

# SM8S Series

Surface Mount — 6600W

**HF** **RoHS**



## Description

The SM8S series is designed specifically to be used in sensitive electronics protection against voltage transients induced by inductive load switching and lighting, especially for automotive load dump pulse protection.

## Features

- Ideally suited for load dump protection
- Flammability Classification 94V-0
- 6600W peak pulse power capability at 10/1000μs waveform, repetition rate (duty cycle): 0.01%
- Integrally molded heatsink provides a very low thermal
- Resistance for maximum heat dissipation
- Low leakage current at  $T_J = 150^{\circ}\text{C}$
- High temperature soldering guaranteed  $260^{\circ}\text{C}$  for 10 seconds at terminals
- Meets ISO7637-2 surge spec.
- Low forward voltage drop
- Meets RoHS2.0 (2011/65/EU) but Halogen
- Meets MSL level 1, per J-STD-020
- Meets AEC-Q101 requirement
- Unit Weight: 2.59g

## Additional Information



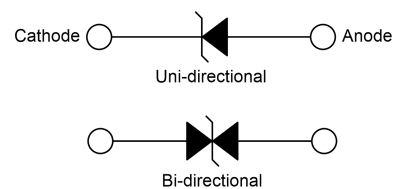
## Maximum Ratings and Characteristics ( $T_A=25^{\circ}\text{C}$ )

Rating	Symbol	Value
Peak pulse power dissipation at 10/1000μs waveform (Note1, Fig.1)	$P_{PPM}$	6600W
Peak pulse current of at 10/1000μs waveform (Note 1, Fig.3)	$I_{PPM}$	See Table(A)
Steady state power dissipation at $T_L=25^{\circ}\text{C}$ (Fig.4)	$P_{M(AV)}$	8.0W
Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load	$I_{FSM}$	700A
Operating junction and Storage Temperature Ranges	$T_J, T_{STG}$	$-55^{\circ}\text{C}$ to $+150^{\circ}\text{C}$
Typical thermal resistance junction to lead	$R_{\theta JC}$	$0.9^{\circ}\text{C/W}$

Notes:

1. Non-repetitive current pulse, per Fig.3 and derating above  $T_A=25^{\circ}\text{C}$  per Fig.2.

## Functional Diagram



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## Electrical Characteristics (T<sub>A</sub>=25°C)

Part Number		Reverse Stand-Off Voltage	Breakdown Voltage @I <sub>T</sub>		Test Current	Maximum Clamping Voltage @I <sub>PP</sub>	Peak Pulse Current	Reverse Leakage @V <sub>R</sub>
Uni.	Bi.	V <sub>R</sub> (V)	V <sub>B Min.</sub> (V)	V <sub>B Max.</sub> (V)	I <sub>T</sub> (mA)	V <sub>C</sub> (V)	I <sub>PP</sub> (A)	I <sub>R</sub> (μA)
SM8S10A	SM8S10CA	10.0	11.10	12.30	5	17.0	388.0	10
SM8S11A	SM8S11CA	11.0	12.20	13.50	5	18.2	363.0	10
SM8S12A	SM8S12CA	12.0	13.30	14.70	5	19.9	332.0	10
SM8S13A	SM8S13CA	13.0	14.40	15.90	5	21.5	307.0	10
SM8S14A	SM8S14CA	14.0	15.60	17.20	5	23.2	284.0	10
SM8S15A	SM8S15CA	15.0	16.70	18.50	5	24.4	270.0	10
SM8S16A	SM8S16CA	16.0	17.80	19.70	5	26.0	254.0	2
SM8S17A	SM8S17CA	17.0	18.90	20.90	5	27.6	239.0	2
SM8S18A	SM8S18CA	18.0	20.00	22.10	5	29.2	226.0	2
SM8S20A	SM8S20CA	20.0	22.20	24.50	5	32.4	204.0	2
SM8S22A	SM8S22CA	22.0	24.40	26.90	5	35.5	186.0	2
SM8S24A	SM8S24CA	24.0	26.70	29.50	5	38.9	170.0	2
SM8S26A	SM8S26CA	26.0	28.90	31.90	5	42.1	157.0	2
SM8S28A	SM8S28CA	28.0	31.10	34.40	5	45.4	145.0	2
SM8S30A	SM8S30CA	30.0	33.30	36.80	5	48.4	136.0	2
SM8S33A	SM8S33CA	33.0	36.70	40.60	5	53.3	124.0	2
SM8S36A	SM8S36CA	36.0	40.00	44.20	5	58.1	114.0	2
SM8S40A	SM8S40CA	40.0	44.40	49.10	5	64.5	102.0	2
SM8S43A	SM8S43CA	43.0	47.80	52.80	5	69.4	95.1	2

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## Ratings and Characteristic Curves ( $T_A=25^\circ\text{C}$ )

