

Surface Mount Transient Voltage Suppressors



DO-218AB

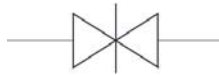
Features

- Optimized glass passivated chip
 $T_J = 175\text{ }^\circ\text{C}$ capability suitable for high reliability and automotive requirement
- 3600 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
- Uni-directional polarity
- Excellent clamping capability
- Very fast response time
- RoHS compliant

Uni-directional



Bi-directional



Mechanical Data

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

■ Maximum Ratings ($T_a=25^\circ\text{C}$ Unless otherwise specified)

PARAMETER	SYMBOL	UNIT	Value
Peak power dissipation with a 10/1000 μs waveform(1)	P_{PP}	W	3600
Peak power dissipation with a 10/10,000 μs waveform	P_{PP}	W	2800
Peak pulse current with a 10/1000 μs waveform(1)	I_{PP}	A	See Next Table
Power dissipation on infinite heatsink at $T_L = 25\text{ }^\circ\text{C}$	P_D	W	5.0
Peak forward surge current 8.3 ms single half sine-wave	I_{FSM}	A	500
Operating junction and storage temperature range	T_J, T_{STG}	$^\circ\text{C}$	- 55 to +175

Note:

(1) Non-repetitive current pulse per Fig.2 and derated above $T_A = 25\text{ }^\circ\text{C}$ per FIG.1



SM5S10AQ THRU SM5S43CAQ

■ Thermal Characteristics (T_a=25°C Unless otherwise specified)

Part Number		Breakdown Voltage VBR @IT			Maximum Reverse Leakage IR @V _{RWM} (uA)	Maximum IR @VRWM T _J =175 (uA)	Working Peak Reverse Voltage VRWM (V)	Maximum Reverse Surge Current IPP (A) (1)	Maximum Clamping Voltage VC @I _{PP} (V)
		Min (V)	Max (V)	IT (mA)					
SM5S10AQ	SM5S10CAQ	11.1	12.3	5.0	15	250	10	212	17.0
SM5S11AQ	SM5S11CAQ	12.2	13.5	5.0	10	150	11	198	18.2
SM5S12AQ	SM5S12CAQ	13.3	14.7	5.0	10	150	12	181	19.9
SM5S13AQ	SM5S13CAQ	14.4	15.9	5.0	10	150	13	167	21.5
SM5S14AQ	SM5S14CAQ	15.6	17.2	5.0	10	150	14	155	23.2
SM5S15AQ	SM5S15CAQ	16.7	18.5	5.0	10	150	15	148	24.4
SM5S16AQ	SM5S16CAQ	17.8	19.7	5.0	10	150	16	138	26.0
SM5S17AQ	SM5S17CAQ	18.9	20.9	5.0	10	150	17	130	27.6
SM5S18AQ	SM5S18CAQ	20.0	22.1	5.0	10	150	18	123	29.2
SM5S20AQ	SM5S20CAQ	22.2	24.5	5.0	10	150	20	111	32.4
SM5S22AQ	SM5S22CAQ	24.4	26.9	5.0	10	150	22	101	35.5
SM5S24AQ	SM5S24CAQ	26.7	29.5	5.0	10	150	24	93	38.9
SM5S26AQ	SM5S26CAQ	28.9	31.9	5.0	10	150	26	86	42.1
SM5S28AQ	SM5S28CAQ	31.1	34.4	5.0	10	150	28	79	45.4
SM5S30AQ	SM5S30CAQ	33.3	36.8	5.0	10	150	30	74	48.4
SM5S33AQ	SM5S33CAQ	36.7	40.6	5.0	10	150	33	68	53.3
SM5S36AQ	SM5S36CAQ	40.0	44.2	5.0	10	150	36	62	58.1
SM5S40AQ	SM5S40CAQ	44.4	49.1	5.0	10	150	40	56	64.5
SM5S43AQ	SM5S43CAQ	47.8	52.8	5.0	10	150	43	52	69.4

Note:

1. Surge current waveform is defined at 10/1000uS waveform
2. For all types maximum VF = 2.0V at IF = 100 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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■ Characteristics (Typical)

