

SMBJ 5.0 - 188A

SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSOR

Stand-off Voltage : 5.0 to 188V

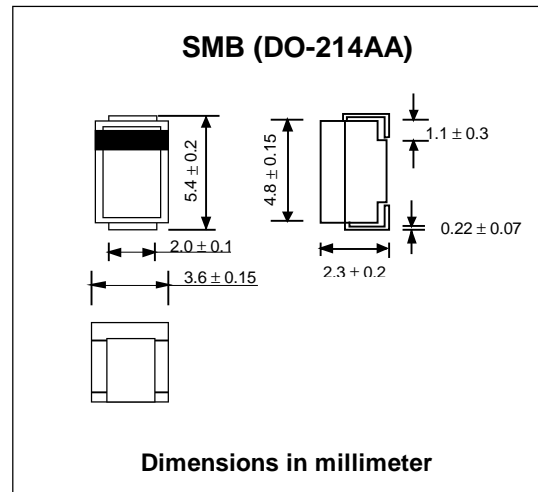
Peak Pulse Power : 600 W

FEATURES :

- * 600W peak pulse power capability with a 10/1000µs waveform
- * Excellent clamping capability
- * Very response Time
- * **Pb / RoHS Free**

MECHANICAL DATA

- * Case : SMB Molded plastic
- * Epoxy : UL94V-O rate flame retardant
- * Lead : Lead Formed for Surface Mount
- * Polarity : Color band denotes cathode end
- * Mounting position : Any
- * Weight : 0.108 gram



DEVICES FOR BIPOLAR APPLICATIONS

- For Bi-directional use C or CA Suffix
- Electrical characteristics apply in both directions

MAXIMUM RATINGS

Rating at 25 °C ambient temperature unless otherwise specified.

Rating	Symbol	Value	Units
Peak Pulse Power Dissipation on 10/1000µs waveform ⁽¹⁾⁽²⁾ (Fig. 3)	PPPM	Minimum 600	W
Peak Pulse Current on 10/1000µs waveform ⁽¹⁾ (Fig. 5)	IPPM	See Table	A
Maximum Peak forward Surge Current 8.3 ms single half sine-wave superimposed on rated load (JEDEC Method) ⁽²⁾	IFSM	100	A
Maximum Instantaneous Forward Voltage at IF = 50A	VFM	3.5	V
Typical Thermal resistance, Junction to ambient	RθJA	100	°C/w
Operating Junction and Storage Temperature Range	TJ, TSTG	- 55 to + 150	°C

Notes :

- (1) Non-repetitive Current pulse, per Fig. 5 and derated above Ta = 25 °C per Fig. 1
- (2) Mounted on 0.2 x 0.2" (5.0 x 5.0 mm) copper pads to each terminal.

