

# 1SMC 5.0 ~ 188A

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

**Peak Pulse Power : 1500 W**

## FEATURES :

- \* 1500W surge capability at 1ms
- \* Excellent clamping capability
- \* Low zener impedance
- \* Fast response time : typically less than 1.0 ps from 0 volt to  $V_{BR(min.)}$
- \* Typical  $I_R$  less than  $1\mu A$  above 10V
- \* **Pb / RoHS Free**

## MECHANICAL DATA

- \* Case : SMC Molded plastic
- \* Epoxy : UL94V-O rate flame retardant
- \* Lead : Lead Formed for Surface Mount
- \* Polarity : Color band denotes cathode end except Bipolar.
- \* Mounting position : Any
- \* Weight : 0.21 gram

## DEVICES FOR BIPOLAR APPLICATIONS

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

## MAXIMUM RATINGS

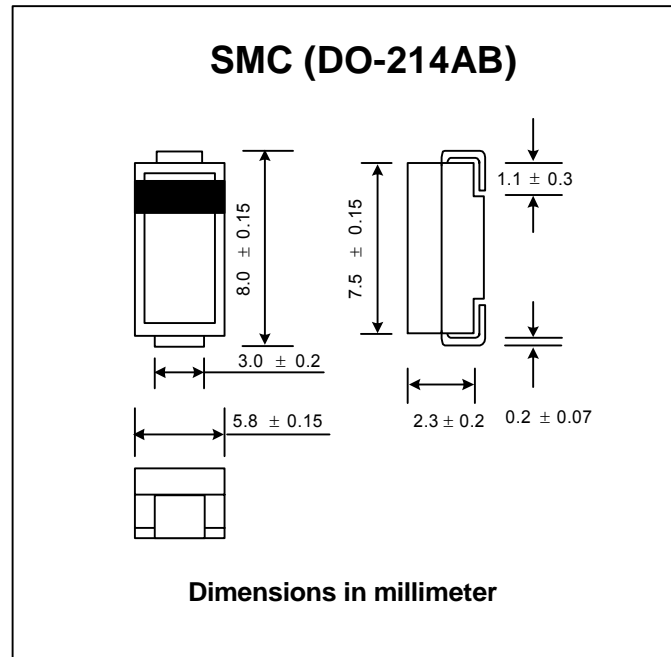
Rating at 25°C ambient temperature unless otherwise specified

Rating	Symbol	Value	Unit
Peak Pulse Power Dissipation <sup>(1) (2)</sup>	PPPM	Minimum 1500	W
Peak Forward Surge Current per Fig. 5 <sup>(2)</sup>	IFSM	200	A
Peak Pulse Current on 10/1000µs waveform <sup>(1)</sup>	IPPM	See Next Table	A
Typical Thermal Resistance , Junction to Ambient <sup>(3)</sup>	RθJA	75	°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. 3 and derated above  $T_a = 25^\circ C$  per Fig. 1
- (2) Mounted on 0.31x 0.31" (8.0 x 8.0mm) copper pads to each terminal.
- (3) Mounted on minimum recommended pad layout

## SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSOR



## ELECTRICAL CHARACTERISTICS (Rating at 25°C ambient temperature unless otherwise specified)

Type No.	Breakdown Voltage @ $T^{(1)}$		Working Peak Reverse Voltage	Maximum Reverse Leakage @ $V_{WM}$	Maximum Peak Pulse Surge Current	Maximum Clamping Voltage @ $I_{PPM}$	
	$V_{BR}$ (V)		$V_{WM}$	$I_D$	$I_{PPM}$	$V_C$	
	Min.	Max.	(mA)	(V)	( $\mu$ A)	(A)	(V)
1SMC5.0A	6.40	7.07	10	5.0	1000	163.0	9.2
1SMC6.0A	6.67	7.37	10	6.0	1000	145.6	10.3
1SMC6.5A	7.22	7.98	10	6.5	500	133.9	11.2
1SMC7.0A	7.78	8.6	10	7.0	200	125.0	12.0
1SMC7.5A	8.33	9.21	1.0	7.5	100	116.3	12.9
1SMC8.0A	8.89	9.83	1.0	8.0	50	110.3	13.6
1SMC8.5A	9.44	10.4	1.0	8.5	20	104.2	14.4
1SMC9.0A	10.0	11.1	1.0	9.0	10	97.4	15.4
1SMC10A	11.1	12.3	1.0	10	5.0	88.2	17.0
1SMC11A	12.2	13.5	1.0	11	5.0	82.4	18.2
1SMC12A	13.3	14.7	1.0	12	5.0	75.4	19.9
1SMC13A	14.4	15.9	1.0	13	5.0	69.8	21.5
1SMC14A	15.6	17.2	1.0	14	5.0	64.7	23.2
1SMC15A	16.7	18.5	1.0	15	5.0	61.5	24.4
1SMC16A	17.8	19.7	1.0	16	5.0	57.7	26.0
1SMC17A	18.9	20.9	1.0	17	5.0	54.3	27.6
1SMC18A	20.0	22.1	1.0	18	5.0	51.4	29.2
1SMC20A	22.2	24.5	1.0	20	5.0	46.3	32.4
1SMC22A	24.4	26.9	1.0	22	5.0	42.3	35.5
1SMC24A	26.7	29.5	1.0	24	5.0	38.6	38.9
1SMC26A	28.9	31.9	1.0	26	5.0	35.6	42.1
1SMC28A	31.1	34.4	1.0	28	5.0	33.0	45.4
1SMC30A	33.3	36.8	1.0	30	5.0	31.0	48.4
1SMC33A	36.7	40.6	1.0	33	5.0	28.1	53.3
1SMC36A	40.0	44.2	1.0	36	5.0	25.8	58.1
1SMC40A	44.4	49.1	1.0	40	5.0	23.3	64.5
1SMC43A	47.8	52.8	1.0	43	5.0	21.6	69.4
1SMC45A	50.0	55.3	1.0	45	5.0	20.6	72.7
1SMC48A	53.3	58.9	1.0	48	5.0	19.4	77.4
1SMC51A	56.7	62.7	1.0	51	5.0	18.2	82.4
1SMC54A	60.0	66.3	1.0	54	5.0	17.2	87.1
1SMC58A	64.4	71.2	1.0	58	5.0	16.0	93.6
1SMC60A	66.7	73.7	1.0	60	5.0	15.5	96
1SMC64A	71.1	78.6	1.0	64	5.0	14.6	103
1SMC70A	77.8	86	1.0	70	5.0	13.3	113
1SMC75A	83.3	92.1	1.0	75	5.0	12.4	121
1SMC78A	86.7	95.8	1.0	78	5.0	11.9	126
1SMC85A	94.4	104	1.0	85	5.0	10.9	137
1SMC90A	100	111	1.0	90	5.0	10.3	146
1SMC100A	111	123	1.0	100	5.0	9.3	162
1SMC110A	122	135	1.0	110	5.0	8.5	177
1SMC120A	133	147	1.0	120	5.0	7.8	193
1SMC130A	144	159	1.0	130	5.0	7.2	209
1SMC150A	167	185	1.0	150	5.0	6.2	243
1SMC160A	178	197	1.0	160	5.0	5.8	259
1SMC170A	189	209	1.0	170	5.0	5.50	275
1SMC188A	209	231	1.0	188	5.0	4.60	328

**Notes :**

- (1) Pulse test :  $t_p \leq 50$ ms.
- (2) Surge Current Waveform per Figure 5 and Derate per Figure
- (3) For bi-directional types have  $V_{WM}$  of 10 Volts and less , the  $I_D$  limit is double
- (4) For the bi-directional 1SMC5.0CA, the maximum  $V_{BR}$  is 7.25V
- (5) "1SMC" will be omitted in marking on the diode

