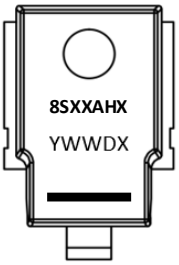
Features

RoHS Compliant

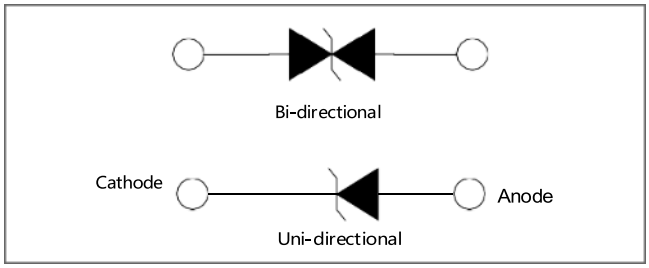


- 6600W peak pulse power capability at 10/1000μs waveform, repetition rate (duty cycles):0.01%
- Excellent clamping capability
- Typical failure mode is a short circuit condition for current events exceeding component rating
- Plastic package is flammability rated V-0 per UL-94
- Meet MSL level1, per J-STD-020, lead-frame maximum peak of 245°C
- AEC-Q101 qualified

Applications

Typically use in sensitive electronics protection against voltage load dump induced by Automotive generator during current interruption.

Function Diagram



Maximum Ratings and Thermal Characteristics (T_A=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Peak Pulse Power Dissipation at T_A=25 °C by 10/1000μs Waveform (Fig.4)--single die	P_{PPM}	6600	W
Power Dissipation on Infinite Heat Sink at T_L=25°C	P_D	8	W
Peak Forward Surge Current, 8.3ms Single Half Sine Wave (Note 1)	I_{FSM}	700	A
Maximum Instantaneous Forward Voltage at 50A for Unidirectional Only	V_F	3.5	V
Operating Temperature Range	T_J	-55 to 175	°C
Storage Temperature Range	T_{STG}	-55 to 175	°C

AGENCY	AGENCY FILE NUMBER
®	Pending

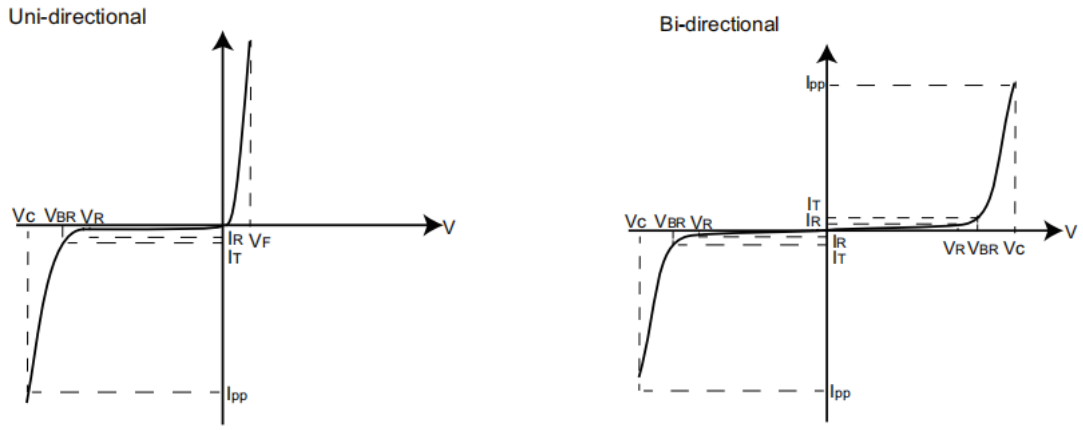
Notes:

1. Measured on 8.3ms single half sine wave or equivalent square wave for unidirectional device only, duty cycle=4 per minute maximum.
2. 3.5V for single die, 5V for stack die

Characteristics (T =25°C unless otherwise noted)

