Prisemi®

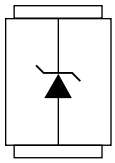
1.0SMBJ5.0A/CA Thru 1.0SMBJ200A/CA

Surface Mount-1000W Transient Voltage Suppression Diodes

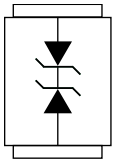
Description

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

Unidirectional



Bi-directional



Feature

- 1000W Peak Pulse Power capability with a 10/1000us wavefore
- For surface mounted application in order to optimize board space
- Low profile space
- Low inductance
- Excellent clamping capability
- Very fast response time
- Typical IR less than 1uA above 10V
- Meet MSL level 1, per J-STD-020
- Component in accordance to ROHS 2011/65/EU and WEEE 2002/96/EU

Applications

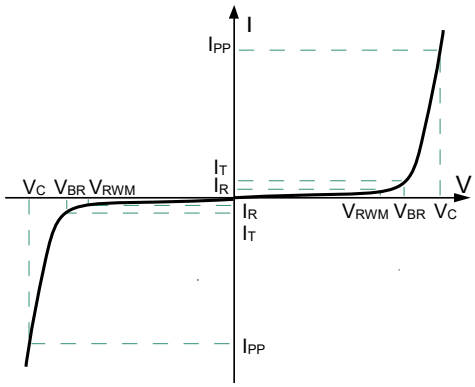
- For bi-directional devices, use suffix CA (e.g.1.0SMBJ10CA).Electrical characteristics apply in both directions.

Mechanical Characteristics:

- JEDEC DO-214AA (SMB) molding compound meets UL 94 V-0 flammability rating
- Solder plated, solderable per MIL-STD-750 method 2026
- For uni-directional types the band by laser denotes the cathode end, no marking on bi-directional types

Electronics Parameter

Symbol	Parameter
V_{RWM}	Peak Reverse Working Voltage
I_R	Reverse Leakage Current @ V_{RWM}
V_{BR}	Breakdown Voltage @ I_T
I_T	Test Current
I_{PP}	Maximum Reverse Peak Pulse Current
V_C	Clamping Voltage @ I_{PP}
P_{PP}	Peak Pulse Power
C_J	Junction Capacitance



Absolute maximum rating@25℃

Rating	Symbol	Value	Units
Peak pulse power(tp=10/1000us)	P_{PPM}	1000	W
Peak pulse current(tp=10/1000us)	I_{PPM}	See next table	A
Typical thermal resistance, junction to ambient(1)	$R_{\theta JA}$	100	℃/W
Typical thermal resistance, junction to lead(1)	$R_{\theta JL}$	20	℃/W
Operation junction and storage temperature range	T_J	-50 to +150	℃

Note1.: Mounted on PCB with 0.2x0.2" (5.0x5.0mm) copper pads to each terminal.

Electrical characteristics per line@25℃(unless otherwise specified)

Part Number		Breakdown Voltage at IT $V_{(BR)}$(V)		Test Current	Stand-off Voltage	Maximum reverse leakage at V_{WM}(3)	Maximum peak pulse surge current (2)	Maximum clamping voltage at I_{PPM}
UNI	BI	Min	Max	I_T(mA)	V_{WM}(V)	ID(uA)	I_{PPM}(A)	V_C(V)
1.0SMBJ5.0A(4)	1.0SMBJ5.0CA	6.40	7.00	10	5.0	200	108.7	9.2
1.0SMBJ6.0A	1.0SMBJ6.0CA	6.67	7.37	10	6.0	200	97.1	10.3
1.0SMBJ6.5A	1.0SMBJ6.5CA	7.22	7.98	10	6.5	100	89.3	11.2
1.0SMBJ7.0A	1.0SMBJ7.0CA	7.78	8.60	10	7.0	80	83.4	12.0
1.0SMBJ7.5A	1.0SMBJ7.5CA	8.33	9.21	1	7.5	50	77.6	12.9
1.0SMBJ8.0A	1.0SMBJ8.0CA	8.89	9.83	1	8.0	20	73.6	13.6
1.0SMBJ8.5A	1.0SMBJ8.5CA	9.44	10.4	1	8.5	10	69.5	14.4
1.0SMBJ9.0A	1.0SMBJ9.0CA	10.0	11.1	1	9	5	65.0	15.4
1.0SMBJ10A	1.0SMBJ10CA	11.1	12.3	1	10	2	58.9	17.0
1.0SMBJ11A	1.0SMBJ11CA	12.2	13.5	1	11	1	55.0	18.2
1.0SMBJ12A	1.0SMBJ12CA	13.3	14.7	1	12	1	50.3	19.9
1.0SMBJ13A	1.0SMBJ13CA	14.4	15.9	1	13	1	46.6	21.5
1.0SMBJ14A	1.0SMBJ14CA	15.6	17.2	1	14	1	43.1	23.2

