ	SM8S18CAQ	20.00	22.10	5.0	10	150	18	226.00	29.2
SM8S20AQ	SM8S20CAQ	22.20	24.50	5.0	10	150	20	204.00	32.4
SM8S22AQ	SM8S22CAQ	24.40	26.90	5.0	10	150	22	186.00	35.5
SM8S24AQ	SM8S24CAQ	26.70	29.50	5.0	10	150	24	170.00	38.9
SM8S26AQ	SM8S26CAQ	28.90	31.90	5.0	10	150	26	157.00	42.1
SM8S28AQ	SM8S28CAQ	31.10	34.40	5.0	10	150	28	145.00	45.4
SM8S30AQ	SM8S30CAQ	33.30	36.80	5.0	10	150	30	136.00	48.4
SM8S33AQ	SM8S33CAQ	36.70	40.60	5.0	10	150	33	124.00	53.3
SM8S36AQ	SM8S36CAQ	40.00	44.20	5.0	10	150	36	114.00	58.1
SM8S40AQ	SM8S40CAQ	44.40	49.10	5.0	10	150	40	102.00	64.5
SM8S43AQ	SM8S43CAQ	47.80	52.80	5.0	10	150	43	95.10	69.4

Note:

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

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

■ Characteristics (Typical)

FIG. 1 Pulse Derating Curve

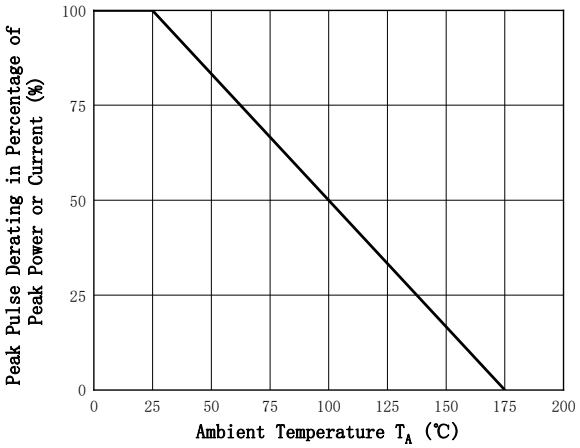


FIG. 2 Pulse Waveform

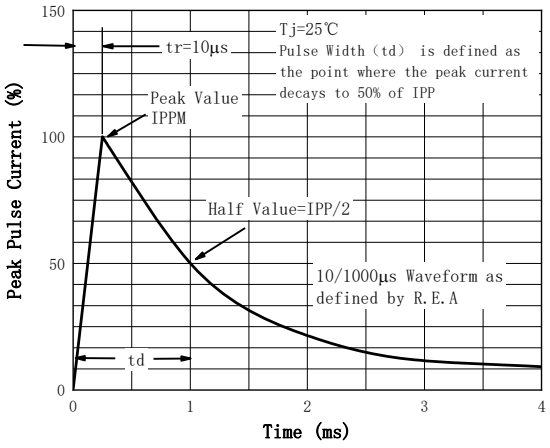


FIG. 3 Steady State Power Derating Curve

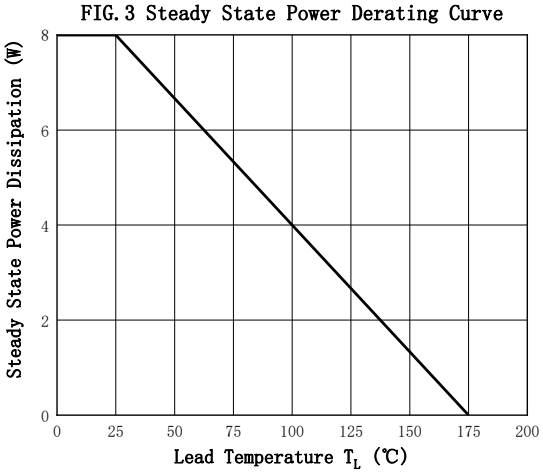
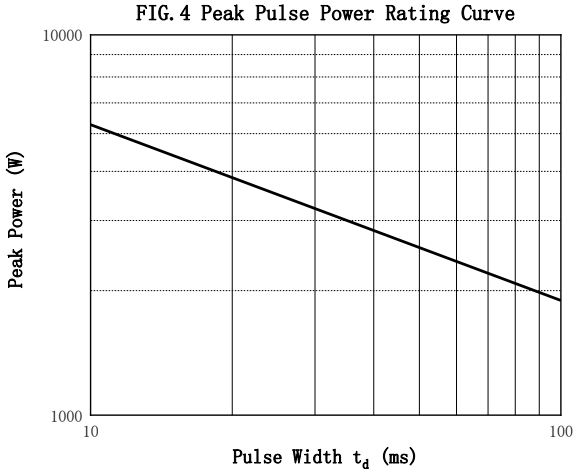


