

## Surface Mount Transient Voltage Suppressors

### SM8Z Series 14 To 43 V 6600W

#### Description

The SM8Z series is designed specifically to protect sensitive electronic equipment from voltage transients induced by lightning and other transient voltage events.

Working Voltage: 14 to 43 V

Peak Pulse Power: 6600 W

#### Features

- ◆ Glass passivated chip
- ◆ 6600 W peak pulse power capability with a 10/1000 us waveform, repetitive rate (duty cycle):0.01 %
- ◆  $T_J = 175\text{ }^\circ\text{C}$  capability suitable for high reliability and automotive requirement
- ◆ Meets ISO7637-2 surge specification (varied by test condition)Meet AEC-Q101 requirement
- ◆ Low leakage
- ◆ Uni-directional polarity
- ◆ 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
- ◆ Epoxy: UL 94V-0 rate flame retardant
- ◆ Polarity: Heatsink is anode

#### Primary Characteristics

$V_{RWM}$	14V to 43V
$P_{PPM}$ (10/1000 $\mu$ s)	6600W
$P_{PPM}$ (10/10000 $\mu$ s)	5200W
$P_D$	8W
$I_{FSM}$	700A
$T_{J\max}$	175 $^\circ\text{C}$
Package	DO-218AB

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

Parameter	Symbol	Value	Units
Peak Pulse Power Dissipation	$P_{PPM}$	with 10/1000 $\mu$ s waveform	6600
		with 10/10000 $\mu$ s waveform	5200
Power Dissipation on Infinite Heat Sink at $T_L = 25\text{ }^\circ\text{C}$ (Fig.1)	$P_D$	8	W
Peak Pulse Current with a 10/1000 $\mu$ s waveform	$I_{PP}$	See Next Table	A
Peak forward surge current 8.3 ms single half sine Wave	$I_{FSM}$	700	A
Operating junction and storage temperature range	$T_J, T_{STG}$	- 55 to +175	$^\circ\text{C}$
Typical thermal resistance, junction to case	$R_{\theta JC}$	0.90	$^\circ\text{C/Watt}$

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

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#### Electrical Characteristics (@ 25°C Unless Otherwise Specified)

Part Number	Stand-Off Voltage $V_{MW}$ (V)	Breakdown Voltage $V_{BR}$ (V)		Test Current $I_T$ (mA)	Maximum Reverse Leakage $I_R$ @ $V_{RWM}$ (uA)	Maximum $I_R$ @ $V_{RWM}$ $T_J = 175$ (uA)	Maximum Reverse Surge Current $I_{PP}$ (A) <sup>(1)</sup>	Maximum Clamping Voltage $V_C$ @ $I_{PP}$ (V)
		MIN.	MAX.					
SM8Z14A	14	15.60	17.20	5.0	10	150	284.0	23.2
SM8Z15A	15	16.70	18.50	5.0	10	150	270.0	24.4
SM8Z16A	16	17.80	19.70	5.0	10	150	254.0	26.0
SM8Z17A	17	18.90	20.90	5.0	10	150	239.0	27.6
SM8Z18A	18	20.00	22.10	5.0	10	150	226.0	29.2
SM8Z20A	20	22.20	24.50	5.0	10	150	204.0	32.4
SM8Z22A	22	24.40	26.90	5.0	10	150	186.0	35.5
SM8Z24A	24	26.70	29.50	5.0	10	150	170.0	38.9
SM8Z26A	26	28.90	31.90	5.0	10	150	157.0	42.1
SM8Z28A	28	31.10	34.40	5.0	10	150	145.0	45.4
SM8Z30A	30	33.30	36.80	5.0	10	150	136.0	48.4
SM8Z33A	33	36.70	40.60	5.0	10	150	124.0	53.3
SM8Z36A	36	40.00	44.20	5.0	10	150	114.0	58.1
SM8Z40A	40	44.40	49.10	5.0	10	150	102.0	64.5
SM8Z43A	43	47.80	52.80	5.0	10	150	95.1	69.4

