

Transient Voltage Suppressors (TVS) Data Sheet

Features

- For surface mounted applications in order to optimize board space
- Low profile package
- Built-in strain relief
- Glass passivated junction
- Low inductance
- Excellent clamping capability
- 600W peak pulse power capability at 10/1000μs waveform, repetition rate (duty cycle): 0.01%
- Fast response time
- Typical I_R less than 1μA above 10V
- 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: E244458

Mechanical Data

- Case: JEDEC DO-214AA. Molded plastic over glass passivated junction
- Terminal: Solder plated, solderable per MIL-STD-750, Method 2026
- Standard Packaging: 12mm tape (EIA STD RS-481)
- Weight: 0.10g

Applications

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

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}	See Table	Amps
Steady state power dissipation at $T_A=50^\circ\text{C}$ (Fig.5)	$P_{M(AV)}$	5.0	Watts
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 $T_A=25^\circ\text{C}$ per Fig.2.
 2. Mounted on 5.0mm×5.0mm (0.03mm thick) copper pads to each terminal.

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

Part Number	Type ①	Device Marking Code	Reverse Stand-Off Voltage	Breakdown Voltage @ I_T	Test Current	Maximum Clamping Voltage @ I_{PP}	Peak Pulse Current	Reverse Leakage @ V_{RWM}
			$V_{RWM}(V)$	$V_{BR}(V)$	$I_T(mA)$	$V_C(V)$	$I_{PP}(A)$	$I_R(\mu A)$
SMBJ5.0CA	IR400	AE	5.0	6.40~7.00	10	10.2	58.8	400

Notes: ① Specific code by request.

Part Number Code and Marking

<p>SMBJ 5.0 C A — IR400</p> <ul style="list-style-type: none"> — Internal Control Code — 5% V_{BR} Voltage Tolerance — Bidirectional — V_{RWM} Voltage — Series Code 	<p>Logo: B Date Code: YXXX Marking Code: AE</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