Figure 1: Peak Pulse Power Rating Curve

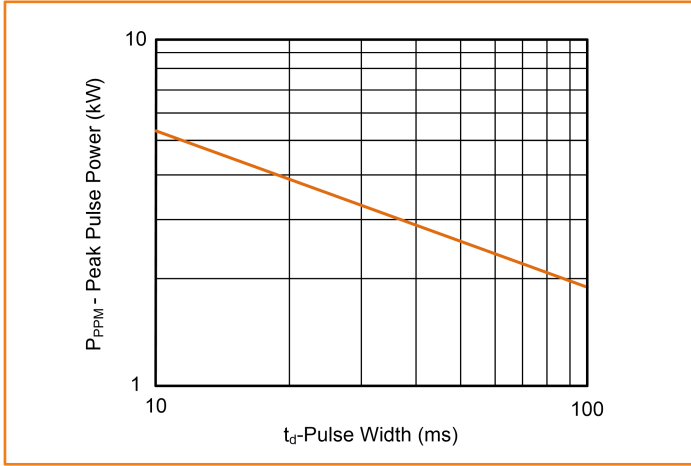


Figure 1: Pulse Derating Curve

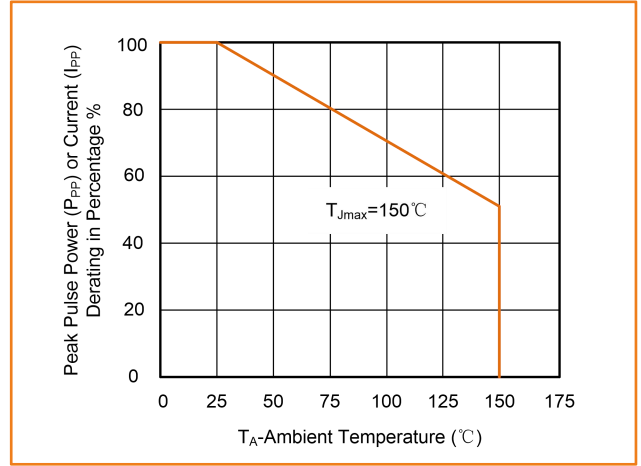


Figure 3: Pulse Waveform

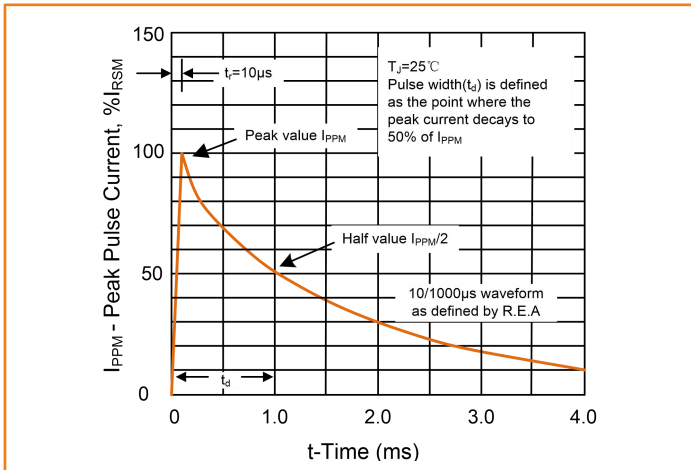
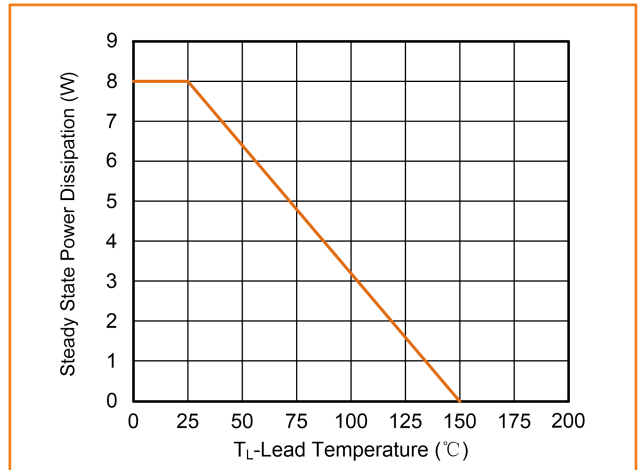
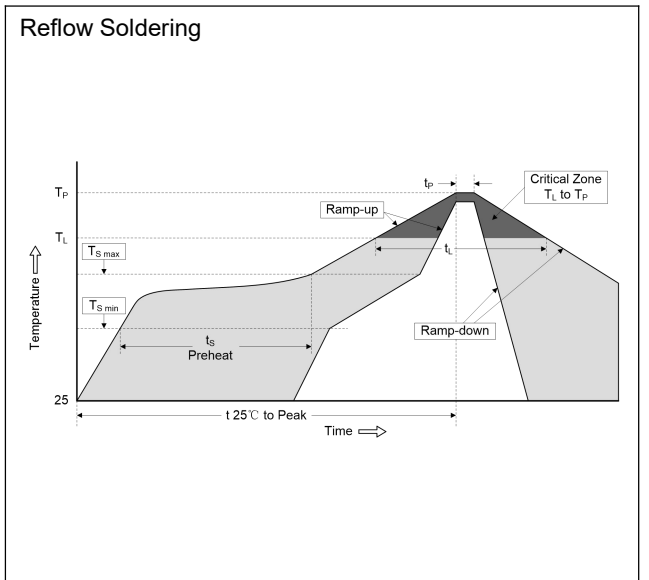


