

## Transient Voltage Suppressors (TVS) Data Sheet

### Features

- High current transient suppressor
- Glass passivated junction.
- Low leakage current
- Excellent Clamping Capability.
- 8000W peak pulse power capability at 10/1000 $\mu$ s waveform, repetition rate (duty cycle): 0.01%
- Fast response time
- Uni-directional polarity
- Halogen free and RoHS compliant
- Meets MSL level 1, per J-STD-020
- Meets AEC-Q101 requirement

### Mechanical Data

- Case: DO-218AB
- Polarity: Heatsink is anode
- Epoxy: UL 94V-0 rate flame retardant

### Applications

- I/O interface
- AC/DC power supply
- Low frequency signal transmission line (RS232, RS485, etc.)

### Maximum Ratings and Characteristics

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

Rating	Symbol	Value	Units
Peak pulse power dissipation at 10/1000 $\mu$ s waveform (Note1)	P <sub>PPM</sub>	Minimum 8000	Watts
Peak pulse current of at 10/1000 $\mu$ s waveform (Note 1)	I <sub>PPM</sub>	See Table	Amps
Power dissipation on infinite heatsink at T <sub>L</sub> =25 $^{\circ}$ C	P <sub>D</sub>	8	Watts
Peak forward surge current, 8.3ms single half sine-wave	I <sub>FSM</sub>	700	Amps
Operating junction and Storage Temperature Rang	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	$^{\circ}$ C

Note: 1. Non-repetitive current pulse, per Fig.3 and derated above T<sub>A</sub>=25 $^{\circ}$ C per Fig.2.

**Dimensions (DO-218AB)**

Symbol	Millimeters		
	Min.	Nom.	Max.
A	4.8	5.3	5.8
B	4.9	5.0	5.2
C	1.7	2.0	2.3
D	2.8	3.3	3.8
E	8.3	8.5	8.7
F	2.3	2.6	2.9
G	0.5	0.6	0.7
H	13.3	13.5	13.7
I	8.7	9.0	9.3
J	9.7	10.0	10.3
K	9.5	10.0	10.5
L	1.5	2.0	2.5
M	15.0	15.5	16.0

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

Part Number	Reverse Stand-Off Voltage	Breakdown Voltage		Test Current	Surge Discharge current	Maximum Clamping Voltage	Reverse Leakage
	V <sub>RWM</sub> (V)	V <sub>BR</sub> (V) MIN.@I <sub>T</sub>	V <sub>BR</sub> (V) MAX.@I <sub>T</sub>	I <sub>T</sub> (mA)	I <sub>PP</sub> (A) @10/1000μs	V <sub>C</sub> (V) @I <sub>PP</sub>	I <sub>R</sub> (μA) @V <sub>RWM</sub>
SMEJ10A	10.0	11.1	12.3	5	475.0	17.5	15
SMEJ11A	11.0	12.2	13.5	5	443.8	18.7	15
SMEJ12A	12.0	13.3	14.7	5	405.0	20.5	10
SMEJ13A	13.0	14.4	15.9	5	373.8	22.1	10
SMEJ14A	14.0	15.6	17.2	5	345.0	23.9	10
SMEJ15A	15.0	16.7	18.5	5	327.5	25.1	10
SMEJ16A	16.0	17.8	19.7	5	307.5	26.8	10
SMEJ17A	17.0	18.9	20.9	5	288.8	28.4	10
SMEJ18A	18.0	20.0	22.1	5	272.5	30.1	10
SMEJ20A	20.0	22.2	24.5	5	245.0	33.4	10
SMEJ22A	22.0	24.4	26.9	5	222.5	36.6	10
SMEJ24A	24.0	26.7	29.5	5	202.5	40.1	10
SMEJ26A	26.0	28.9	31.9	5	186.3	43.4	10
SMEJ28A	28.0	31.1	34.4	5	171.3	46.8	10