Part Number (Uni)	Part Number (Bi)	Key Marking Uni	Bi	Reverse Stand off Voltage V_R (Volts)	Breakdown Voltage V_{BR} (Volts) @ I_T MIN	MAX	Test Current I_T (mA)	Maximum Clamping Voltage V_C @ I_{pp} (V)	Maximum Peak Pulse Current I_{pp} (A)	Maximum Reverse Leakage I_R @ V_R (μA)	Agency Approval
SM8S10A-H	SM8S10CA-H	8S10AH	8S10CAH	10.0	11.10	12.30	5	17.0	388	20	
SM8S11A-H	SM8S11CA-H	8S11AH	8S11CAH	11.0	12.20	13.50	5	18.2	363	15	
SM8S12A-H	SM8S12CA-H	8S12AH	8S12CAH	12.0	13.30	14.70	5	19.9	332	10	
SM8S13A-H	SM8S13CA-H	8S13AH	8S13CAH	13.0	14.40	15.90	5	21.5	307	5	
SM8S14A-H	SM8S14CA-H	8S14AH	8S14CAH	14.0	15.60	17.20	5	23.2	284	5	
SM8S15A-H	SM8S15CA-H	8S15AH	8S15CAH	15.0	16.70	18.50	5	24.4	270	5	
SM8S16A-H	SM8S16CA-H	8S16AH	8S16CAH	16.0	17.80	19.70	5	26.0	253	5	
SM8S17A-H	SM8S17CA-H	8S17AH	8S17CAH	17.0	18.90	20.90	5	27.6	239	5	
SM8S18A-H	SM8S18CA-H	8S18AH	8S18CAH	18.0	20.00	22.10	5	29.2	226	5	
SM8S20A-H	SM8S20CA-H	8S20AH	8S20CAH	20.0	22.20	24.50	5	32.4	204	5	
SM8S22A-H	SM8S22CA-H	8S22AH	8S22CAH	22.0	24.40	26.90	5	35.5	186	5	
SM8S24A-H	SM8S24CA-H	8S24AH	8S24CAH	24.0	26.70	29.50	5	38.9	170	5	
SM8S26A-H	SM8S26CA-H	8S26AH	8S26CAH	26.0	28.90	31.90	5	42.1	157	5	
SM8S28A-H	SM8S28CA-H	8S28AH	8S28CAH	28.0	31.10	34.40	5	45.4	145	5	
SM8S30A-H	SM8S30CA-H	8S30AH	8S30CAH	30.0	33.30	36.80	5	48.4	136	5	
SM8S33A-H	SM8S33CA-H	8S33AH	8S33CAH	33.0	36.70	40.60	5	53.3	124	5	
SM8S36A-H	SM8S36CA-H	8S36AH	8S36CAH	36.0	40.00	44.20	5	58.1	114	5	
SM8S40A-H	SM8S40CA-H	8S40AH	8S40CAH	40.0	44.40	49.10	5	64.5	102	5	
SM8S43A-H	SM8S43CA-H	8S43AH	8S43CAH	43.0	47.80	52.80	5	69.4	95.1	5	
SM8S45A-H	SM8S45CA-H	8S45AH	8S45CAH	45.0	50.0	55.30	5	72.7	90.8	5	
SM8S48A-H	SM8S48CA-H	8S48AH	8S48CAH	48.0	53.30	58.90	5	77.4	85.3	5	
SM8S51A-H	SM8S51CA-H	8S51AH	8S51CAH	51.0	56.70	62.70	5	82.4	80.1	5	
SM8S54A-H	SM8S54CA-H	8S54AH	8S54CAH	54.0	60.00	66.30	5	87.1	75.8	5	
SM8S58A-H	SM8S58CA-H	8S58AH	8S58CAH	58.0	64.40	71.20	5	93.6	70.5	5	
SM8S60A-H	SM8S60CA-H	8S60AH	8S60CAH	60.0	66.70	73.70	5	96.8	68.2	5	