ELECTRICAL CHARACTERISTICS

Rating at 25 °C ambient temperature unless otherwise specified

Type	Breakdown Voltage @ $I_T^{(1)}$			Reverse Stand-off Voltage	Maximum Reverse Leakage @ V_{WM}	Maximum Peak Pulse Surge Current	Maximum Clamping Voltage @ I_{PPM}				
	V_{BR} (V)		I_T					V_{WM}	$I_R^{(3)}$	$I_{PPM}^{(2)}$	V_C
	Min.	Max.									
SMBJ5.0	6.40	7.82	10	5.0	800	62.5	9.6				
SMBJ5.0A ⁽⁴⁾	6.40	7.07	10	5.0	800	65.2	9.2				
SMBJ6.0	6.67	8.15	10	6.0	800	52.6	11.4				
SMBJ6.0A	6.67	7.37	10	6.0	800	58.3	10.3				
SMBJ6.5	7.22	8.82	10	6.5	500	48.7	12.3				
SMBJ6.5A	7.22	7.98	10	6.5	500	53.6	11.2				
SMBJ7.0	7.78	9.51	10	7.0	200	45.1	13.3				
SMBJ7.0A	7.78	8.6	10	7.0	200	50.0	12.0				
SMBJ7.5	8.33	10.2	1.0	7.5	100	42.0	14.3				
SMBJ7.5A	8.33	9.21	1.0	7.5	100	46.5	12.9				
SMBJ8.0	8.89	10.9	1.0	8.0	50	40.0	15.0				
SMBJ8.0A	8.89	9.83	1.0	8.0	50	44.1	13.6				
SMBJ8.5	9.44	11.5	1.0	8.5	10	37.7	15.9				
SMBJ8.5A	9.44	10.4	1.0	8.5	10	41.7	14.4				
SMBJ9.0	10.0	12.2	1.0	9.0	5.0	35.5	16.9				
SMBJ9.0A	10.0	11.1	1.0	9.0	5.0	39.0	15.4				
SMBJ10	11.1	13.6	1.0	10	1.0	31.9	18.8				
SMBJ10A	11.1	12.3	1.0	10	1.0	35.3	17.0				
SMBJ11	12.2	14.9	1.0	11	1.0	29.9	20.1				
SMBJ11A	12.2	13.5	1.0	11	1.0	33.0	18.2				
SMBJ12	13.3	16.3	1.0	12	1.0	27.3	22.0				
SMBJ12A	13.3	14.7	1.0	12	1.0	30.2	19.9				
SMBJ13	14.4	17.6	1.0	13	1.0	25.2	23.8				
SMBJ13A	14.4	15.9	1.0	13	1.0	27.9	21.5				
SMBJ14	15.6	19.1	1.0	14	1.0	23.3	25.8				
SMBJ14A	15.6	17.2	1.0	14	1.0	25.8	23.2				
SMBJ15	16.7	20.4	1.0	15	1.0	22.3	26.9				
SMBJ15A	16.7	18.5	1.0	15	1.0	24.0	24.4				
SMBJ16	17.8	21.8	1.0	16	1.0	20.8	28.8				
SMBJ16A	17.8	19.7	1.0	16	1.0	23.1	26.0				
SMBJ17	18.9	23.1	1.0	17	1.0	19.7	30.5				
SMBJ17A	18.9	20.9	1.0	17	1.0	21.7	27.6				
SMBJ18	20.0	24.4	1.0	18	1.0	18.6	32.2				
SMBJ18A	20.0	22.1	1.0	18	1.0	20.5	29.2				
SMBJ20	22.2	27.1	1.0	20	1.0	16.7	35.8				
SMBJ20A	22.2	24.5	1.0	20	1.0	18.5	32.4				
SMBJ22	24.4	29.8	1.0	22	1.0	15.2	39.4				
SMBJ22A	24.4	26.9	1.0	22	1.0	16.9	35.5				
SMBJ24	26.7	32.6	1.0	24	1.0	14.0	43.0				
SMBJ24A	26.7	29.5	1.0	24	1.0	15.4	38.9				
SMBJ26	28.9	35.3	1.0	26	1.0	12.4	46.6				
SMBJ26A	28.9	31.9	1.0	26	1.0	14.2	42.1				
SMBJ28	31.1	38	1.0	28	1.0	12.0	50.0				
SMBJ28A	31.1	34.4	1.0	28	1.0	13.2	45.4				
SMBJ30	33.3	40.7	1.0	30	1.0	11.2	53.5				
SMBJ30A	33.3	36.8	1.0	30	1.0	12.4	48.4				
SMBJ33	36.7	44.9	1.0	33	1.0	10.2	59.0				
SMBJ33A	36.7	40.6	1.0	33	1.0	11.3	53.3				
SMBJ36	40.0	48.9	1.0	36	1.0	9.3	64.3				
SMBJ36A	40.0	44.2	1.0	36	1.0	10.3	58.1				

ELECTRICAL CHARACTERISTICS

Rating at 25 °C ambient temperature unless otherwise specified

Type	Breakdown Voltage @ $I_T^{(1)}$			Reverse Stand-off Voltage	Maximum Reverse Leakage @ V_{WM}	Maximum Peak Pulse Surge Current	Maximum Clamping Voltage @ I_{PPM}			
	V_{BR} (V)		I_T					V_{WM}	$I_{PPM}^{(2)}$	V_C
	Min.	Max.	(mA)					(V)	(A)	(V)
SMBJ40	44.4	54.3	1.0	40	1.0	8.4	71.4			
SMBJ40A	44.4	49.1	1.0	40	1.0	9.3	64.5			
SMBJ43	47.8	58.4	1.0	43	1.0	7.8	76.7			
SMBJ43A	47.8	52.8	1.0	43	1.0	8.6	69.4			
SMBJ45	50.0	61.1	1.0	45	1.0	7.5	80.3			
SMBJ45A	50.0	55.3	1.0	45	1.0	8.3	72.7			
SMBJ48	53.3	65.1	1.0	48	1.0	7.0	85.5			
SMBJ48A	53.3	58.9	1.0	48	1.0	7.7	77.4			
SMBJ51	56.7	69.3	1.0	51	1.0	6.6	91.1			
SMBJ51A	56.7	62.7	1.0	51	1.0	7.3	82.4			
SMBJ54	60.0	73.3	1.0	54	1.0	6.2	96.3			
SMBJ54A	60.0	66.3	1.0	54	1.0	6.9	87.1			
SMBJ58	64.4	78.7	1.0	58	1.0	5.8	103			
SMBJ58A	64.4	71.2	1.0	58	1.0	6.4	93.6			
SMBJ60	66.7	81.5	1.0	60	1.0	5.6	107			
SMBJ60A	66.7	73.7	1.0	60	1.0	6.2	96.8			
SMBJ64	71.1	86.9	1.0	64	1.0	5.3	114			
SMBJ64A	71.1	78.6	1.0	64	1.0	5.8	103			
SMBJ70	77.8	95.1	1.0	70	1.0	4.8	125			
SMBJ70A	77.8	86	1.0	70	1.0	5.3	113			
SMBJ75	83.3	102	1.0	75	1.0	4.5	134			
SMBJ75A	83.3	92.1	1.0	75	1.0	4.9	121			
SMBJ78	86.7	106	1.0	78	1.0	4.3	139			
SMBJ78A	86.7	95.8	1.0	78	1.0	4.7	126			
SMBJ85	94.4	115	1.0	85	1.0	3.9	151			
SMBJ85A	94.4	104	1.0	85	1.0	4.4	137			
SMBJ90	100	122	1.0	90	1.0	3.8	160			
SMBJ90A	100	111	1.0	90	1.0	4.1	146			
SMBJ100	111	136	1.0	100	1.0	3.4	179			
SMBJ100A	111	123	1.0	100	1.0	3.7	162			
SMBJ110	122	149	1.0	110	1.0	3.0	196			
SMBJ110A	122	135	1.0	110	1.0	3.4	177			
SMBJ120	133	163	1.0	120	1.0	2.8	214			
SMBJ120A	133	147	1.0	120	1.0	3.1	193			
SMBJ130	144	176	1.0	130	1.0	2.6	231			
SMBJ130A	144	159	1.0	130	1.0	2.9	209			
SMBJ150	167	204	1.0	150	1.0	2.2	268			
SMBJ150A	167	185	1.0	150	1.0	2.5	243			
SMBJ160	178	218	1.0	160	1.0	2.1	287			
SMBJ160A	178	197	1.0	160	1.0	2.3	259			
SMBJ170	189	231	1.0	170	1.0	2.0	304			
SMBJ170A	189	209	1.0	170	1.0	2.2	275			
SMBJ188	209	255	1.0	188	1.0	1.7	344			
SMBJ188A	209	231	1.0	188	1.0	2.0	328			