NOTE: Surge current waveform is defined at 10/1000uS waveform

#### Ratings and Characteristics Curves ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

Figure 1 – Power Derating Curve

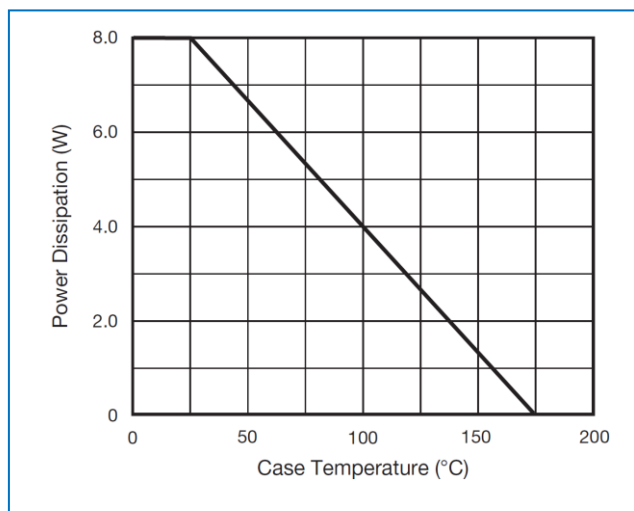
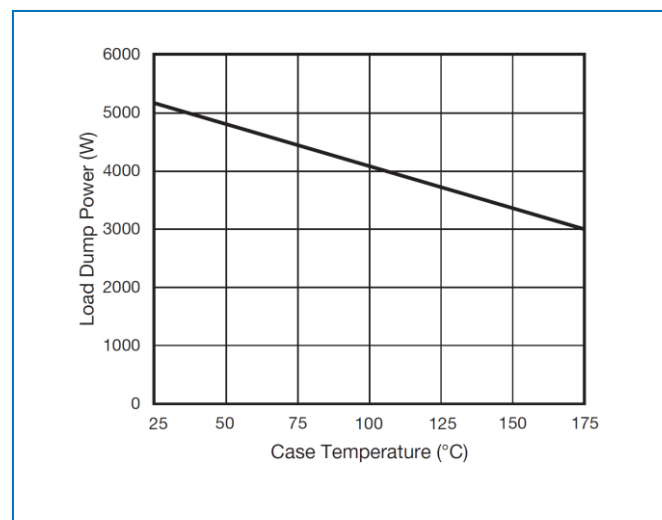


Figure 2 - Load Dump Power Characteristics (10 ms Exponential Waveform)



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Figure 3 - Pulse Waveform

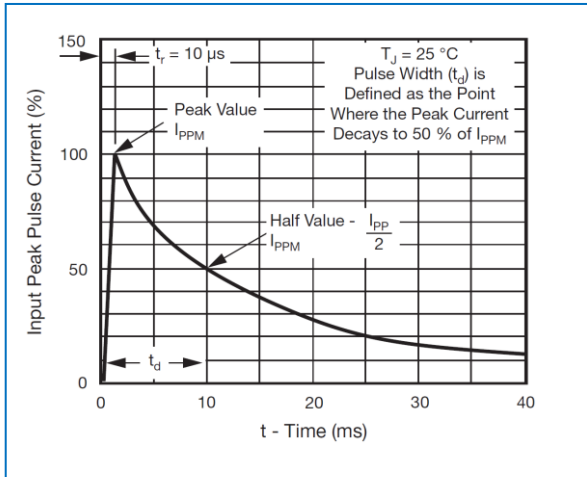
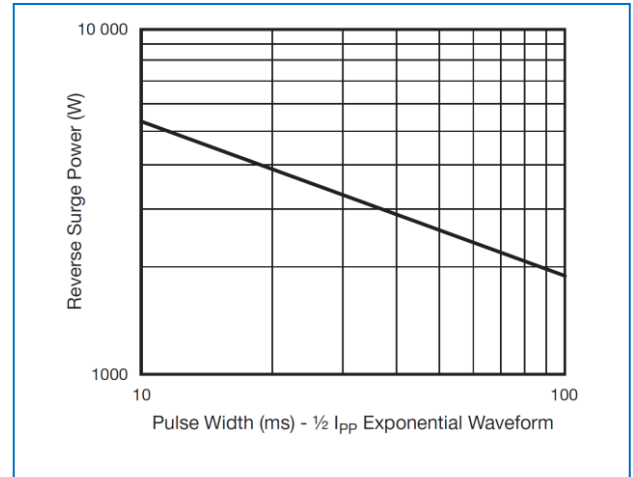
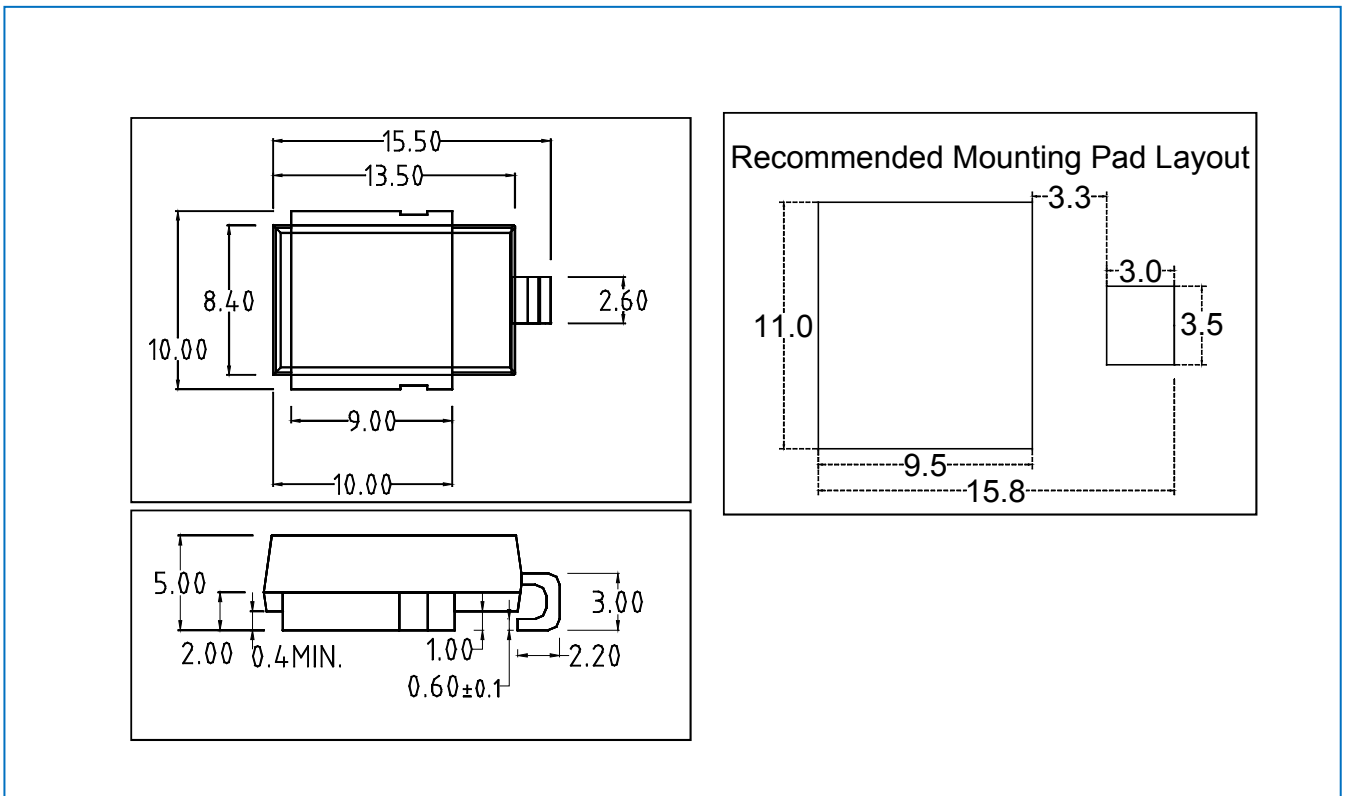