Figure 4: Steady State Power Dissipation Derating Curve



## Soldering Parameters

Reflow Condition		Lead-free
Pre Heat	-Temperature Min ( $T_{S\ min}$ )	150 $^\circ\text{C}$
	-Temperature Max ( $T_{S\ max}$ )	200 $^\circ\text{C}$
	-Time (min to max) ( $t_s$ )	60 — 180 secs
Average ramp-up rate ( $T_L$ to $T_p$ )		3 $^\circ\text{C}/\text{second}$ max.
$T_{S\ max}$ to $T_L$ -Ramp-up Rate		3 $^\circ\text{C}/\text{second}$ max.
Time maintained above:	-Temperature ( $T_L$ )	217 $^\circ\text{C}$
	-Time ( $t_l$ )	60-150 seconds
Peak Temperature ( $T_p$ )		260 $^\circ\text{C}$
Time within 5 $^\circ\text{C}$ of actual Peak Temperature ( $t_p$ )		20-40 seconds
Ramp-down Rate		6 $^\circ\text{C}/\text{second}$ max.
Time 25 $^\circ\text{C}$ to Peak Temperature		8 minutes max.

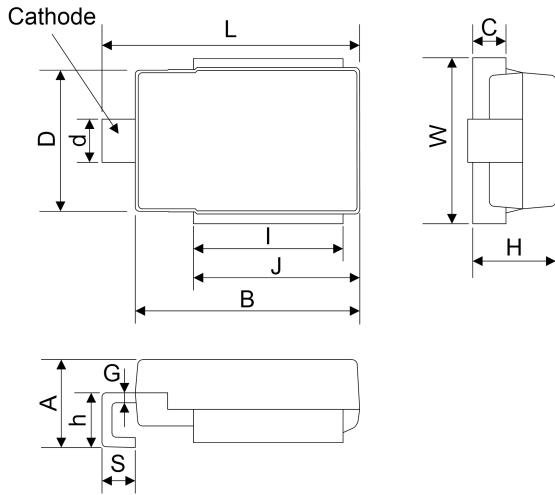


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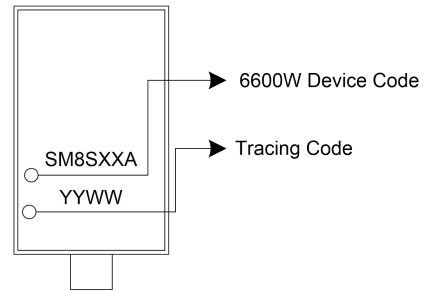
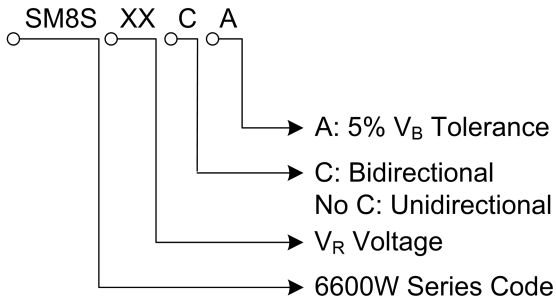


## Dimensions (DO-218AB)



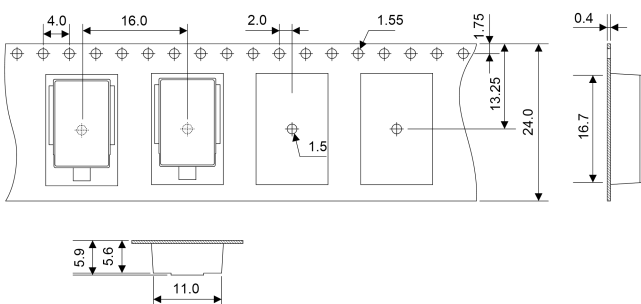
Symbol	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.8	5.8	0.189	0.228
B	13.3	13.7	0.524	0.539
C	1.7	2.3	0.067	0.091
D	8.3	8.7	0.327	0.343
d	2.3	3.1	0.091	0.122
G	0.5	0.7	0.020	0.028
H	4.7	5.2	0.185	0.205
h	2.5	3.9	0.098	0.154
I	8.7	9.5	0.343	0.374
J	9.7	10.5	0.382	0.413
W	9.5	10.5	0.374	0.414
S	1.5	2.5	0.059	0.099
L	15.0	16.0	0.591	0.630

## Part Number Code and Marking Code

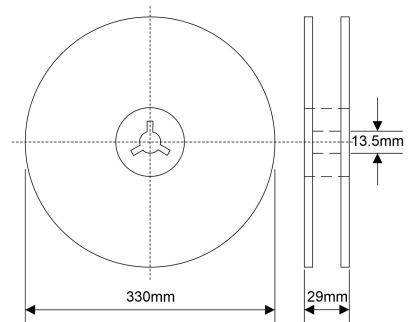


## Packaging Specification

Tape



13 Inches Reel



Quantity: 5000pcs/reel

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