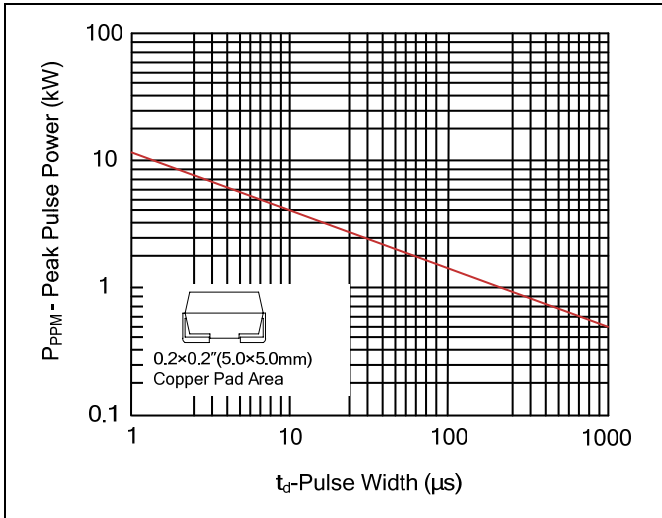


Figure 2. Pulse Derating Curve

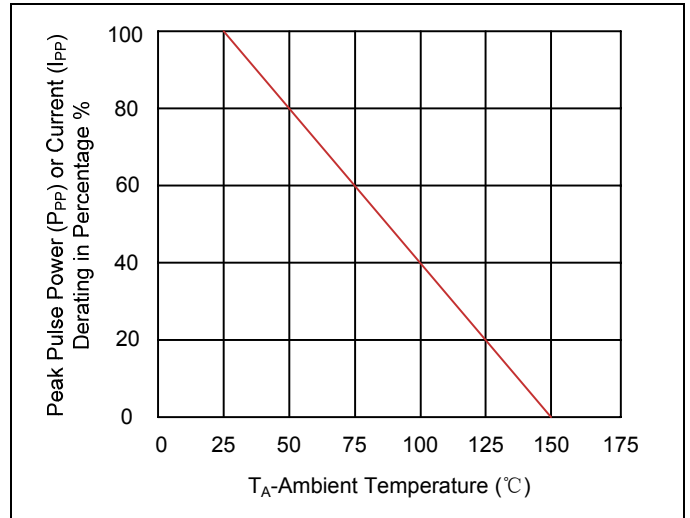


Figure 3. Pulse Waveform

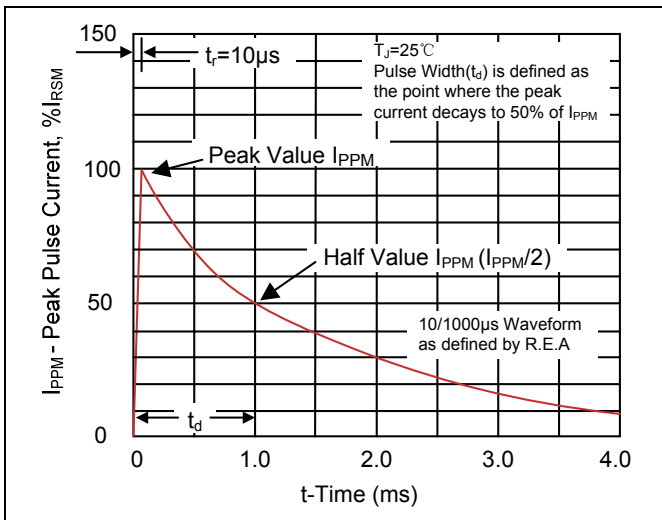


Figure 4. Typical Junction Capacitance

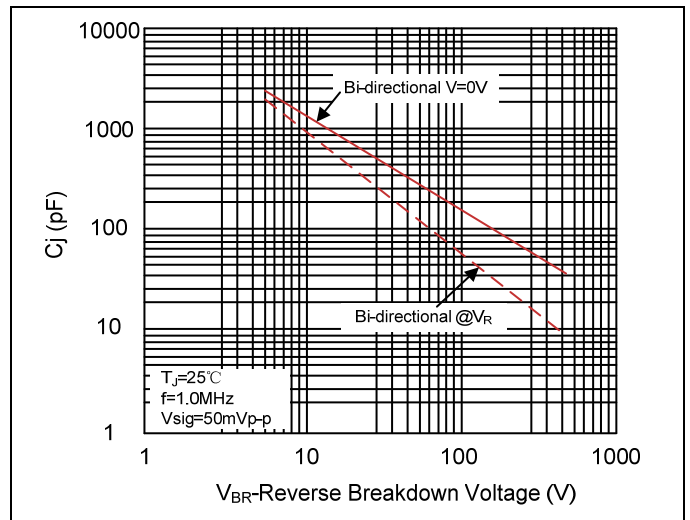
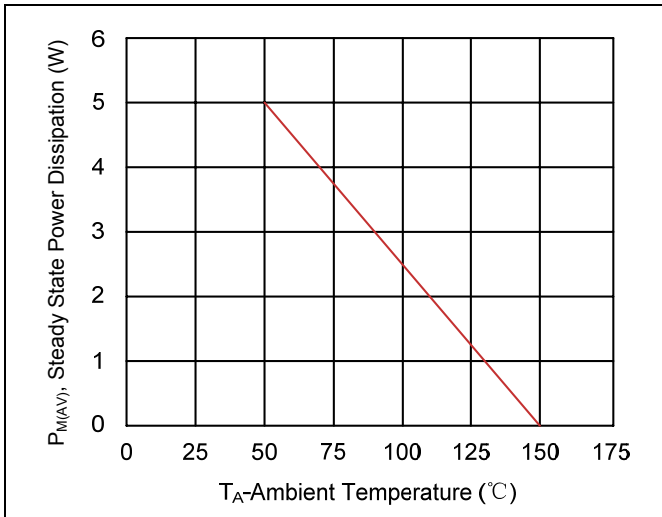
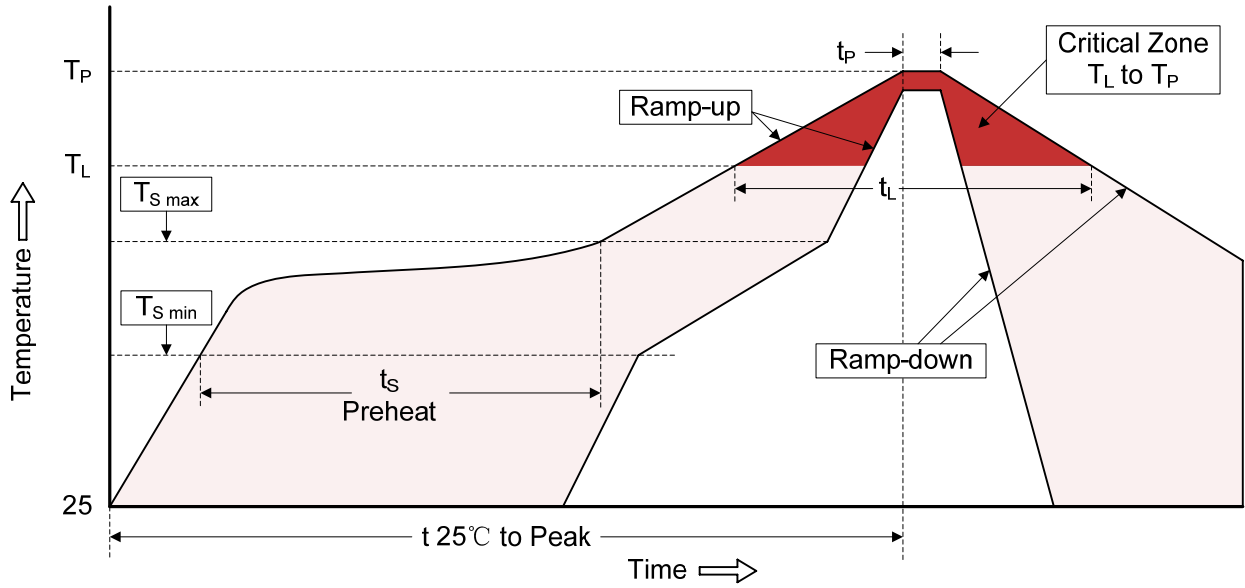


Figure 5. Steady State Power Dissipation Derating Curve



Recommended Soldering Conditions

Reflow Soldering



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±0.10		
		A0	3.86±0.15		
		B0	5.65±0.10		
		K0	2.75±0.15		
		T	0.25±0.05		
		7" Reel		D2	Φ178.0±2.0
				D3	Φ50.0Min.
D4	Φ13.0±0.5				
W1	16.0±2.0				
Quantity: 500PCS					
13" Reel		D5	Φ330.0±2.0		
		D6	Φ13.5±0.5		
		H	2.5±1.0		
		W2	16.0±2.0		
		Quantity: 3000PCS			

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