**Electrical Characteristics ( $T_A=25^\circ\text{C}$ )**

Part Number	Reverse Stand-Off Voltage	Breakdown Voltage		Test Current	Surge Discharge current	Maximum Clamping Voltage	Reverse Leakage
	$V_{RWM}(V)$	$V_{BR}(V)$ MIN.@ $I_T$	$V_{BR}(V)$ MAX.@ $I_T$	$I_T$ (mA)	$I_{PP}(A)$ @10/1000 $\mu\text{s}$	$V_C(V)$ @ $I_{PP}$	$I_R(\mu A)$ @ $V_{RWM}$
SMEJ30A	30.0	33.3	36.8	5	160.0	50.1	10
SMEJ33A	33.0	36.7	40.6	5	145.0	55.2	10
SMEJ36A	36.0	40.0	44.2	5	132.5	60.4	10
SMEJ40A	40.0	44.4	49.1	5	117.5	68.3	10
SMEJ43A	43.0	47.8	52.8	5	108.9	73.8	10
SMEJ48A	48.0	53.2	58.7	5	93.5	85.6	10

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

Figure 1. Peak Pulse Power Rating Curve

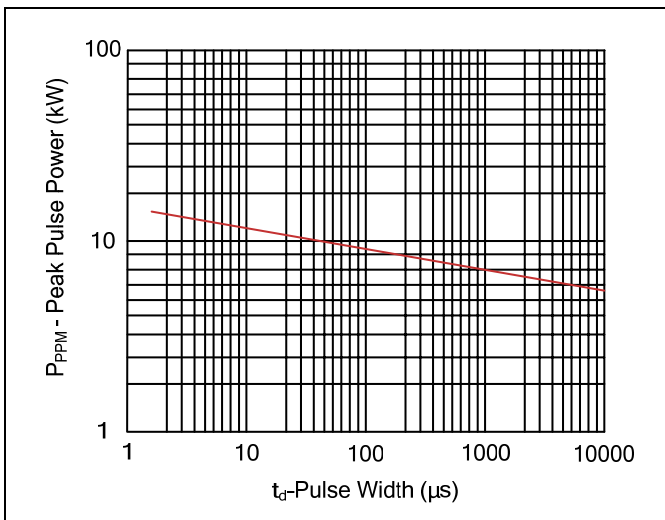


Figure 2. Pulse Derating Curve

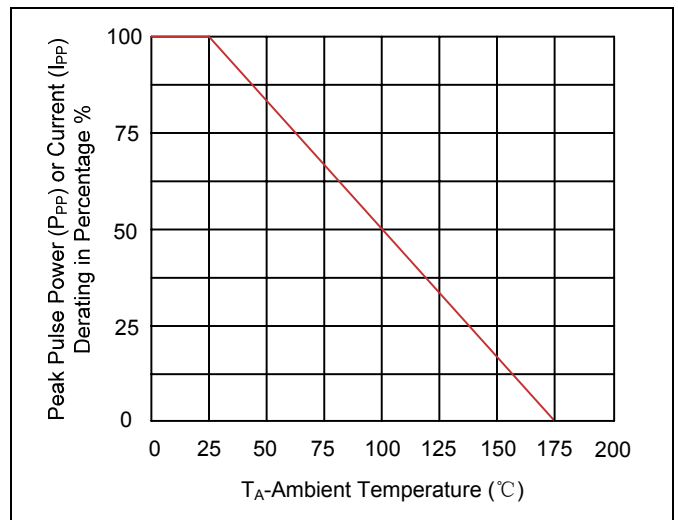


Figure 3. Pulse Waveform

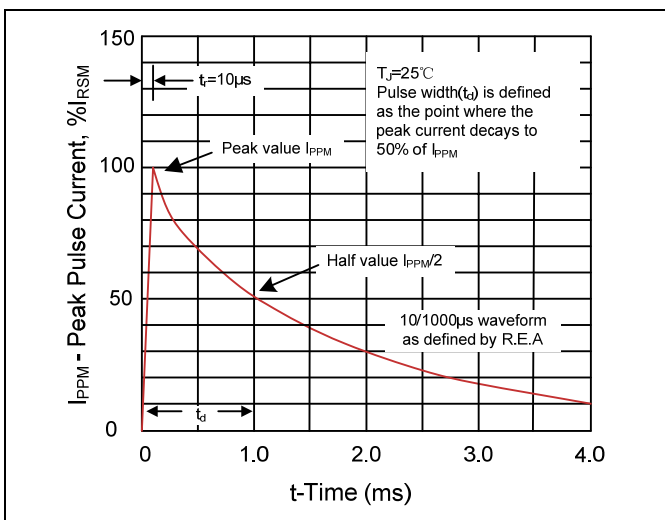
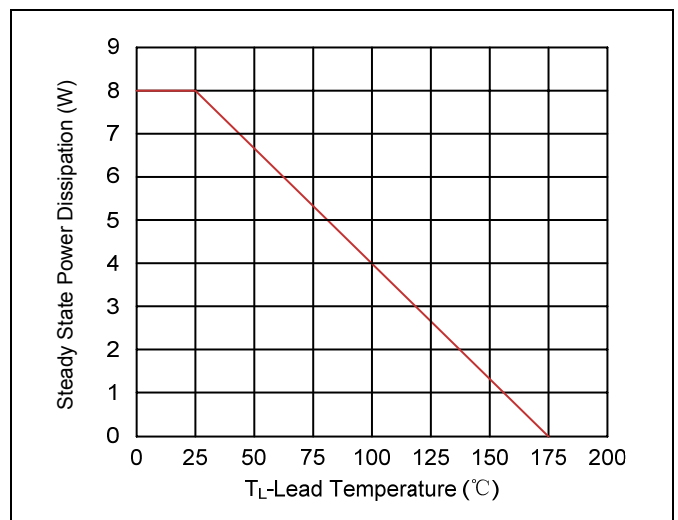
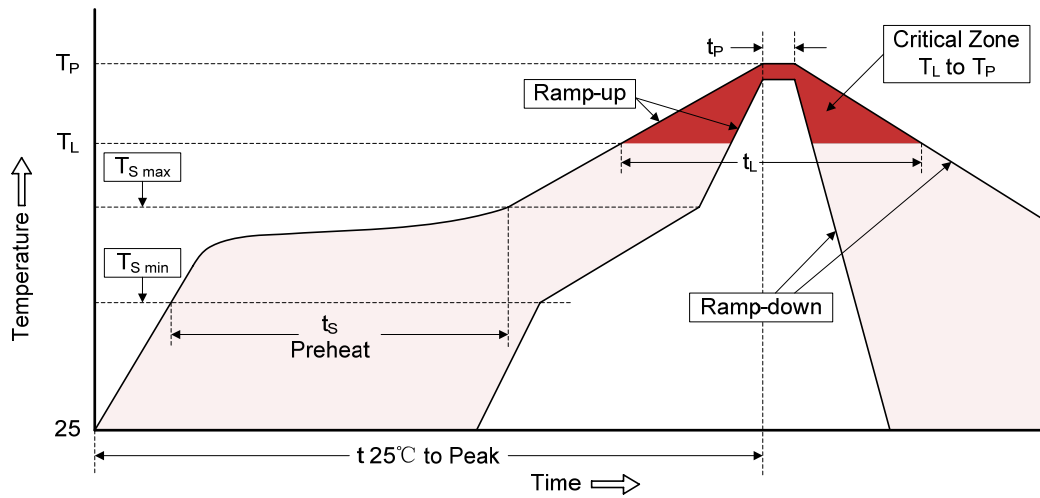