FIG.1 Pulse Derating Curve

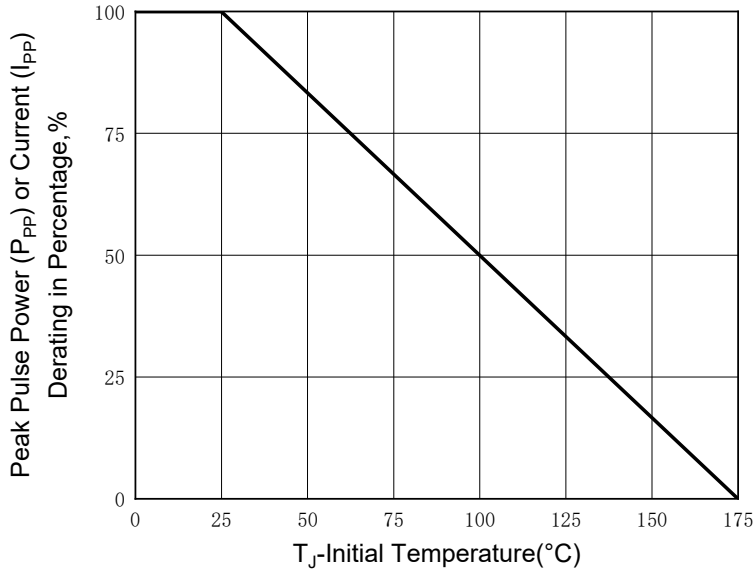


FIG.2 Pulse Waveform

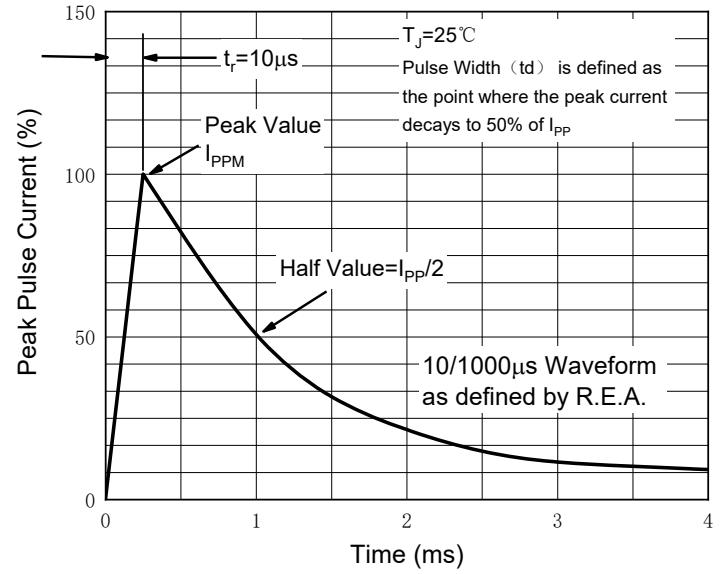


FIG.3 Steady State Power Derating Curve

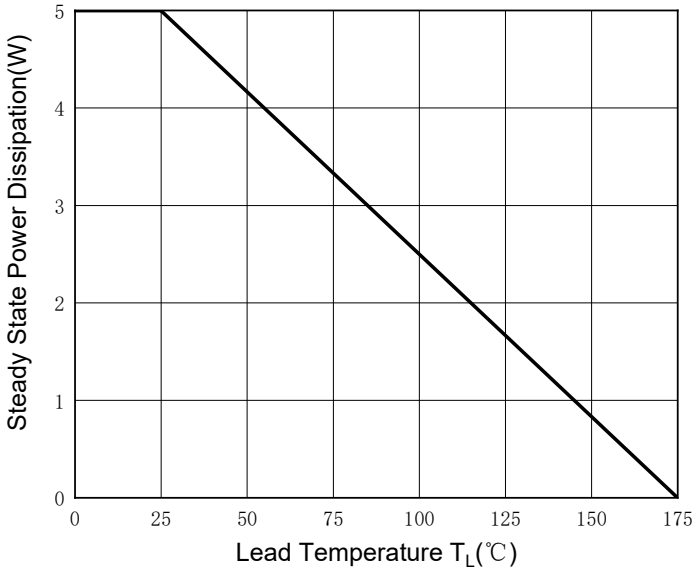


FIG.4: Peak Pulse Power Rating Curve

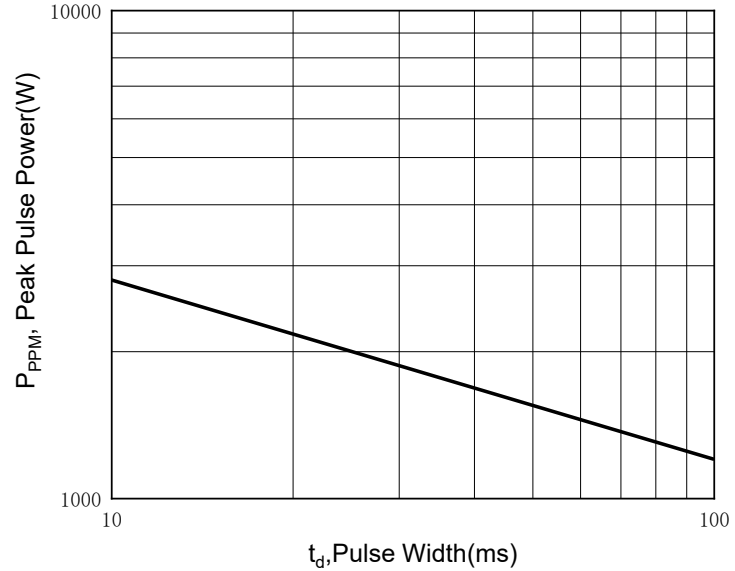
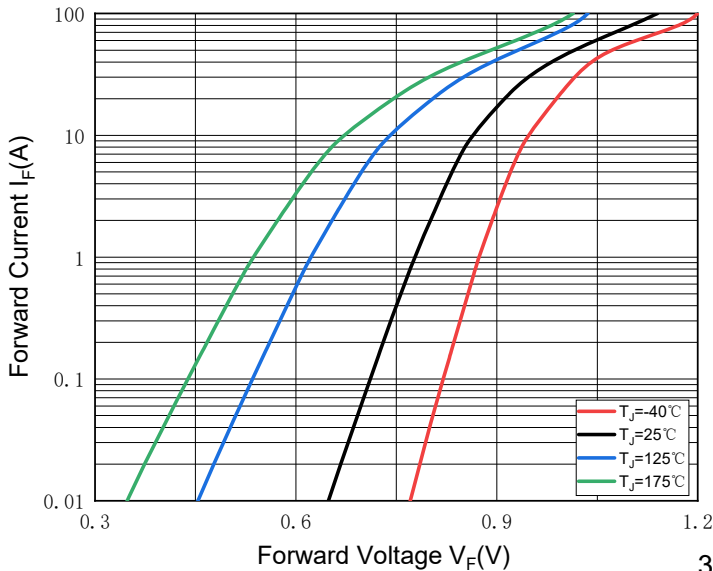


FIG.5: Forward Characteristics



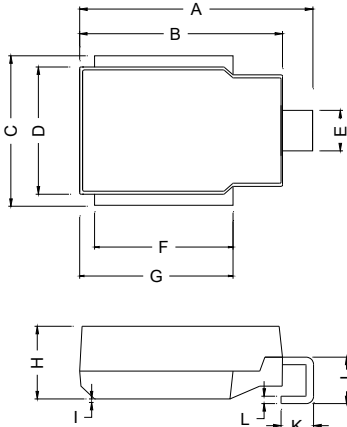


SM5S10AQ THRU SM5S43CAQ

Ordering Information (Example)

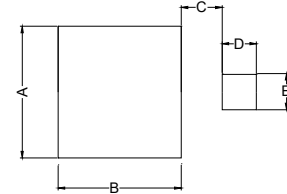
PREFERED P/N	PACKING CODE	UNIT WEIGHT(g)	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
SM5S10AQ-SM5S43CAQ	F1	Approximate 2.77	750	750	3750	13"reel

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

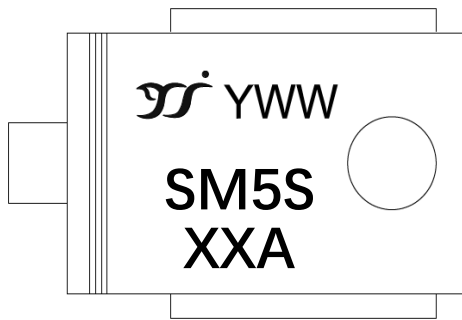
Suggested pad layout



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

Marking Information

Uni-directional



Bi-directional



Note:

- All marking is at middle of the product body
- All marking is in laser printing
- XXA/XXCA is marking code, like SM5S43AQ/43CAQ marking code is 43
- Body color: Black
- YWW is date code, "Y" is year. "WW" is week.

For instance:

The 17th week of 2022, date code is 217
 The 17th week of 2023, date code is 317



SM5S10AQ THRU SM5S43CAQ

Disclaimer

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