I-V Curve Characteristics



P_{PPM}	Peak Pulse Power Dissipation -- Max power dissipation
V_R	Stand-off Voltage -- Maximum voltage that can be applied to the TVS without operation
V_{BR}	Breakdown Voltage -- Maximum voltage that flows though the TVS at a specified test current (I_T)
V_C	Clamping Voltage -- Peak voltage measured across the TVS at a specified I_{PPM} (peak impulse current)
I_R	Reverse Leakage Current -- Current measured at V_R
V_F	Forward Voltage Drop for Uni-directional

Ratings and Characteristic Curves (T =25°C unless otherwise noted)

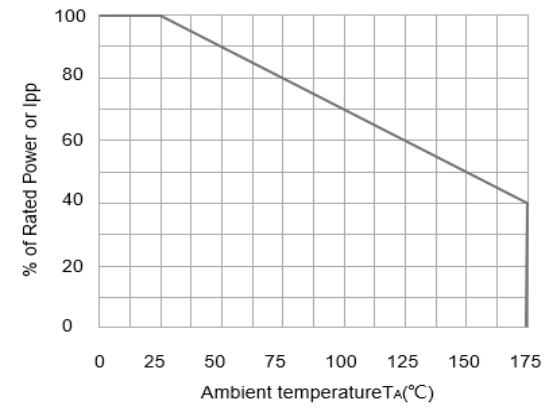


Figure 1. Peak pulse power derating curve

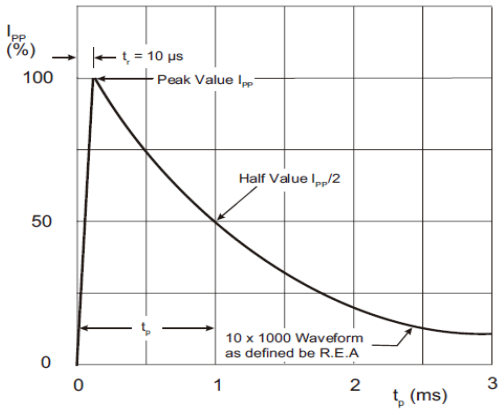


Figure2. Pulse waveform

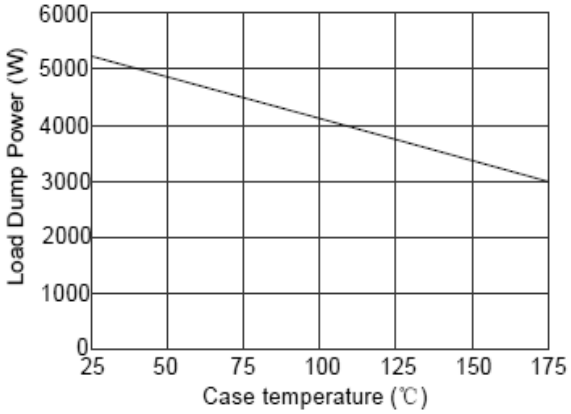


