

# SMBJ5.0A - 188CA

# SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSOR

**Stand-off Voltage : 5.0 to 188V**

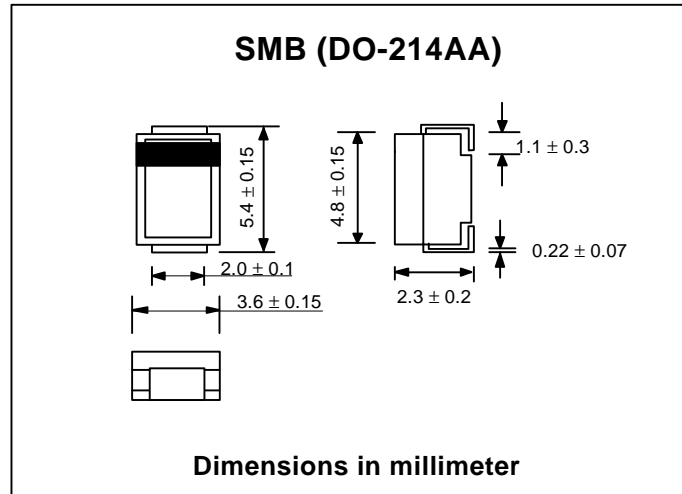
**Peak Pulse Power : 600 W**

## FEATURES :

- \* 600W surge capability at 1ms
- \* Excellent clamping capability
- \* Low inductance
- \* Response Time Typically < 1ns
- \* Typical  $I_R$  less then  $1\mu A$  above 10V

## 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



## MAXIMUM RATINGS

Rating at 25 °C ambient temperature unless otherwise specified.

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

## Notes :

- (1) Non-repetitive Current pulse, per Fig. 5 and derated above  $T_a = 25\text{ }^\circ\text{C}$  per Fig. 1
- (2) Mounted on 0.2 x 0.2" (5.0 x 5.0 mm) copper pads to each terminal.



SYNSEMI SEMICONDUCTOR

## ELECTRICAL CHARACTERISTICS

Rating at 25°C ambient temperature unless otherwise specified

Type No.		Breakdown Voltage @ $I_T^{(1)}$			Reverse Stand-off Voltage	Maximum Reverse Leakage @ $V_{WM}$	Maximum Peak Pulse Surge Current	Maximum Clamping Voltage @ $I_{PPM}$
Uni-directional	Bi-directional	$V_{BR}$ (V)		$I_T$	$V_{WM}$	$I_D^{(3)}$	$I_{PPM}^{(2)}$	$V_C$
		Min.	Max.	(mA)	(V)	( $\mu$ A)	(A)	(V)
SMBJ5.0A	SMBJ5.0CA <sup>(4)</sup>	6.40	7.07	10	5.0	800	65.2	9.2
SMBJ6.0A	SMBJ6.0CA	6.67	7.37	10	6.0	800	58.3	10.3
SMBJ6.5A	SMBJ6.5CA	7.22	7.98	10	6.5	500	53.6	11.2
SMBJ7.0A	SMBJ7.0CA	7.78	8.6	10	7.0	200	50.0	12.0
SMBJ7.5A	SMBJ7.5CA	8.33	9.21	1.0	7.5	100	46.5	12.9
SMBJ8.0A	SMBJ8.0CA	8.89	9.83	1.0	8.0	50	44.1	13.6
SMBJ8.5A	SMBJ8.5CA	9.44	10.4	1.0	8.5	20	41.7	14.4
SMBJ9.0A	SMBJ9.0CA	10.0	11.1	1.0	9.0	10	39.0	15.4
SMBJ10A	SMBJ10CA	11.1	12.3	1.0	10	5.0	35.3	17.0
SMBJ11A	SMBJ11CA	12.2	13.5	1.0	11	5.0	33.0	18.2
SMBJ12A	SMBJ12CA	13.3	14.7	1.0	12	5.0	30.2	19.9
SMBJ13A	SMBJ13CA	14.4	15.9	1.0	13	5.0	27.9	21.5
SMBJ14A	SMBJ14CA	15.6	17.2	1.0	14	5.0	25.8	23.2
SMBJ15A	SMBJ15CA	16.7	18.5	1.0	15	5.0	24.0	24.4
SMBJ16A	SMBJ16CA	17.8	19.7	1.0	16	5.0	23.1	26.0
SMBJ17A	SMBJ17CA	18.9	20.9	1.0	17	5.0	21.7	27.6
SMBJ18A	SMBJ18CA	20.0	22.1	1.0	18	5.0	20.5	29.2
SMBJ20A	SMBJ20CA	22.2	24.5	1.0	20	5.0	18.5	32.4
SMBJ22A	SMBJ22CA	24.4	26.9	1.0	22	5.0	16.9	35.5
SMBJ24A	SMBJ24CA	26.7	29.5	1.0	24	5.0	15.4	38.9
SMBJ26A	SMBJ26CA	28.9	31.9	1.0	26	5.0	14.2	42.1
SMBJ28A	SMBJ28CA	31.1	34.4	1.0	28	5.0	13.2	45.4
SMBJ30A	SMBJ30CA	33.1	36.8	1.0	30	5.0	12.4	48.4
SMBJ33A	SMBJ33CA	36.7	40.6	1.0	33	5.0	11.3	53.3
SMBJ36A	SMBJ36CA	40.0	44.2	1.0	36	5.0	10.3	58.1
SMBJ40A	SMBJ40CA	44.4	49.1	1.0	40	5.0	9.3	64.5
SMBJ43A	SMBJ43CA	47.8	52.8	1.0	43	5.0	8.6	69.4
SMBJ45A	SMBJ45CA	50.0	55.3	1.0	45	5.0	8.3	72.7
SMBJ48A	SMBJ48CA	53.3	58.9	1.0	48	5.0	7.7	77.4
SMBJ51A	SMBJ51CA	56.7	62.7	1.0	51	5.0	7.3	82.4
SMBJ54A	SMBJ54CA	60.0	66.3	1.0	54	5.0	6.9	87.1
SMBJ58A	SMBJ58CA	64.4	71.2	1.0	58	5.0	6.4	93.6
SMBJ60A	SMBJ60CA	66.7	73.7	1.0	60	5.0	6.2	96.8
SMBJ64A	SMBJ64CA	71.1	78.6	1.0	64	5.0	5.8	103
SMBJ70A	SMBJ70CA	77.8	86	1.0	70	5.0	5.3	113
SMBJ75A	SMBJ75CA	83.3	92.1	1.0	75	5.0	4.9	121
SMBJ78A	SMBJ78CA	86.7	95.8	1.0	78	5.0	4.7	126
SMBJ85A	SMBJ85CA	94.4	104	1.0	85	5.0	4.4	137
SMBJ90A	SMBJ90CA	100	111	1.0	90	5.0	4.1	146
SMBJ100A	SMBJ100CA	111	123	1.0	100	5.0	3.7	162
SMBJ110A	SMBJ110CA	122	135	1.0	110	5.0	3.4	177
SMBJ120A	SMBJ120CA	133	147	1.0	120	5.0	3.1	193
SMBJ130A	SMBJ130CA	144	159	1.0	130	5.0	2.9	209
SMBJ150A	SMBJ150CA	167	185	1.0	150	5.0	2.5	243
SMBJ160A	SMBJ160CA	178	197	1.0	160	5.0	2.3	259
SMBJ170A	SMBJ170CA	189	209	1.0	170	5.0	2.2	275
SMBJ188A	SMBJ188CA	189	231	1.0	188	5.0	2.0	328