Part Number		Breakdown Voltage at IT $V_{(BR)}$(V)		Test Current	Stand-off Voltage	Maximum reverse leakage at V_{WM} (3)	Maximum peak pulse surge current (2)	Maximum clamping voltage at I_{PPM}
UNI	BI	Min	Max	I_T(mA)	V_{WM}(V)	ID(uA)	I_{PPM}(A)	V_C(V)
1.0SMBJ15A	1.0SMBJ15CA	16.7	18.5	1	15	1	41.0	24.4
1.0SMBJ16A	1.0SMBJ16CA	17.8	19.7	1	16	1	38.5	26.0
1.0SMBJ17A	1.0SMBJ17CA	18.9	20.9	1	17	1	36.3	27.6
1.0SMBJ18A	1.0SMBJ18CA	20.0	22.1	1	18	1	34.3	29.2
1.0SMBJ20A	1.0SMBJ20CA	22.2	24.5	1	20	1	30.9	32.4
1.0SMBJ22A	1.0SMBJ22CA	24.4	26.9	1	22	1	28.2	35.5
1.0SMBJ24A	1.0SMBJ24CA	26.7	29.5	1	24	1	25.7	38.9
1.0SMBJ26A	1.0SMBJ26CA	28.9	31.9	1	26	1	23.8	42.1
1.0SMBJ28A	1.0SMBJ28CA	31.1	34.4	1	28	1	22.1	45.4
1.0SMBJ30A	1.0SMBJ30CA	33.3	36.8	1	30	1	20.7	48.4
1.0SMBJ33A	1.0SMBJ33CA	36.7	40.6	1	33	1	18.8	53.3
1.0SMBJ36A	1.0SMBJ36CA	40.0	44.2	1	36	1	17.3	58.1
1.0SMBJ40A	1.0SMBJ40CA	44.4	49.1	1	40	1	15.5	64.5
1.0SMBJ43A	1.0SMBJ43CA	47.8	52.8	1	43	1	14.4	69.4
1.0SMBJ45A	1.0SMBJ45CA	50.0	55.3	1	45	1	13.8	72.7
1.0SMBJ48A	1.0SMBJ48CA	53.3	58.9	1	48	1	13.0	77.4
1.0SMBJ51A	1.0SMBJ51CA	56.7	62.7	1	51	1	12.2	82.4
1.0SMBJ54A	1.0SMBJ54CA	60.0	66.3	1	54	1	11.5	87.1
1.0SMBJ58A	1.0SMBJ58CA	64.4	71.2	1	58	1	10.7	93.6
1.0SMBJ60A	1.0SMBJ60CA	66.7	73.7	1	60	1	10.4	96.8
1.0SMBJ64A	1.0SMBJ64CA	71.1	78.6	1	64	1	9.7	103
1.0SMBJ70A	1.0SMBJ70CA	77.8	86.0	1	70	1	8.9	113
1.0SMBJ75A	1.0SMBJ75CA	83.3	92.1	1	75	1	8.3	121