Figure 3. Load dump power 10mS

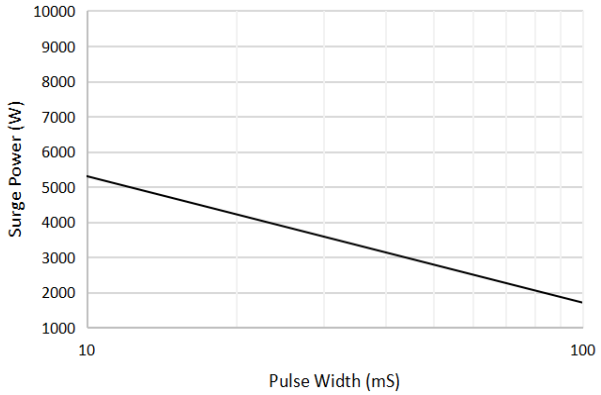
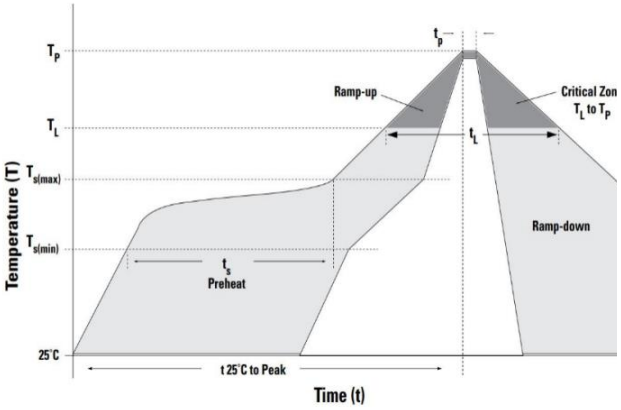


Figure 4. Maximum non-repetitive surge current

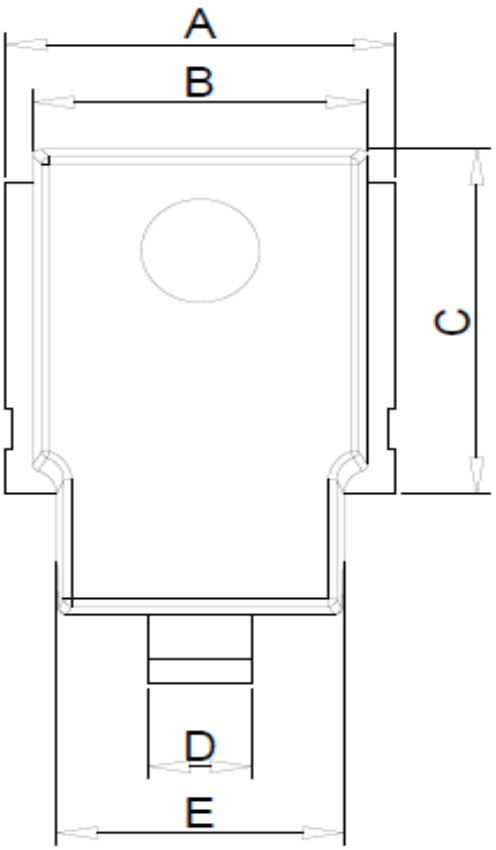
Soldering Parameters

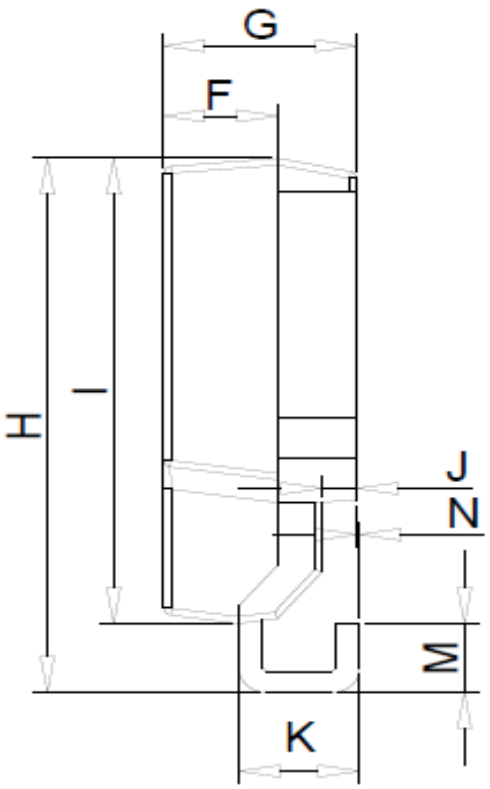
Reflow Condition		Lead–free assembly
Pre Heat	- Temperature Min ($T_{s(min)}$)	150°C
	- Temperature Max ($T_{s(max)}$)	200°C
	- Time (min to max) (t_s)	60 – 180 secs
Average ramp up rate (Liquidus Temp (T_A) to peak		3°C/second max
$T_{S(max)}$ to T_A - Ramp-up Rate		3°C/second max
Reflow	- Temperature (T_A) (Liquidus)	217°C
	- Time (min to max) (t_s)	60 – 150 seconds
Peak Temperature (T_P)		260 $^{+0/-5}$ °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		260°C

