

SM8S Series Datasheet

Description

The SM8S series is designed specifically to use 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 10/1000 μ s waveform,
- repetition rate (duty cycle): 0.01%
- Integrally molded heatsink provides a very low thermal resistance for maximum heat dissipation
- Low leakage current at $T_J = 150^{\circ}\text{C}$ & $T_J = 175^{\circ}\text{C}$
- 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/PCS

Maximum Ratings and Characteristics

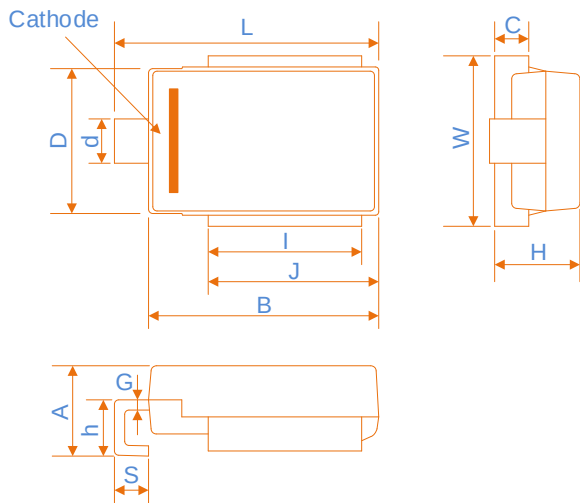
Ratings at 25 $^{\circ}\text{C}$ ambient temperature unless otherwise specified.

Rating	Symbol	Value	Units
Peak pulse power dissipation at 10/1000 μ s waveform (Note1, Note2, Fig.1)	P_{PPM}	Minimum 6600	Watts
Peak pulse current of at 10/1000 μ s waveform (Note 1, Fig.3)	I_{PPM}	See Table	Amps
Steady state power dissipation at $T_A=25^{\circ}\text{C}$ (Fig.5)	$P_{M(AV)}$	8.0	Watts
Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load, (JEDEC Method) (Note2, Fig.6)	I_{FSM}	700	Amps
Operating junction and Storage Temperature Ranges.	T_J, T_{STG}	-55 to +150	$^{\circ}\text{C}$
Typical thermal resistance junction to Case	$R_{\theta JC}$	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.

2. 8.3ms single half sine-wave or equivalent square wave, duty cycle=4 pulses per minutes maximum.

Dimensions (DO-218)



Dimensions	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.8	5.8	0.189	0.228
B	13.3	13.7	0.524	0.540
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	4.9	5.2	0.193	0.205
h	2.5	3.9	0.098	0.154
I	8.7	9.3	0.342	0.366
J	9.7	10.3	0.382	0.406
W	9.5	10.5	0.374	0.414
S	1.5	2.5	0.059	0.099
L	15	16	0.591	0.630

Electrical Characteristics (TA=25°C)

Part Number		Reverse Stand-Off Voltage	Breakdown Voltage @I _r		Test Current	Maximum Clamping Voltage @I _{PP}	Peak Pulse Current	Reverse Leakage @V _R
Unidirectional	Bidirectional	V _R (V)	Min(V)	Max(V)	I _T (mA)	V _C (V)	I _{PP} (A)	I _R (μA)
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	44.4	49.1	5	64.5	102.0	2
SM8S43A	SM8S43CA	43.0	47.80	52.80	5	69.4	95.1	2
SM8S48A	SM8S48CA	48.0	53.30	58.90	5	77.4	85.3	2
SM8S58A	SM8S58CA	58.0	64.40	71.20	5	93.6	70.5	2

Ratings and Characteristic Curves ($T_a=25^{\circ}\text{C}$ unless otherwise noted)

