



# SMBJ SERIES

## Surface Mount Transient Voltage Suppressor



Voltage Range  
5.0 to 170 Volts  
600 Watts Peak Power

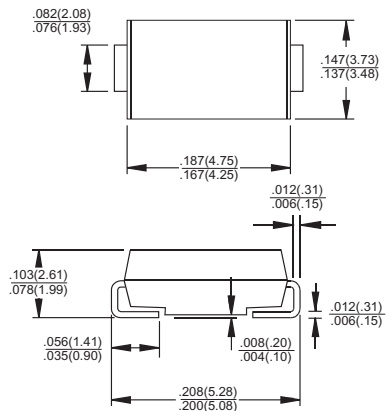
### Features

- ✧ For surface mounted application
- ✧ Low profile package
- ✧ Built-in strain relief
- ✧ Glass passivated junction
- ✧ Excellent clamping capability
- ✧ Fast response time: Typically less than 1.0ps from 0 volt to BV min.
- ✧ Typical  $I_R$  less than 1 $\mu$ A above 10V
- ✧ High temperature soldering guaranteed:  
260°C / 10 seconds at terminals
- ✧ Plastic material used carries Underwriters Laboratory  
Flammability Classification 94V-0
- ✧ 600 watts peak pulse power capability with a 10 x 1000 us  
waveform by 0.01% duty cycle

### Mechanical Data

- ✧ Case: Molded plastic
- ✧ Terminals: Solder plated
- ✧ Polarity: Indicated by cathode band
- ✧ Standard packaging: 12mm tape (EIA STD RS-481)
- ✧ Weight: 0.093gram

### SMB/DO-214AA



Dimensions in inches and (millimeters)

### Maximum Ratings and Electrical Characteristics

Rating at 25°C ambient temperature unless otherwise specified.

Type Number	Symbol	Value	Units
Peak Power Dissipation at $T_A=25^\circ\text{C}$ , $T_p=1\text{ms}$ (Note 1)	$P_{PK}$	Minimum 600	Watts
Peak Forward Surge Current, 8.3 ms Single Half Sine-wave Superimposed on Rated Load (JEDEC method) (Note 2, 3) - Unidirectional Only	$I_{FSM}$	100	Amps
Maximum Instantaneous Forward Voltage at 50.0A for Unidirectional Only (Note 4)	$V_F$	3.5 / 5.0	Volts
Operating and Storage Temperature Range	$T_J, T_{STG}$	-65 to + 150	°C

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<sup>2</sup> (.013 mm Thick) Copper Pads to Each Terminal.

3. 8.3ms Single Half Sine-wave or Equivalent Square Wave, Duty Cycle=4 pulses Per Minute Maximum.

4.  $V_F=3.5\text{V}$  on SMBJ5.0 thru SMBJ90 Devices and  $V_F=5.0\text{V}$  on SMBJ100 thru SMBJ170 Devices.