Soldering profile



Dimensions





Symbol	A	B	C	D	E	F	G	H	I	J	K	M	N
Max.	10.50	8.70	10.08	3.00	8.00	2.95	5.20	16.20	13.70	0.93	3.12	2.70	0.16
Min.	9.50	8.30	9.92	2.40	7.00	2.85	4.60	15.20	13.30	0.83	3.02	1.70	0.00

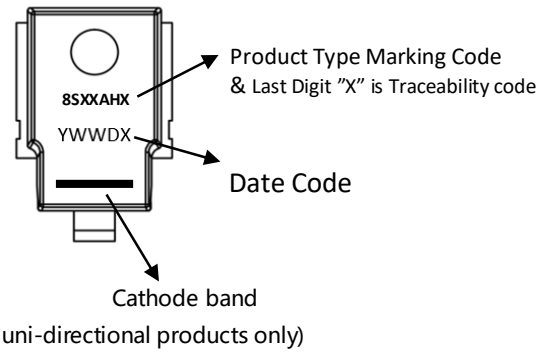
Note: Size units mm

Part Numbering

SM8S xx xx-H

- Automotive&High Reliability
- A: Uni-directional
  CA: Bi-directional
- Reverse Standard off Voltage V_R
- Product series

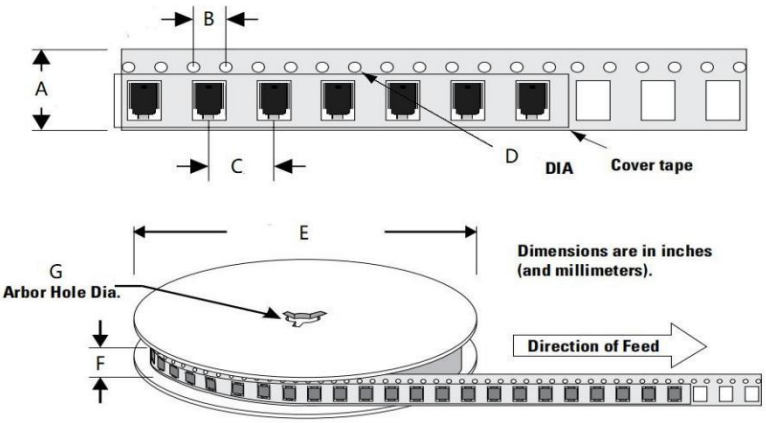
Part Marking

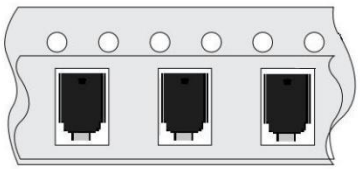


Packing

Part number	Package name	Small packing quantity	Packing method
SM8SXXXX-H	DO-218AB	750PCS	Tape & Reel

Tape and Reel Specification





Symbol	Millimeter
A	24.00 ± 0.2
B	4.00 ± 0.2
C	16.00 ± 0.2
D	1.55 ± 0.2
E	330.0 ± 0.3
F	25.85 ± 0.2
G	13.30 ± 0.2

Revision history of Specification

Version	Change Items	Effective Date
1.0	Initial Release	13-July-2021
1.1	Update Key Marking	13- Dec-2022
1.2	Update T_J、T_{STG}	22- Nov-2023
1.3	Add New Voltage Products	20-Dec-2023
1.4	Add Remark For Marking Last Digit	26-Mar-2024