Part Number		Breakdown Voltage at IT $V_{(BR)}$(V)		Test Current	Stand-off Voltage	Maximum reverse leakage at V_{WM} (3)	Maximum peak pulse surge current (2)	Maximum clamping voltage at I_{PPM}
UNI	BI	Min	Max	I_T(mA)	V_{WM}(V)	ID(uA)	I_{PPM}(A)	V_C(V)
1.0SMBJ85A	1.0SMBJ85CA	94.4	104.0	1	85	1	7.3	137
1.0SMBJ90A	1.0SMBJ90CA	100	111	1	90	1	6.9	146
1.0SMBJ100A	1.0SMBJ100CA	111	123	1	100	1	6.2	162
1.0SMBJ110A	1.0SMBJ110CA	122	135	1	110	1	5.7	177
1.0SMBJ120A	1.0SMBJ120CA	133	147	1	120	1	5.2	193
1.0SMBJ130A	1.0SMBJ130CA	144	159	1	130	1	4.8	209
1.0SMBJ150A	1.0SMBJ150CA	167	185	1	150	1	4.2	243
1.0SMBJ160A	1.0SMBJ160CA	178	197	1	160	1	3.9	259
1.0SMBJ170A	1.0SMBJ170CA	189	209	1	170	1	3.7	275
1.0SMBJ180A	1.0SMBJ180CA	201	222	1	180	1	3.5	292
1.0SMBJ190A	1.0SMBJ190CA	211	234	1	190	1	3.3	307
1.0SMBJ200A	1.0SMBJ200CA	224	247	1	200	1	3.1	324

Note 2: Surge current waveform per Fig.3 and derate per Fig.2.

Note 3: For bi-directional types with V_{WM} of 10V and less, the I_D limit is doubled.

Note 4: V_F=3.5V at I_F=50A (uni-directional only)