Devices for Bipolar Applications

1. For Bidirectional Use C or CA Suffix for Types SMBJ5.0 through Types SMBJ170.

2. Electrical Characteristics Apply in Both Directions.

## RATINGS AND CHARACTERISTIC CURVES (SMBJ SERIES)

FIG.1- PEAK PULSE POWER RATING CURVE

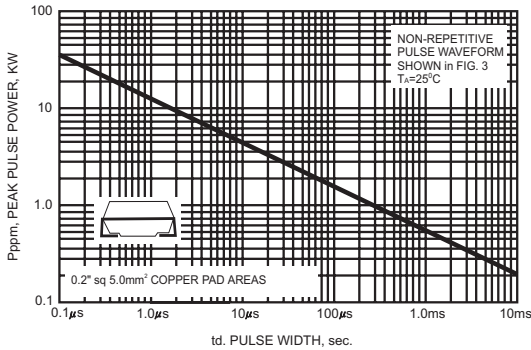


FIG.2- PULSE DERATING CURVE

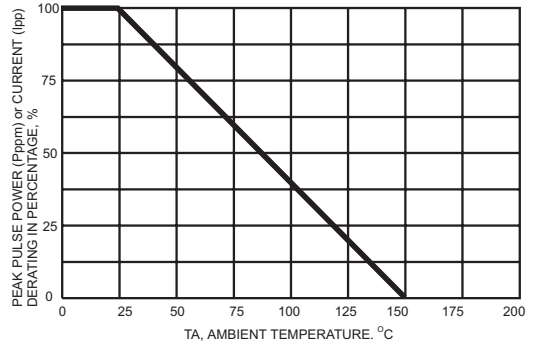


FIG.3- PULSE WAVEFORM

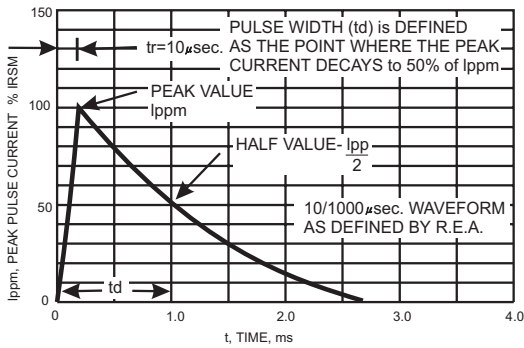


FIG.4- MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT

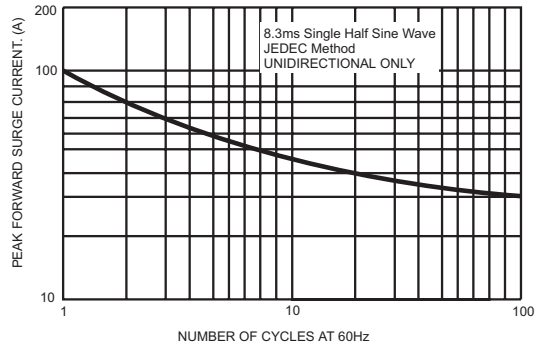
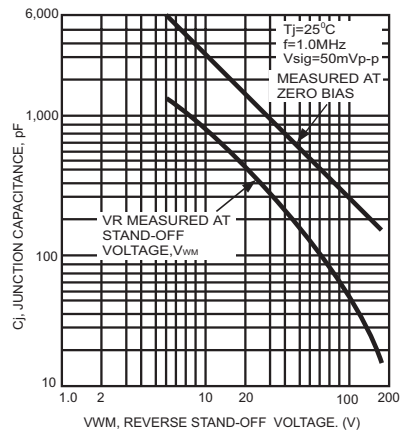


FIG.5- TYPICAL JUNCTION CAPACITANCE



ELECTRICAL CHARACTERISTICS (TA=25°C unless otherwise noted)