Figure 1. Peak Pulse Power Rating Curve

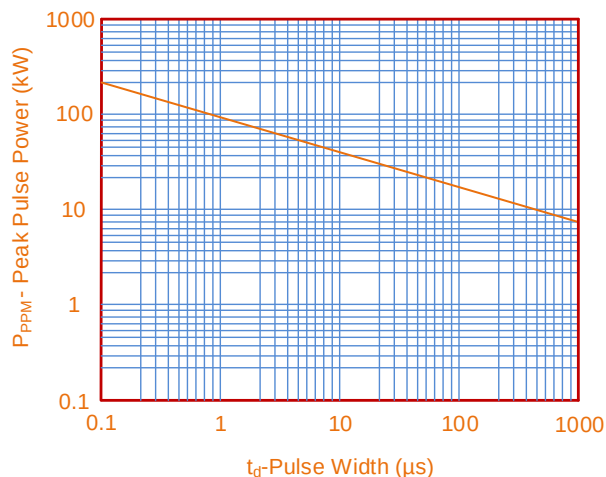


Figure 2. Pulse Derating Curve

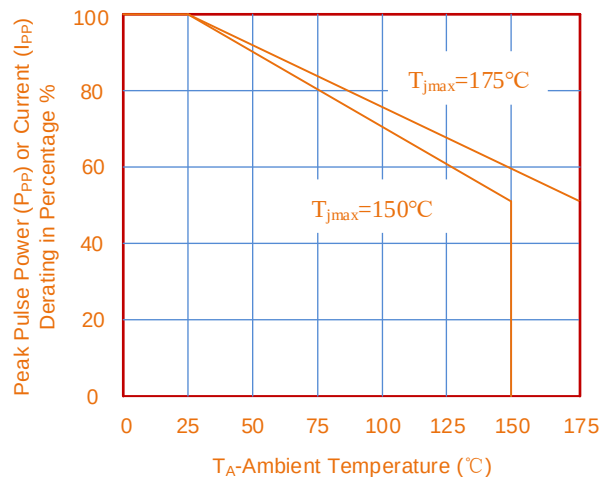


Figure 3. Pulse Waveform

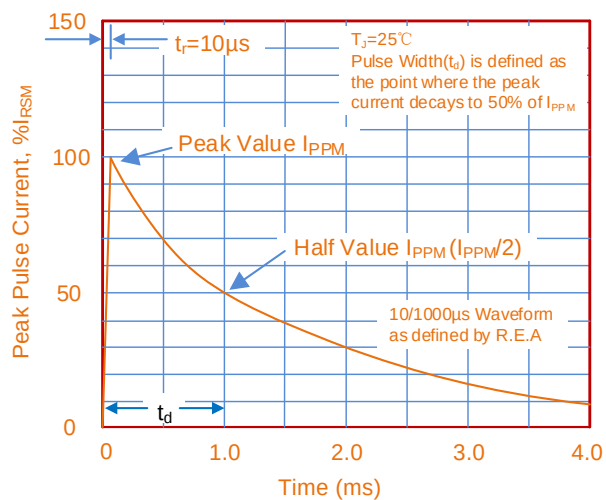
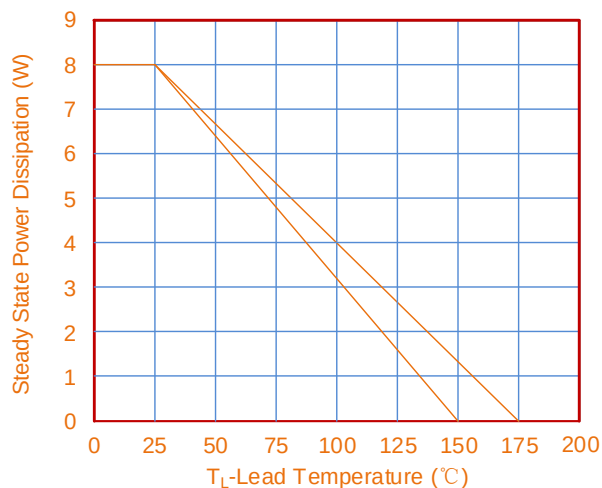
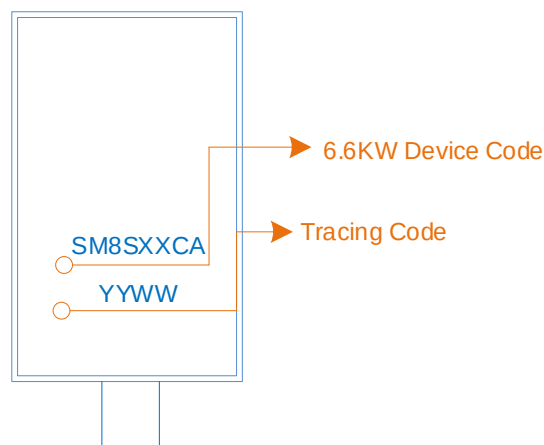
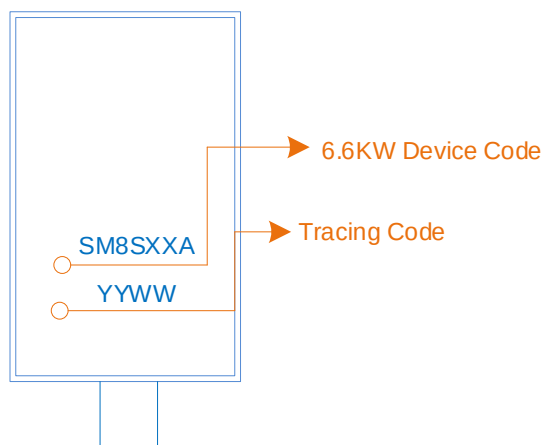