Typical Characteristics

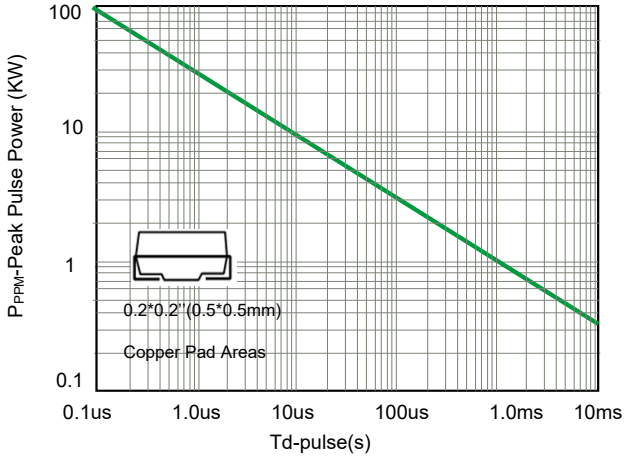


Fig 1. Peak Pulse Power Rating Curve

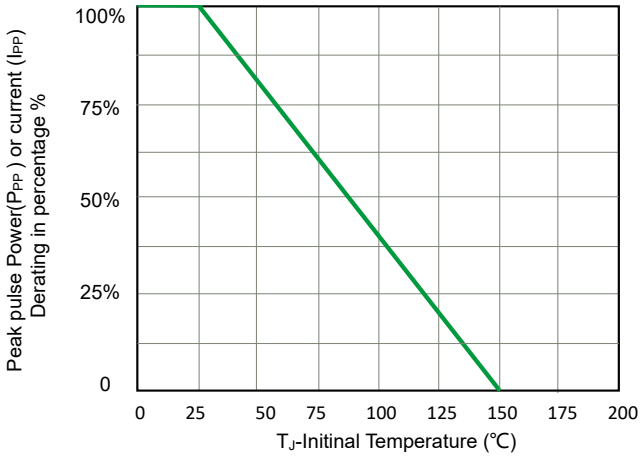


Fig 2. Pulse Derating Curve

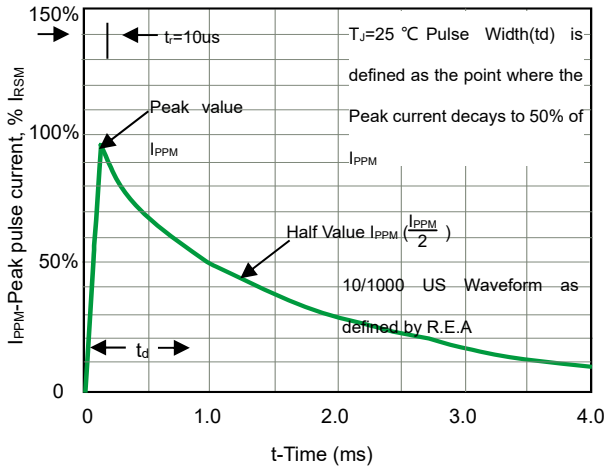


Fig 3. Pulse Waveform

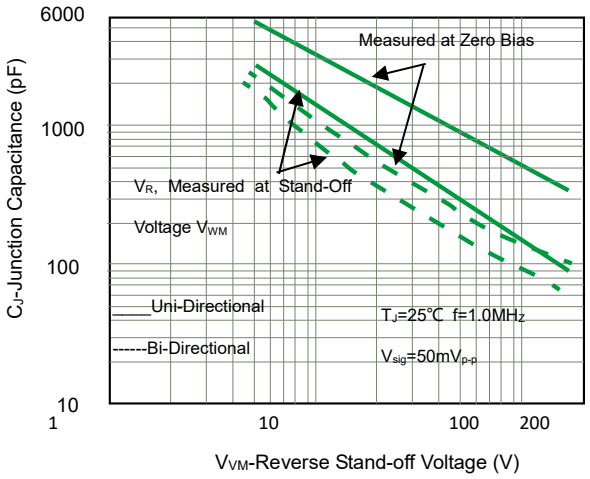


Fig 4. Typical Junction Capacitance

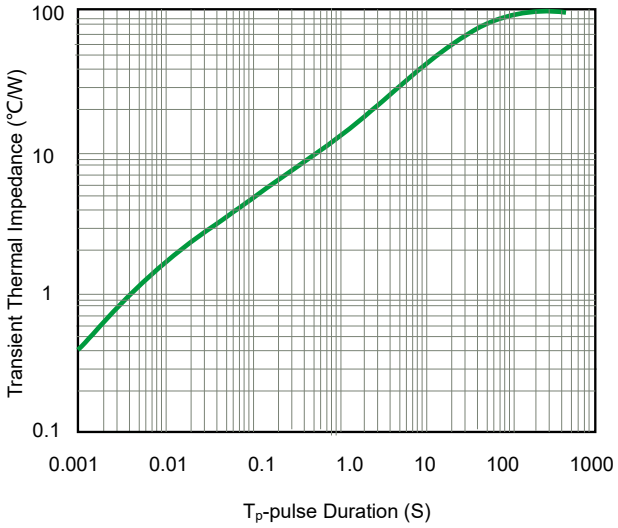
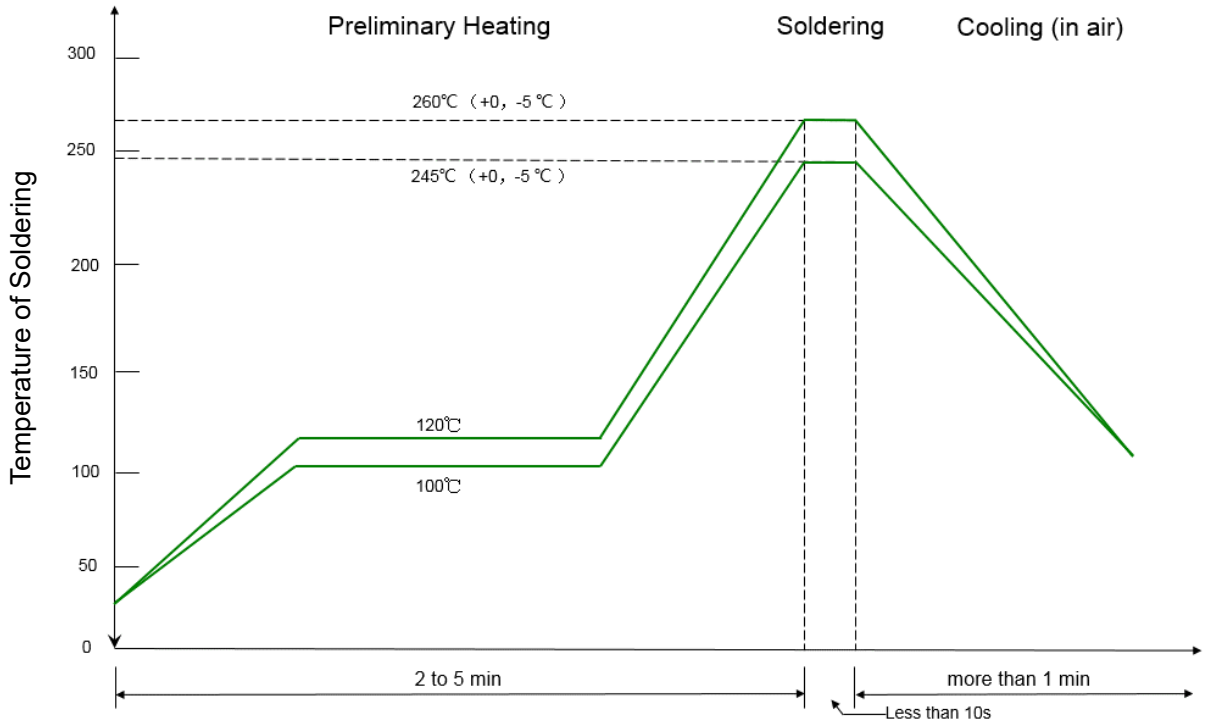


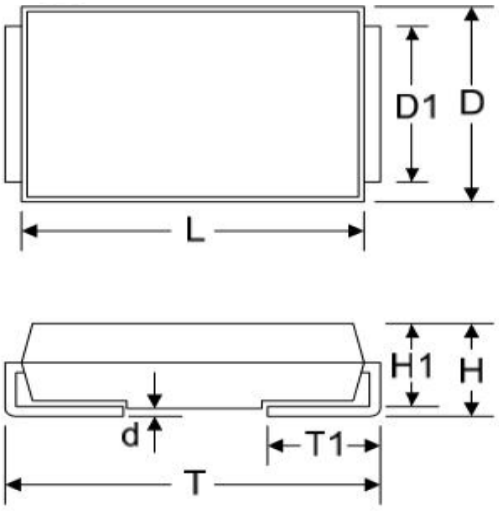
Fig 5. Steady State Power Dissipation Derating Curve

Solder Reflow Recommendation

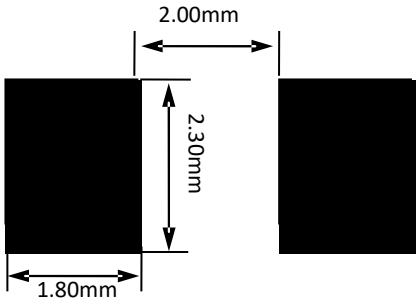


Remark: Pb free for 260℃; Pb for 245℃.

Product dimension(SMB)



Dimension	Millimeters	
	MIN	MAX
D	3.40	3.94
D1	1.90	2.10
L	4.22	4.70
T	5.21	5.59
T1	0.90	1.42
d	0.00	0.23
H	1.95	2.60
H1	2.00	2.34



Ordering information

Device	Package	MPQ
1.0SMBJ5.0A-1.0SMBJ200CA	SMB (Pb-Free)	500 / Tape & Reel

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