Device	Device Marking code	Breakdown Voltage VBR		Test Current @IT(mA)	Stand-Off Voltage VWM (Volts)	Maximum Reverse Leakage at Vwm ID (uA)	Maximum Peak Surge Current IPPM (Note 2)(Amps)	Maximum Clamping Voltage at IPPM VC(Volts)
		(Volts) (Note 1)						
		Min	Max					
SMBJ5.0	KD	6.40	7.50	10	5.0	800.0	65	9.6
SMBJ5.0A	KE	6.40	7.00	10	5.0	800.0	68	9.2
SMBJ6.0	KF	6.67	8.15	10	6.0	800.0	55	11.4
SMBJ6.0A	KG	6.67	7.37	10	6.0	800.0	61	10.3
SMBJ6.5	KH	7.22	8.82	10	6.5	500.0	51	12.3
SMBJ6.5A	KK	7.22	7.98	10	6.5	500.0	56	11.2
SMBJ7.0	KL	7.78	9.51	10	7.0	200.0	47	13.3
SMBJ7.0A	KM	7.78	8.60	10	7.0	200.0	52	12.0
SMBJ7.5	KN	8.33	10.3	1.0	7.5	100.0	44	14.3
SMBJ7.5A	KP	8.33	9.21	1.0	7.5	100.0	48	12.9
SMBJ8.0	KQ	8.89	10.9	1.0	8.0	50.0	42	15.0
SMBJ8.0A	KR	8.89	9.83	1.0	8.0	50.0	46	13.6
SMBJ8.5	KS	9.44	11.5	1.0	8.5	20.0	39	15.9
SMBJ8.5A	KT	9.44	10.4	1.0	8.5	20.0	43	14.4
SMBJ9.0	KU	10.0	12.2	1.0	9.0	10.0	37	16.9
SMBJ9.0A	KV	10.0	11.1	1.0	9.0	10.0	40	15.4
SMBJ10	KW	11.1	13.6	1.0	10	5.0	33	18.8
SMBJ10A	KX	11.1	12.3	1.0	10	5.0	37	17.0
SMBJ11	KY	12.2	14.9	1.0	11	5.0	31	20.1
SMBJ11A	KZ	12.2	13.5	1.0	11	5.0	34	18.2
SMBJ12	LD	13.3	16.3	1.0	12	5.0	28	22.0
SMBJ12A	LE	13.3	14.7	1.0	12	5.0	31	19.9
SMBJ13	LF	14.4	17.6	1.0	13	5.0	26	23.8
SMBJ13A	LG	14.4	15.9	1.0	13	5.0	29	21.5
SMBJ14	LH	15.6	19.1	1.0	14	5.0	24.4	25.8
SMBJ14A	LK	15.6	17.2	1.0	14	5.0	27	23.2
SMBJ15	LL	16.7	20.4	1.0	15	5.0	23.1	26.9
SMBJ15A	LM	16.7	18.5	1.0	15	5.0	25.1	24.4
SMBJ16	LN	17.8	21.8	1.0	16	5.0	21.8	28.8
SMBJ16A	LP	17.8	19.7	1.0	16	5.0	24.2	26.0
SMBJ17	LQ	18.9	23.1	1.0	17	5.0	20.0	30.5
SMBJ17A	LR	18.9	20.9	1.0	17	5.0	22.8	27.6
SMBJ18	LS	20.0	24.4	1.0	18	5.0	19.5	32.2
SMBJ18A	LT	20.0	22.1	1.0	18	5.0	21.5	29.2
SMBJ20	LU	22.2	27.1	1.0	20	5.0	17.6	35.8
SMBJ20A	LV	22.2	24.5	1.0	20	5.0	19.4	32.4
SMBJ22	LW	24.4	29.8	1.0	22	5.0	15.0	39.4
SMBJ22A	LX	24.4	26.9	1.0	22	5.0	17.7	35.5
SMBJ24	LY	26.7	32.6	1.0	24	5.0	14.6	43.0
SMBJ24A	LZ	26.7	29.5	1.0	24	5.0	16.0	38.9
SMBJ26	MD	28.9	35.3	1.0	26	5.0	13.5	46.6
SMBJ26A	ME	28.9	31.9	1.0	26	5.0	14.9	42.1
SMBJ28	MF	31.1	38.0	1.0	28	5.0	12.6	50.0
SMBJ28A	MG	31.1	34.4	1.0	28	5.0	13.8	45.4
SMBJ30	MH	33.3	40.7	1.0	30	5.0	11.7	53.5
SMBJ30A	MK	33.3	36.8	1.0	30	5.0	13.0	48.4
SMBJ33	ML	36.7	44.9	1.0	33	5.0	10.6	59.0