Figure 4 - Reverse Power Capability



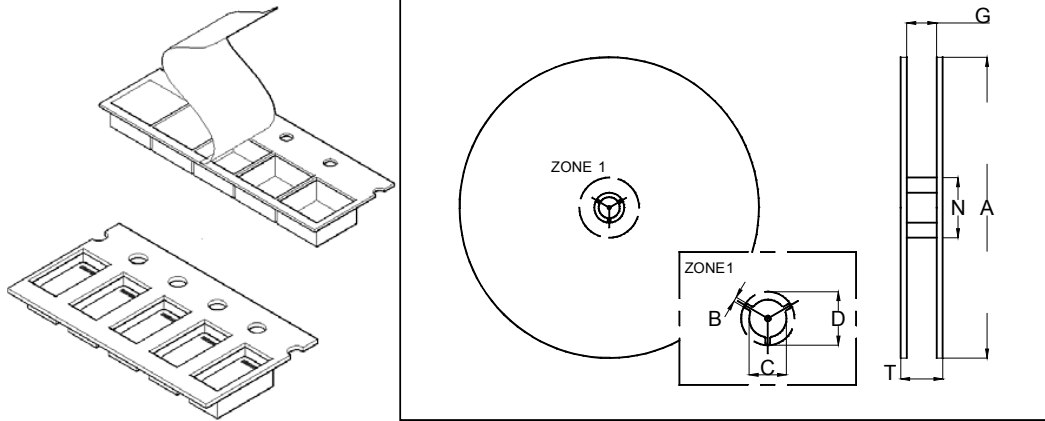
### Package Outline Dimensions Unit: inches (millimeters)



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#### SURFACE MOUNT TAPE AND REEL PACKAGING



#### DIMENSIONS in millimeters (inches)

TAPE SIZE	A MAX.	B MIN.	C	D MIN.	N MIN.	G MAX.	T MAX.
24 mm (0.945)	330 ± 2.0 (13.0 ± 0.079) 178 ± 2.0 (7.0 ± 0.079)	1.5 (0.059)	13.0 ± 0.20 (0.51 ± 0.0008)	20.2 (0.795)	50 (1.97)	26.4 (1.039)	30.4 (1.197)

#### Recommended Soldering Parameters

IR-Reflow Condition			
Pre Heat	Temp. min	150	°C
	Temp. max	200	°C
	Time(min to max)	60-180	sec
Ramp up rate (150-200°C)		<3	°C/sec

Reflow	Liquidus Temp.	>220	°C
	Peak Temp.	255-260	sec
	Time(Liq. to Peak)	60-150	sec
Ramp up rate (220-200°C)		<3	°C/sec
Time within actual peak temp.		10-30	sec

Ramp down Rate	<5	°C/sec
Time(25°C to Peak temp.)	<6	min
Do not exceed	280	°C