Notes:

- (1) Pulse test : $t_p \leq 50\text{ms}$.
- (2) Surge Current Waveform per Figure 5 and Derate per Figure 1
- (3) For bi-directional types have V_{WM} of 10 Volts and less , the I_R limit is doubled
- (4) For the bi-directional SMBJ5.0CA, the maximum V_{BR} is 7.25V
- (5) "SMBJ" will be omitted in marking on the diode.

RATING AND CHARACTERISTIC CURVES (SMBJ5.0 - SMBJ188A)

FIG.1 - PULSE DERATING CURVE

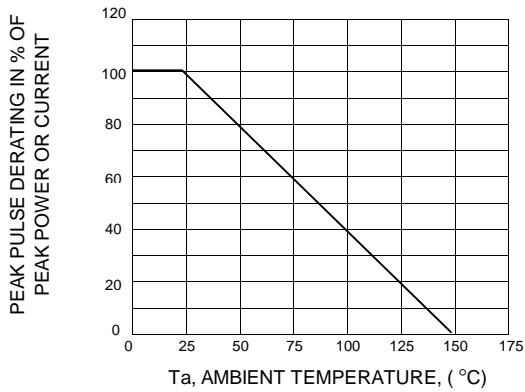


FIG.2 - MAXIMUM NON-REPETITIVE PERK FORWARD SURGE CURRENT

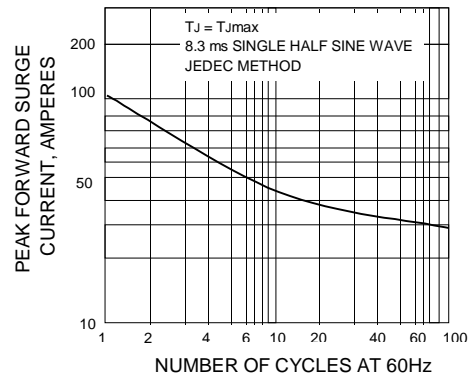


FIG.3 - TYPICAL JUNCTION CAPACITANCE

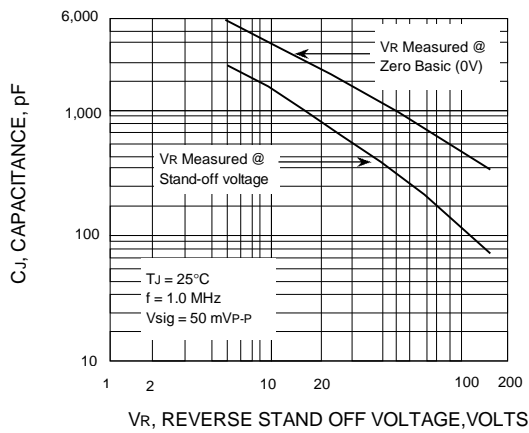


FIG.4 - PEAK PULSE POWER RATING CURVE

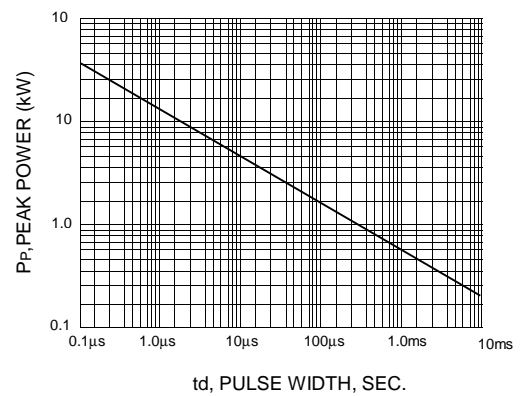


FIG.5 - PULSE WAVEFORM