**Notes:**

- (1) Pulse test :  $t_p \leq 50ms$ .
- (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  $I_D$  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 ( SMBJ5.0A - SMBJ188CA )

FIG.1 - PULSE DERATING CURVE

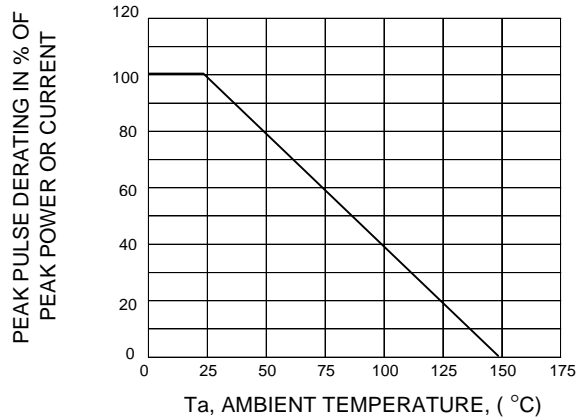


FIG.2 - MAXIMUM NON-REPETITIVE PERK FORWARD SURGE CURRENT

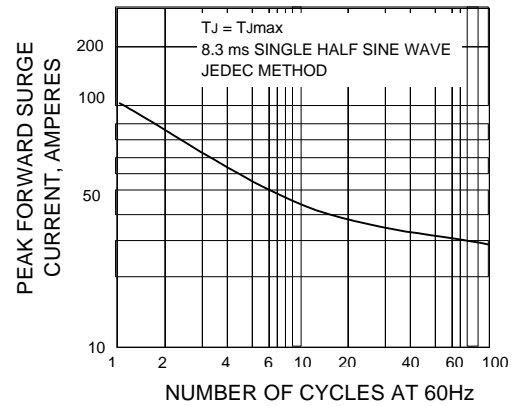


FIG.3 - TYPICAL JUNCTION CAPACITANCE

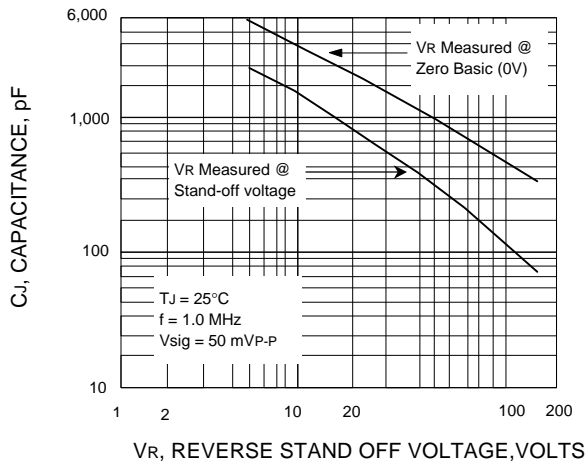


FIG.4 - PEAK PULSE POWER RATING CURVE

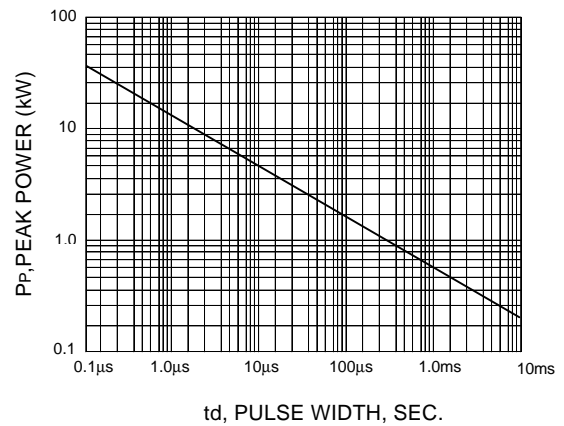


FIG.5 - PULSE WAVEFORM

