

Transient Voltage Suppressors (TVS) Data Sheet

Features

- For surface mounted applications in order to optimize board space
- Low profile package
- Built-in strain relief
- Low inductance
- Excellent clamping capability
- 600W peak pulse power capability at 10/1000μs waveform, repetitionrate (duty cycle):0.01%
- Fast response time
- Typical I_R less than 200μA
- High Temperature soldering: 260°C/10 seconds at terminals
- Plastic package has underwriters laboratory flammability 94V-0
- Meets MSL level 1, per J-STD-020
- Safety certification: UL: E465643

Mechanical Data

- Case: JEDEC DO-214AA.
- Terminal: Solder plated, solderable per MIL-STD-750, Method 2026
- Polarity: Color band denotes cathode
- Standard Packaging: 12mm tape (EIA STD RS-481)
- Weight: 0.10g

Applications

- I/O interface
- Power supply

Maximum Ratings and Characteristics

Ratings at 25°C ambient temperature unless otherwise specified.

Rating	Symbol	Value	Units
Peak pulse power dissipation at 10/1000μs waveform (Note1, Note2, Fig.1)	P_{PPM}	Minimum 600	Watts
Peak pulse current of at 10/1000μs waveform (Note 1, Fig.3)	I_{PPM}	50	Amps
Steady state power dissipation at $T_A=50^{\circ}C$ (Fig.5)	$P_{M(AV)}$	5.0	Watts
Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load, (JEDEC Method) (Note3, Fig.6)	I_{FSM}	100	Amps
Operating junction and Storage Temperature Range.	T_J, T_{STG}	-65 to +150	°C
Typical thermal resistance junction to lead	$R_{\theta JL}$	20	°C/W
Typical thermal resistance junction to ambient	$R_{\theta JA}$	100	°C/W

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

2. Mounted on 5.0mm×5.0mm (0.03mm thick) copper pads to each terminal.

3. 8.3ms single half sine-wave, or equivalent square wave, duty cycle=4 pulses per minutes maximum.

Dimensions (SMB/DO-214AA)

	Symbol	Millimeters		Inches	
		Min.	Max.	Min.	Max.
	L	4.06	4.57	0.160	0.180
	D	3.30	3.94	0.130	0.155
	D1	1.95	2.20	0.077	0.086
	T	5.21	5.59	0.205	0.220
	T1	0.76	1.52	0.030	0.060
	d	-	0.203	-	0.008
	H	2.15	2.65	0.085	0.104
	H1	2.13	2.47	0.084	0.097

Electrical Characteristics (T_A=25°C)

Part Number	Device Marking Code	Reverse Stand-Off Voltage	Breakdown Voltage @I _T	Test Current	Maximum Clamping Voltage @I _{PP} 10/1000μs		Maximum Clamping Voltage @I _{PP} 8/20μs		Reverse Leakage @V _{RWM}	Typical Junction Capacitance @1MHz 100mV
		V _{RWM} (V)	V _{BR} (V)	I _T (mA)	V _C (V)	I _{PP} (A)	V _C (V)	I _{PP} (A)	I _R (μA)	C _J (pF)
SMBJ3.3A	KD	3.3	4.1-6.0	1.0	7.3	50	11.3	200	200	5900

Part Number Code and Marking

<p>SMBJ 3.3 A</p> <ul style="list-style-type: none"> Series V_{RWM} Voltage Unidirectional 	<p>Marking Code</p>
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Ratings and Characteristic Curves ($T_A=25^\circ\text{C}$ unless otherwise noted)