Figure 4. Steady State Power Dissipation Derating Curve



**Recommended Soldering Conditions**

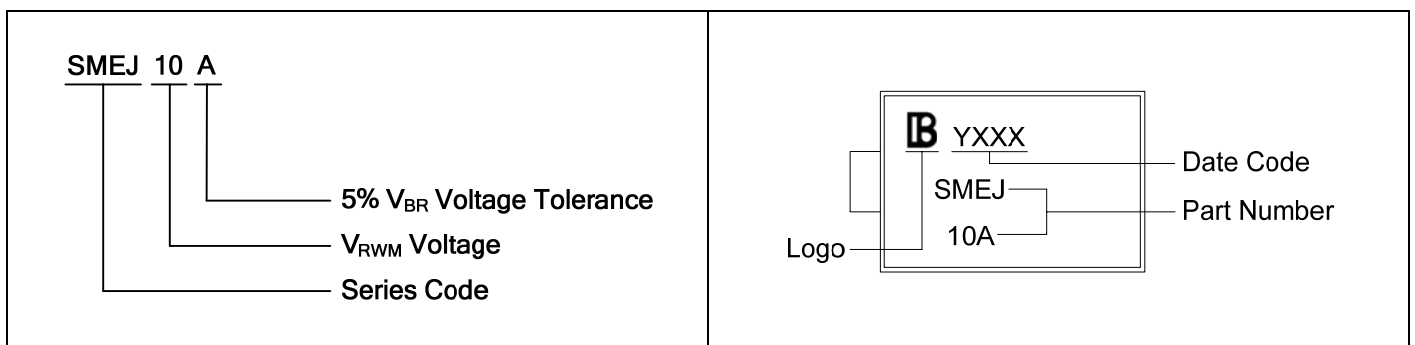
Reflow Soldering



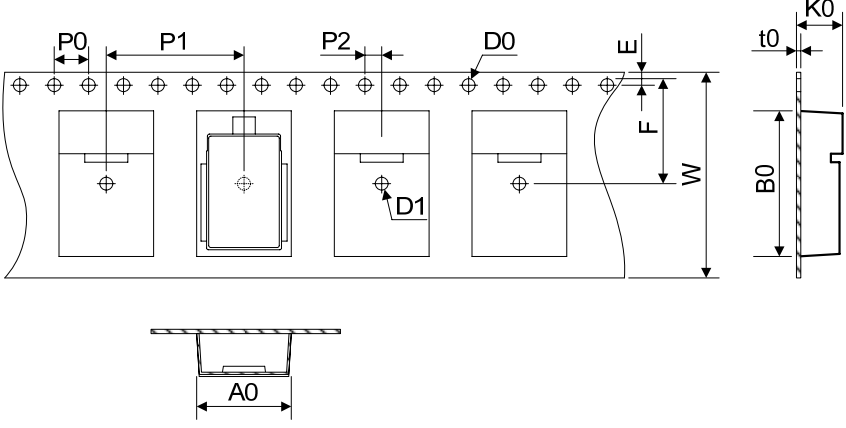
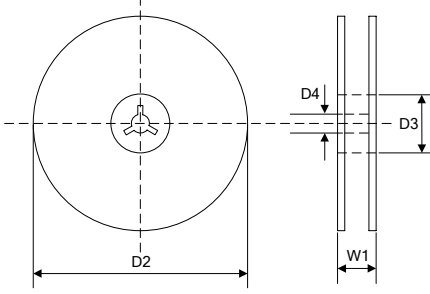
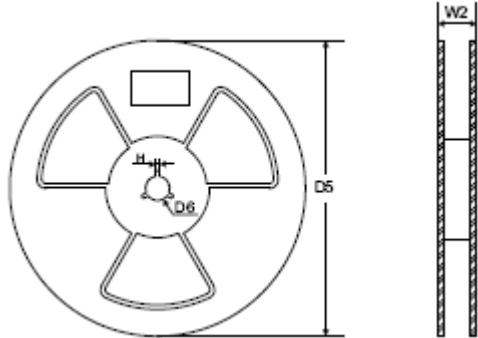
Recommended Conditions

Profile Feature	Pb-Free Assembly
Average ramp-up rate (TL to TP)	3°C/second max.
Preheat -Temperature Min (TS min) -Temperature Max (TS max) -Time (min to max) (ts)	150°C 200°C 60-180 seconds
TS max to TL -Ramp-up Rate	3°C/second max.
Time maintained above: -Temperature (TL) -Time (tL)	217°C 60-150 seconds
Peak Temperature (TP)	260°C
Time within 5°C of actual Peak Temperature (tp)	20-40 seconds
Ramp-down Rate	6°C/second max.
Time 25°C to Peak Temperature	8 minutes max.

**Part Number Code and Marking**



**Packaging**

Tape	Symbol      Dimension (mm)		
	W	24.00±0.20	
	P0	4.00±0.10	
	P1	16.00±0.10	
	P2	2.00±0.10	
	D0	Φ1.5±0.10	
	D1	Φ1.5±0.10	
	E	1.50±0.10	
	F	12.25±0.10	
	A0	11.0±0.10	
	B0	17.0±0.10	
	K0	6.05±0.15	
	t0	0.40±0.05	
	<p>7" Reel</p> 	D2	Φ178.0±2.0
		D3	Φ50.0Min.
D4		Φ13.0±0.5	
W1		29.0±2.0	
Quantity: 150PCS			
<p>13" Reel</p> 	D5	Φ330.0±2.0	
	D6	Φ13.5±0.5	
	H	2.5±1.0	
	W2	29.0±2.0	
	Quantity: 700PCS		