SMBJ33A	MM	36.7	40.6	1.0	33	5.0	11.8	53.3
SMBJ36	MN	40.0	48.9	1.0	36	5.0	9.8	64.3
SMBJ36A	MP	40.0	44.2	1.0	36	5.0	10.8	58.1
SMBJ40	MQ	44.4	54.3	1.0	40	5.0	8.8	71.4
SMBJ40A	MR	44.4	49.1	1.0	40	5.0	9.7	64.5
SMBJ43	MS	47.8	58.4	1.0	43	5.0	8.2	76.7
SMBJ43A	MT	47.8	52.8	1.0	43	5.0	9.0	69.4
SMBJ45	MU	50.0	61.1	1.0	45	5.0	7.8	80.3
SMBJ45A	MV	50.0	55.3	1.0	45	5.0	8.6	72.7
SMBJ48	MW	53.3	65.1	1.0	48	5.0	7.3	85.5
SMBJ48A	MX	53.3	58.9	1.0	48	5.0	8.1	77.4
SMBJ51	MY	56.7	69.3	1.0	51	5.0	6.9	91.1
SMBJ51A	MZ	56.7	62.7	1.0	51	5.0	7.6	82.4
SMBJ54	ND	60.0	73.3	1.0	54	5.0	6.5	96.3
SMBJ54A	NE	60.0	66.3	1.0	54	5.0	7.2	87.1
SMBJ58	NF	64.4	78.7	1.0	58	5.0	6.1	103
SMBJ58A	NG	64.4	71.2	1.0	58	5.0	6.7	93.6
SMBJ60	NH	66.7	81.5	1.0	60	5.0	5.8	107
SMBJ60A	NK	66.7	73.7	1.0	60	5.0	6.5	96.8
SMBJ64	NL	71.1	86.9	1.0	64	5.0	5.5	114
SMBJ64A	NM	71.1	78.6	1.0	64	5.0	6.1	103
SMBJ70	NN	77.8	95.1	1.0	70	5.0	5.0	125
SMBJ70A	NP	77.8	86.0	1.0	70	5.0	5.5	113
SMBJ75	NQ	83.3	102	1.0	75	5.0	4.7	134
SMBJ75A	NR	83.3	92.1	1.0	75	5.0	5.2	121
SMBJ78	NS	86.7	106	1.0	78	5.0	4.5	139
SMBJ78A	NT	86.7	95.8	1.0	78	5.0	5.0	126
SMBJ85	NU	94.4	115	1.0	85	5.0	4.1	151
SMBJ85A	NV	94.4	104	1.0	85	5.0	4.6	137
SMBJ90	NW	100	122	1.0	90	5.0	3.9	160
SMBJ90A	NX	100	111	1.0	90	5.0	4.3	146
SMBJ100	NY	111	136	1.0	100	5.0	3.5	179
SMBJ100A	NZ	111	123	1.0	100	5.0	3.8	162
SMBJ110	PD	122	149	1.0	110	5.0	3.2	196
SMBJ110A	PE	122	135	1.0	110	5.0	3.5	177
SMBJ120	PF	133	163	1.0	120	5.0	2.9	214
SMBJ120A	PG	133	147	1.0	120	5.0	3.2	193
SMBJ130	PH	144	176	1.0	130	5.0	2.7	231
SMBJ130A	PK	144	159	1.0	130	5.0	3.0	209
SMBJ150	PL	167	204	1.0	150	5.0	2.3	268
SMBJ150A	PM	167	185	1.0	150	5.0	2.5	243
SMBJ160	PN	178	218	1.0	160	5.0	2.2	287
SMBJ160A	PP	178	197	1.0	160	5.0	2.4	259
SMBJ170	PQ	189	231	1.0	170	5.0	2.0	304
SMBJ170A	PR	189	209	1.0	170	5.0	2.2	275

- Note:  
 1. VBR measured after IT applied for 300us, IT= square wave pulse or equivalent.  
 2. Surge current waveform per Figure 3 and derate per Figure 2.  
 3. All terms and symbols are consistent with ANSI/IEEE C62.35.  
 4. For bidirectional use C or CA suffix for types SMBJ5.0 through types SMBJ170.  
 5. For bipolar types having VWM of 10 volts(SMBJ8.0C) and under the ID limit is doubled.