Figure 1. Peak Pulse Power Rating Curve

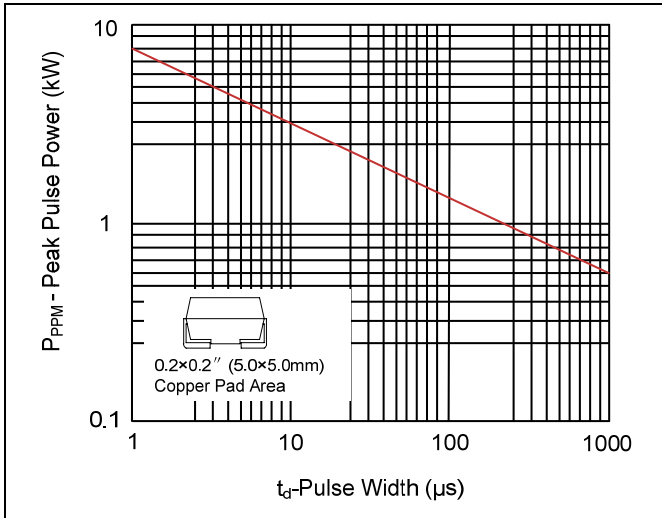


Figure 2. Pulse Derating Curve

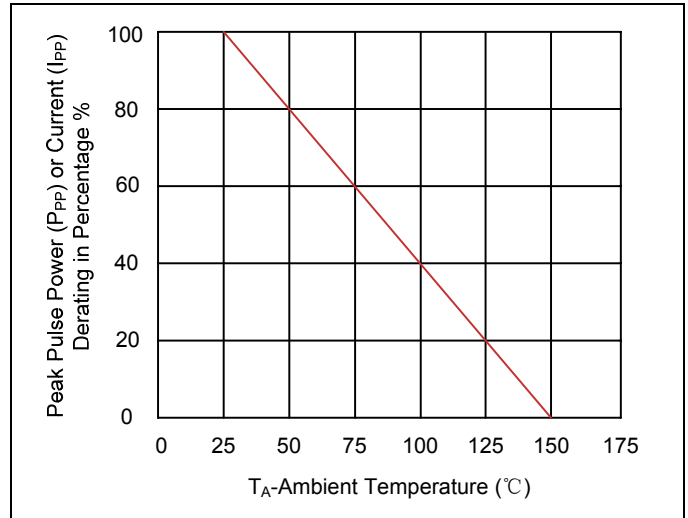


Figure 3. Pulse Waveform

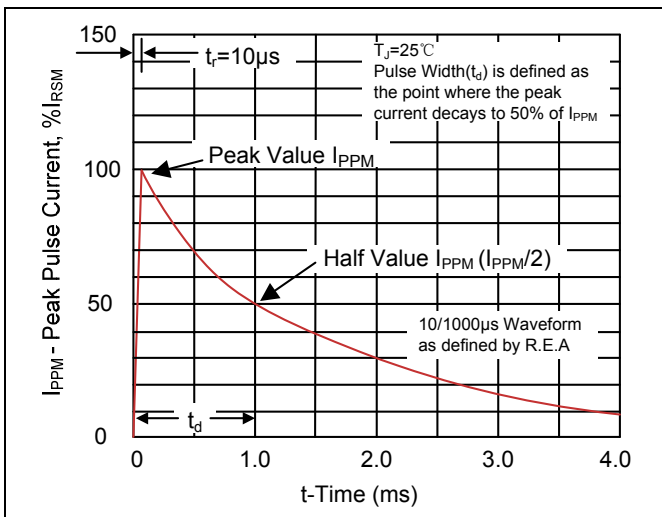


Figure 4. Typical Junction Capacitance

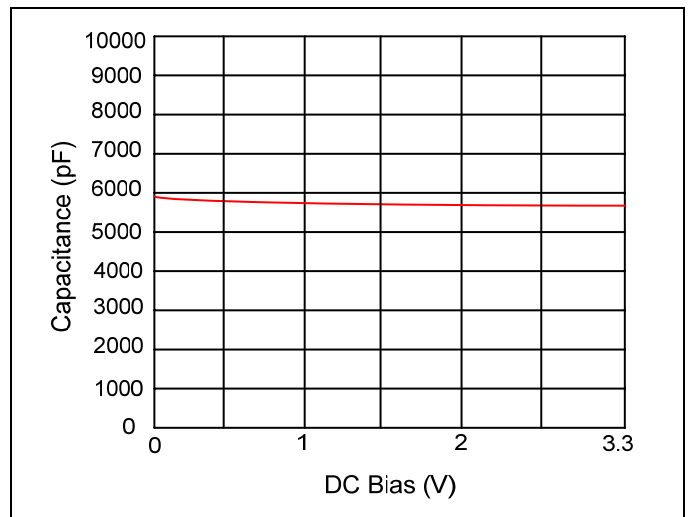


Figure 5. Steady State Power Dissipation Derating Curve

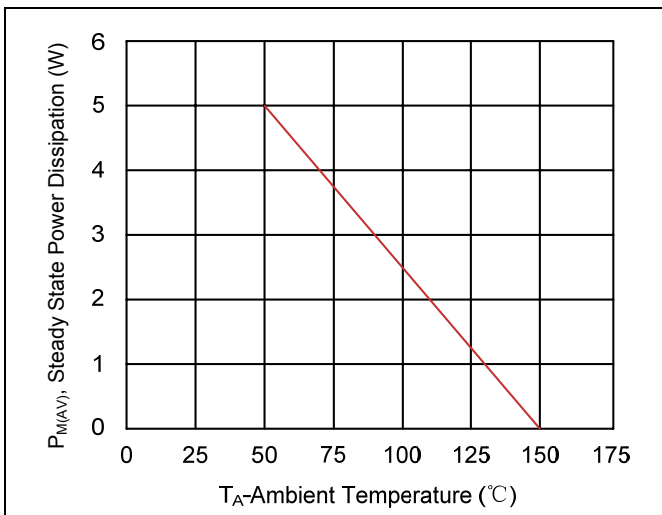
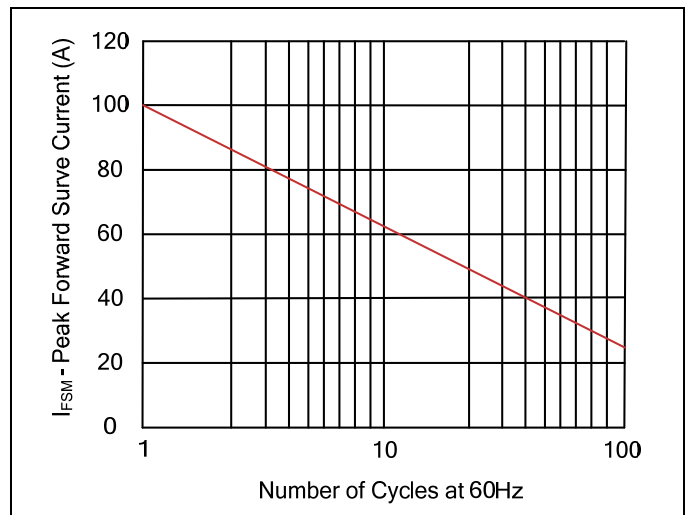
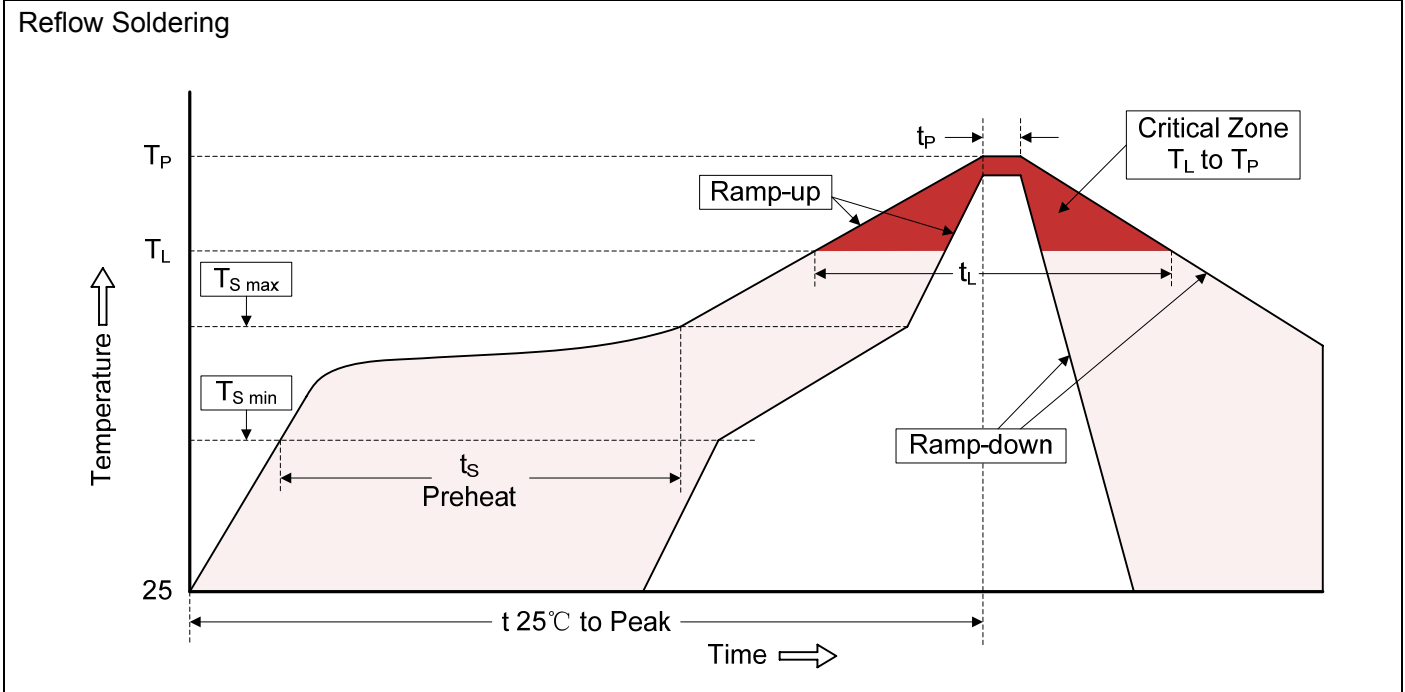


Figure 6. Maximum Non-Repetitive Forward Surge Current



Recommended Soldering Conditions



Recommended Conditions

Profile Feature	Pb-Free Assembly
Average ramp-up rate (T_L to T_P)	3°C/second max.
Preheat -Temperature Min ($T_{S\ min}$) -Temperature Max ($T_{S\ max}$) -Time (min to max) (t_s)	150°C 200°C 60-180 seconds
$T_{S\ max}$ to T_L -Ramp-up Rate	3°C/second max.
Time maintained above: -Temperature (T_L) -Time (t_L)	217°C 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	8 minutes max.

Packaging

Tape		Symbol	Dimension (mm)
		W	12.00±0.20
		P0	4.00±0.10
		P1	8.00±0.10
		P2	2.00±0.10
		D0	Φ1.55±0.10
		D1	Φ1.5±0.10
		E	1.75±0.10
		F	5.50±0.05
		A0	3.86±0.10
		B0	5.65±0.10
		K0	2.75±0.15
		T	0.25±0.05
		<p>7" Reel</p>	
D3	Φ50.0Min.		
D4	Φ13.0±0.5		
W1	16.0±2.0		
Quantity: 500PCS			
<p>13" Reel</p>		D5	Φ330.0±2.0
		D6	Φ13.5±0.5
		H	2.5±1.0
		W2	16.0±2.0
		Quantity: 3000PCS	