FIG. 4 Peak Pulse Power Rating Curve



■TYPICAL LOAD DUMP CAPABILITY AT ISO 16750-2 PULSE 5a WITH 12 V BATTERY SYSTEM (TA = 25 °C)

Condititon	Us(V)	Ri(Ω)	Td(ms)
Device type			
SM8S18AQ/CAQ	101	1	400
SM8S20AQ/CAQ			
SM8S22AQ/CAQ			
SM8S24AQ/CAQ			
SM8S26AQ/CAQ			
SM8S28AQ/CAQ			

■TYPICAL LOAD DUMP CAPABILITY AT ISO 16750-2 PULSE 5a WITH 24 V BATTERY SYSTEM (TA = 25 °C)

Condititon	Us(V)	Ri(Ω)	Td(ms)
Device type			
SM8S30AQ/CAQ	151	2	350
SM8S33AQ/CAQ			
SM8S36AQ/CAQ			
SM8S40AQ/CAQ			

■TYPICAL LOAD DUMP CAPABILITY AT ISO 16750-2 PULSE 5b WITH 12 V BATTERY SYSTEM (TA = 25 °C)

Condititon	Us(V)	Us*(V)	Ri(Ω)	Td(ms)
Device type				
SM8S18AQ/CAQ	101	35	1	400
SM8S20AQ/CAQ				
SM8S22AQ/CAQ				
SM8S24AQ/CAQ				
SM8S26AQ/CAQ				
SM8S28AQ/CAQ				

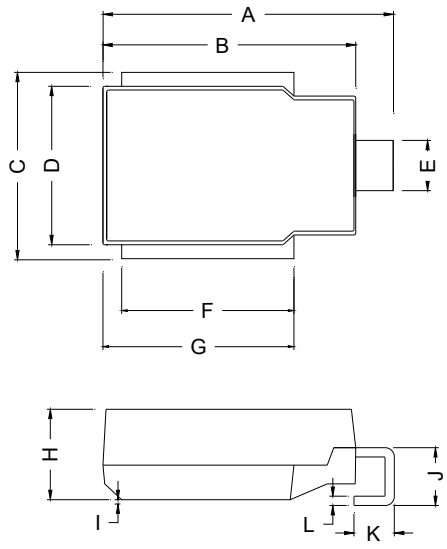
■TYPICAL LOAD DUMP CAPABILITY AT ISO 16750-2 PULSE 5b WITH 24 V BATTERY SYSTEM (TA = 25 °C)

Condititon	Us(V)	Us*(V)	Ri(Ω)	Td(ms)
Device type				
SM8S30AQ/CAQ	151	65	1	200
SM8S33AQ/CAQ				
SM8S36AQ/CAQ				
SM8S40AQ/CAQ				

■Ordering Information (Example)

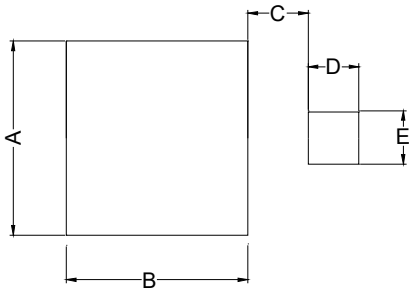
PREFERED P/N	PACKING CODE	UNIT WEIGHT(g)	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
SM8S10AQ-SM8S43AQ SM8S14CAQ-SM8S43CAQ	F1	Approximate 2.86	750	750	3750	13”reel

■ Outline Dimensions



DO-218AB		
DIM	MIN（mm）	MAX(mm)
A	15.00	16.00
B	13.30	13.70
C	9.50	10.50
D	8.30	8.70
E	2.40	3.00
F	8.90	9.50
G	9.90	10.50
H	4.70	5.00
I	0.00	0.18
J	2.50	3.50
K	1.80	2.80
L	0.50	0.70

■ Suggested pad layout



DO-218AB		
DIM	MIN（mm）	MAX(mm)
A	9.50	10.50
B	9.00	9.60
C	2.80	3.40
D	2.30	2.90
E	2.40	3.00

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