## RATING AND CHARACTERISTIC CURVES ( 1SMC5.0 - 1SMC188A )

FIG.1 - PULSE DERATING CURVE

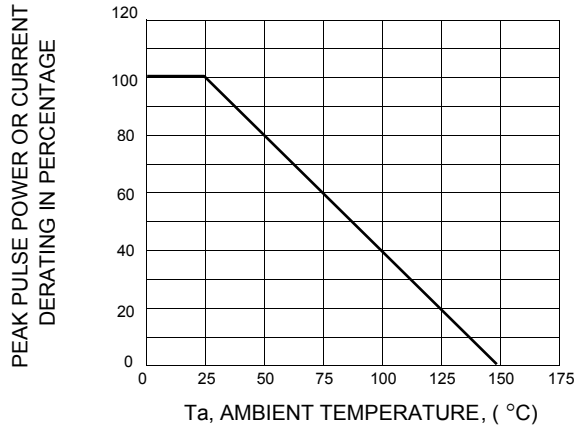


FIG.2 - TYPICAL JUNCTION CAPACITANCE

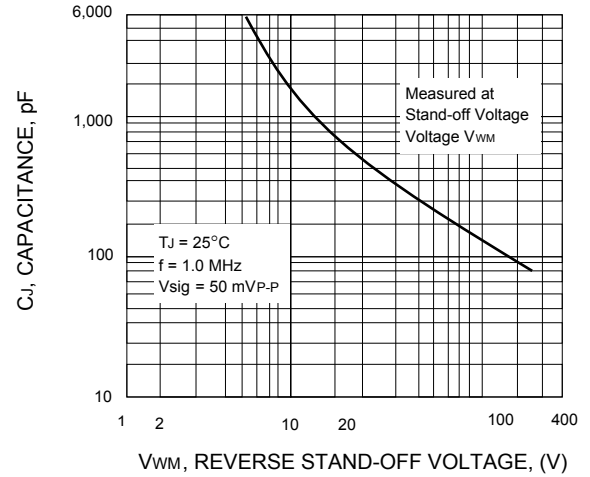


FIG.3 - PULSE WAVEFORM

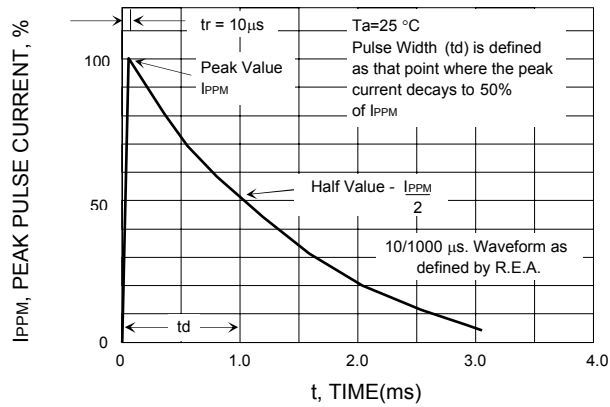


FIG.4 - PEAK PULSE POWER RATING CURVE

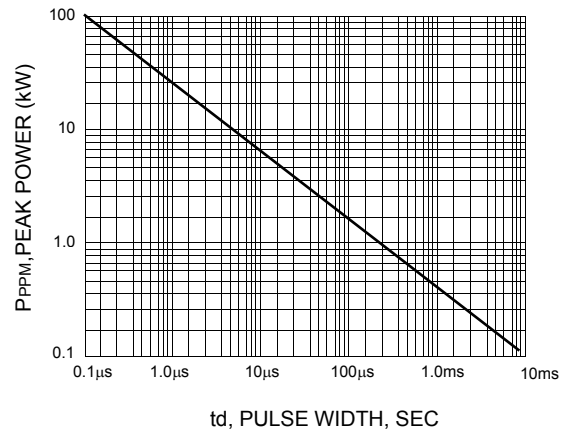


FIG.5 - MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT

