

SMBJ Series

Transient Voltage Suppressors

Features

- Plastic package has Underwriters Laboratory Flammability Classification 94V-0
- 600 W peak pulse power capability
- Excellent clamping capability

Mechanical Data

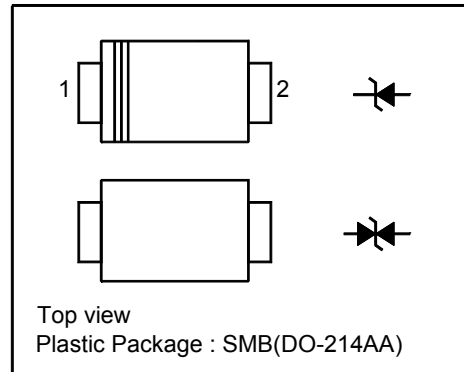
- **Case:** SMB (DO-214AA) molded plastic
- **Terminals:** Solder plated
- **Polarity:** For unidirectional types the color band denotes the cathode (except for bidirectional types)
- **Mounting Position:** Any

Description

- Devices for bidirectional applications
- Electrical characteristics apply in both directions

PINNING

PIN	DESCRIPTION
1	Cathode
2	Anode



Absolute Maximum Ratings ($T_a = 25^\circ\text{C}$ unless otherwise specified)

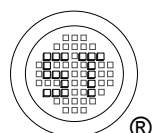
Parameter	Symbol	Value	Unit
Peak Pulse Power Dissipation with a 10/1000 μs Waveform ^{1) 2)}	P_{PPM}	Min. 600	W
Peak Pulse Current with a 10/1000 μs Waveform ¹⁾	I_{PPM}	See Table 1	A
Peak Forward Surge Current, Unidirectional only ³⁾	I_{FSM}	100	A
Power Dissipation on Infinite Heat Sink at $T_L = 50^\circ\text{C}$	P_D	5	W
ESD per IEC 61000-4-2 Air Contact	V_{ESD}	± 30 ± 30	KV
Maximum Instantaneous Forward Voltage at 50 A, Unidirectional only ⁴⁾	V_F	3.5 / 5	V
Typical Thermal Resistance from Junction to Ambient ²⁾	$R_{\theta JA}$	100	$^\circ\text{C/W}$
Operating Junction and Storage Temperature Range	T_J, T_{stg}	- 65 to + 150	$^\circ\text{C}$

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

²⁾ Mounted on 5 mm² (0.13mm thick) land areas.

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

⁴⁾ V_F :3.5V max for types SMBJ5.0~SMBJ90, V_F :5V Max for types SMBJ100~SMBJ440.

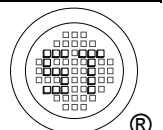


SMBJ Series

Electrical Characteristics ($T_a = 25^\circ\text{C}$ unless otherwise specified)

Table 1

Uni-directional / Bi-directional Type ³⁾	Stand-off Voltage V_{WM} (V)	Breakdown Voltage ¹⁾		Test Current I_T (mA)	Maximum Clamping Voltage V_C (V) at I_{PPM}	Maximum Peak Pulse Current I_{PPM} (A)	Maximum Reverse Leakage ²⁾ I_D (μA) at V_{WM}
		V_{BR} (V) Min. at I_T	V_{BR} (V) Max. at I_T				
SMBJ5.0A / CA	5	6.4	7	10	9.2	68	800
SMBJ6.0A / CA	6	6.67	7.37	10	10.3	61	800
SMBJ6.5A / CA	6.5	7.22	7.98	10	11.2	56	500
SMBJ7.0A / CA	7	7.78	8.6	10	12	52	200
SMBJ7.5A / CA	7.5	8.33	9.21	1	12.9	48	100
SMBJ8.0A / CA	8	8.89	9.83	1	13.6	46	50
SMBJ8.5A / CA	8.5	9.44	10.4	1	14.4	43	20
SMBJ9.0A / CA	9	10	11.1	1	15.4	40	10
SMBJ10A / CA	10	11.1	12.3	1	17	37	5
SMBJ11A / CA	11	12.2	13.5	1	18.2	34	5
SMBJ12A / CA	12	13.3	14.7	1	19.9	31	5
SMBJ13A / CA	13	14.4	15.9	1	21.5	29	5
SMBJ14A / CA	14	15.6	17.2	1	23.2	27	5
SMBJ15A / CA	15	16.7	18.5	1	24.4	25.1	5
SMBJ16A / CA	16	17.8	19.7	1	26	24.2	5
SMBJ17A / CA	17	18.9	20.9	1	27.6	22.8	5
SMBJ18A / CA	18	20	22.1	1	29.2	21.5	5
SMBJ20A / CA	20	22.2	24.5	1	32.4	19.4	5
SMBJ22A / CA	22	24.4	26.9	1	35.5	17.7	5
SMBJ24A / CA	24	26.7	29.5	1	38.9	16	5
SMBJ26A / CA	26	28.9	31.9	1	42.1	14.9	5
SMBJ28A / CA	28	31.1	34.4	1	45.4	13.8	5
SMBJ30A / CA	30	33.3	36.8	1	48.4	13	5
SMBJ33A / CA	33	36.7	40.6	1	53.3	11.8	5
SMBJ36A / CA	36	40	44.2	1	58.1	10.8	5
SMBJ40A / CA	40	44.4	49.1	1	64.5	9.7	5
SMBJ43A / CA	43	47.8	52.8	1	69.4	9	5
SMBJ45A / CA	45	50	55.3	1	72.7	8.6	5
SMBJ48A / CA	48	53.3	58.9	1	77.4	8.1	5
SMBJ51A / CA	51	56.7	62.7	1	82.4	7.6	5
SMBJ54A / CA	54	60	66.3	1	87.1	7.2	5
SMBJ58A / CA	58	64.4	71.2	1	93.6	6.7	5
SMBJ60A / CA	60	66.7	73.7	1	96.8	6.5	5
SMBJ64A / CA	64	71.1	78.6	1	103	6.1	5
SMBJ70A / CA	70	77.8	86	1	113	5.5	5
SMBJ75A / CA	75	83.3	92.1	1	121	5.2	5
SMBJ78A / CA	78	86.7	95.8	1	126	5	5
SMBJ85A / CA	85	94.4	104	1	137	4.6	5
SMBJ90A / CA	90	100	111	1	146	4.3	5
SMBJ100A / CA	100	111	123	1	162	3.8	5



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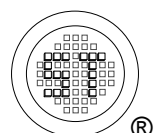
Table 1

Uni-directional / Bi-directional Type ³⁾	Stand-off Voltage V_{WM} (V)	Breakdown Voltage ¹⁾		Test Current I_T (mA)	Maximum Clamping Voltage V_C (V) at I_{PPM}	Maximum Peak Pulse Current I_{PPM} (A)	Maximum Reverse Leakage ²⁾ I_D (μA) at V_{WM}
		V_{BR} (V) Min. at I_T	V_{BR} (V) Max. at I_T				
SMBJ110A / CA	110	122	135	1	177	3.5	5
SMBJ120A / CA	120	133	147	1	193	3.2	5
SMBJ130A / CA	130	144	159	1	209	3	5
SMBJ150A / CA	150	167	185	1	243	2.5	5
SMBJ160A / CA	160	178	197	1	259	2.4	5
SMBJ170A / CA	170	189	209	1	275	2.2	5
SMBJ180A / CA	180	201	222	1	292	2.1	5
SMBJ188A / CA	188	209	231	1	328	2	1
SMBJ200A / CA	200	222	246	1	323	1.9	1
SMBJ220A / CA	220	245	270	1	355	1.7	1
SMBJ250A / CA	250	278	307	1	403	1.5	1
SMBJ300A / CA	300	334	368	1	484	1.2	1
SMBJ350A / CA	350	389	430	1	565	1.1	1
SMBJ400A / CA	400	445	491	1	645	0.9	1
SMBJ440A / CA	440	489	540	1	710	0.8	1

¹⁾ V_{BR} measured after I_T applied for 300 μs square wave pulse or equivalent.

²⁾ For bidirectional types having V_{RWM} of 10 V and less, the I_D limit is doubled.

³⁾ For bidirectional use CA suffix types, the electrical characteristics apply in both directions.



Electrical Characteristics Curves

Fig.1 Peak Pulse Power Rating Curve

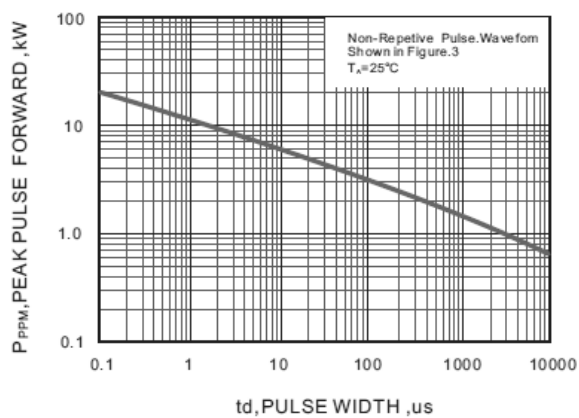


Fig.2 Pulse Power or Current Derating Curve

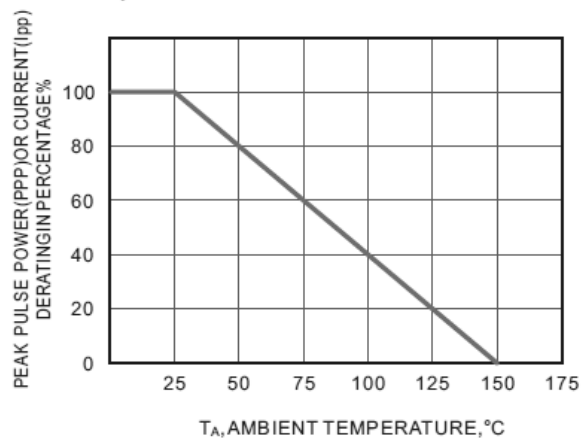


Fig.3 Pulse Waveform

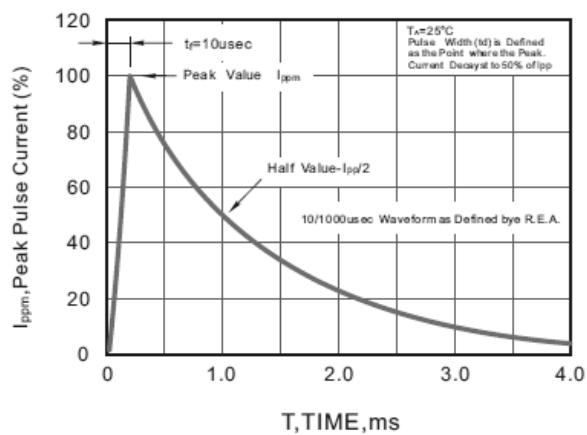
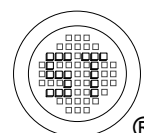
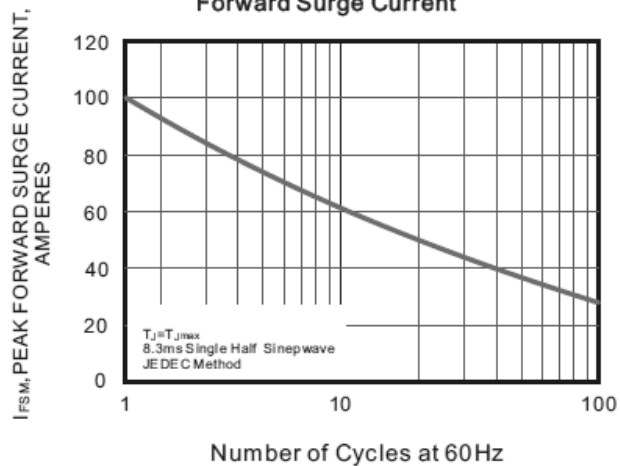


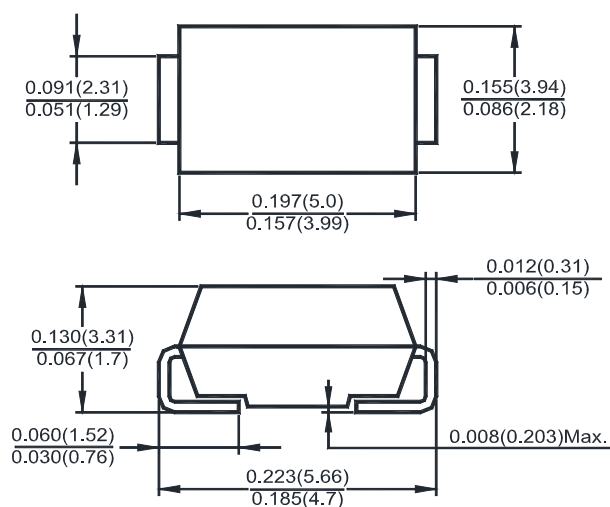
Fig.4 Maximum Non-Repetitive Peak Forward Surge Current



SMBJ Series

Package Outline Dimensions in inches (millimeters)

SMB(DO-214AA)



Marking information

" III " = Cathode line

" SMBJ***A/CA " = Part No.

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