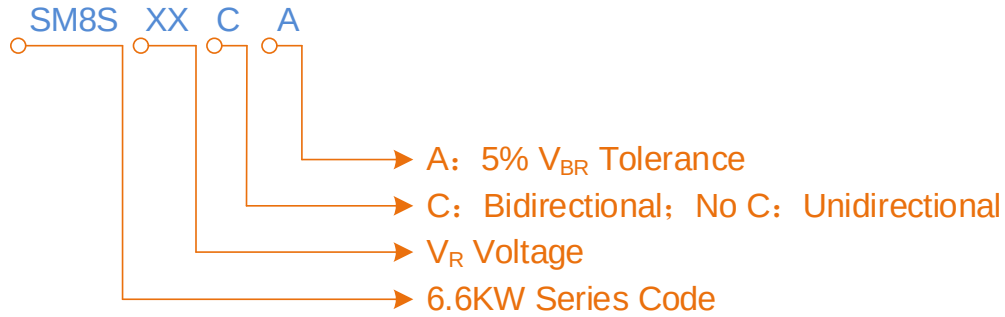
Figure 4. Steady State Power Dissipation Derating



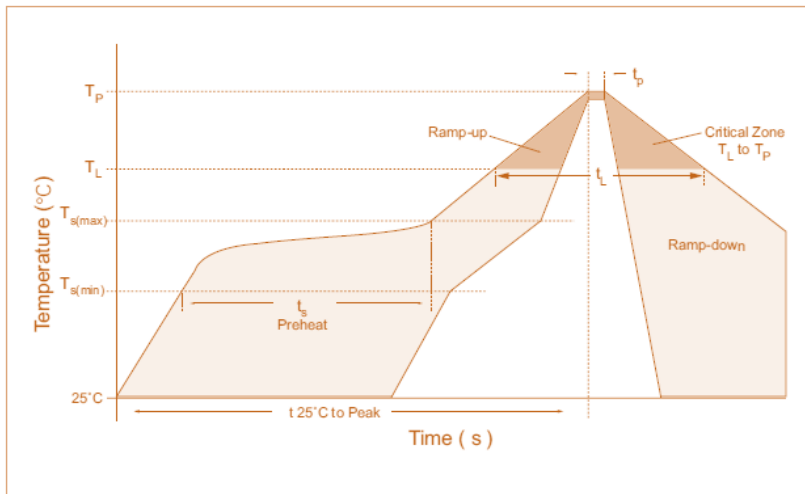
Marking Code



Part Number Code



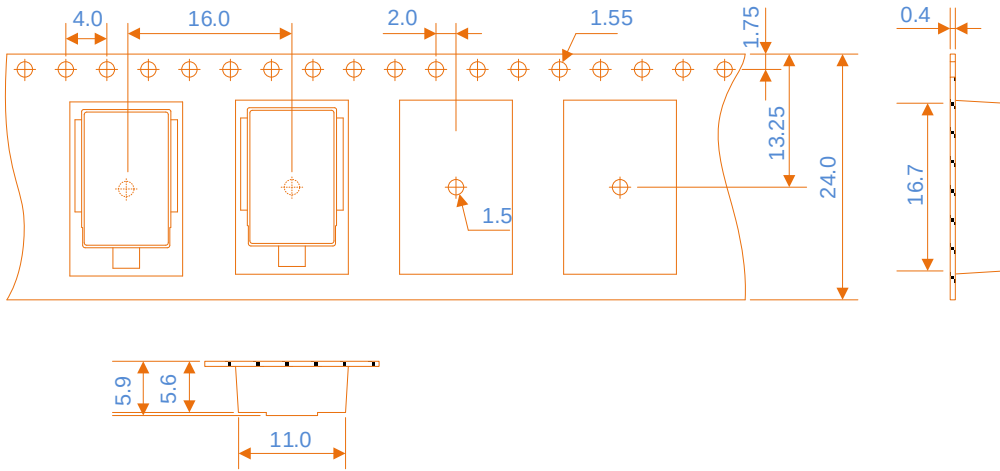
Soldering Parameters



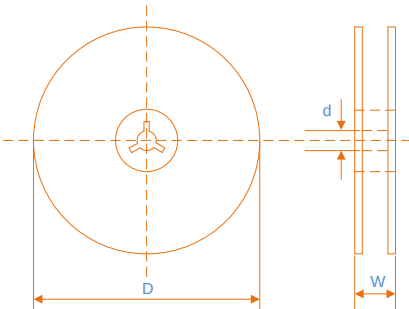
Reflow Condition		Lead-free Soldering
Pre Heat	- Temperature Min ($T_{S(min)}$)	150°C
	- Temperature Max ($T_{S(max)}$)	200°C
	- Time (min to max) (t_s)	60 – 180 secs
Average ramp up rate (Liquidus Temp (T_A) to peak)		3°C/second max
$T_{S(max)}$ to T_A - Ramp-up Rate		3°C/second max
Reflow	- Temperature (T_A)	217°C
	- Time (min to max) (t_r)	60 – 150 seconds
Peak Temperature (T_P)		260°C
Time within 5°C of actual peak Temperature (t_p)		20 – 40 seconds
Ramp-down Rate		6°C/second max
Time 25°C to peak Temperature (T_P)		8 minutes Max.
Do not exceed Temperature		260°C

Packaging Specification

Tape



13 Inches Reel



D

$\Phi 330.0 \pm 2.0$

d

$\Phi 13.5 \pm 0.5$

W

29.0 ± 2.0

Quantity: 700PCS/Reel