

SMCJ5.0 THRU SMCJ188CA

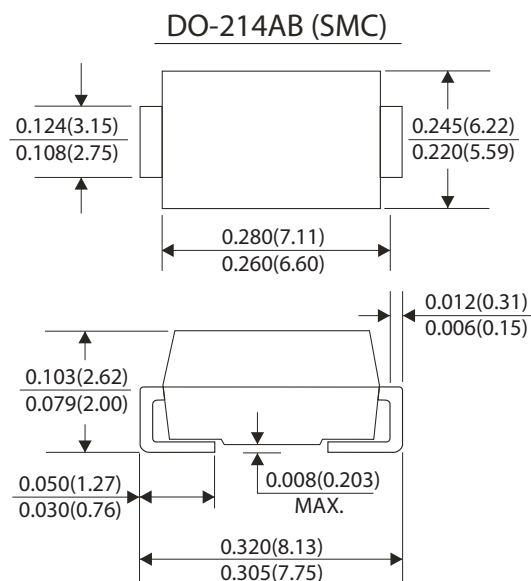
POWER 1500Watts
VOLTAGE 5.0 to 188 Volts

Features

- Underwriters Laboratory recognition under UL standard for safety 497B : Isolated loop curcuit protection
- Low profile package with built-in strain relief for surface mounted applications
- Glass passivated junction
- Low incremental surge resistance, excellent clamping capability
- 1500W peak pulse power capability with a 10/1000 μ S waveform, repetition rate(duty cycle) : 0.01%
- Very fast response time
- High temperature soldering guaranteed : 250 °C/10 seconds at terminals

Mechanical Data

- Case : JEDEC DO-214AB(SMC) molded plastic over passivated chip
- Terminals : Solder plated , solderable per MIL-STD-750, method 2026
- Polarity : For uni-directional types the band denotes the cathode, which is positive with respect to the anode under normal TVS operation
- Mounting Position : Any
- Weight : 0.007 ounce, 0.25 gram



Dimensions in inches and (millimeters)

Devices For Bidirectional Applications

- For bi-directional devices, use suffix C or CA (e.g. SMCJ10C, SMCJ10CA). Electrical characteristics apply in both directions.

Maximum Ratings And Electrical Characteristics

(Ratings at 25 °C ambient temperature unless otherwise specified)

	Symbols	Values	Units
Peak pulse power dissipation with a 10/1000 μ S waveform (Note 1,2)	PPPM	Minimum 1500	Watts
Peak pulse current with a waveform (Note 1)	IPPM	See next table	Amps
Peak forward surge current, 8.3mm single half sine-wave unidirectional only (Note 2)	IFSM	200	Amps
Typical thermal resistance, junction to ambient (Note 3)	R θ JA	75	°C/W
Typical thermal resistance, junction to lead	R θ JL	15	°C/W
Operating junction and storage temperature range	TJ,TSTG	-55 to +150	°C

Notes:

- (1) Non repetitive current pulse, per Fig.3 and derated above TA=25 °C per Fig.2
- (2) Mounted on 0.31 $\times$ 0.31"(8.0 $\times$ 8.0mm) copper pads to each terminal
- (3) Mounted on minimum recommended pad layout

ELECTRICAL CHARACTERISTIC

Ratings at 25 °C ambient temperature unless otherwise specified. VF=3.5V at IF=100A (uni-directional only)

Device Type	Device Marking Code		Breakdown Voltage $V_{(BR)}$ at $I_T^{(1)}$ (V)		Test Current I_T (mA)	Stand-off Voltage V_{WM} (V)	Maximum Reverse Leakage Current at V_{WM} I_{LR} (μA) ⁽³⁾	Maximum Peak Pulse Surge Current I_{PPM} (A) ⁽²⁾	Maximum Clamping Voltage at I_{PPM} V_C (V)
	UNI	BI	Min	Max					
SMCJ5.0(C)	GDD	GDD	6.40	7.82	10.0	5.0	1000	156.3	9.6
SMCJ5.0(C)A ⁽⁵⁾	GDE	GDE	6.40	7.07	10.0	5.0	1000	163.0	9.2
SMCJ6.0(C)	GDF	GDF	6.67	8.15	10.0	6.0	1000	131.6	11.4
SMCJ6.0(C)A	GDG	GDG	6.67	7.37	10.0	6.0	1000	145.6	10.3
SMCJ6.5(C)	GDH	BDH	7.22	8.82	10.0	6.5	500	122.0	12.3
SMCJ6.5(C)A	GDK	BDK	7.22	7.98	10.0	6.5	500	133.9	11.2
SMCJ7.0(C)	GDL	GDL	7.78	9.51	10.0	7.0	200	112.8	13.3
SMCJ7.0(C)A	GDM	GDM	7.78	8.60	10.0	7.0	200	125.0	12.0
SMCJ7.5(C)	GDN	BDN	8.33	10.2	1.0	7.5	100	104.9	14.3
SMCJ7.5(C)A	GDP	BDP	8.33	9.21	1.0	7.5	100	116.3	12.9
SMCJ8.0(C)	GDQ	BDG	8.89	10.9	1.0	8.0	50	100.0	15.0
SMCJ8.0(C)A	GDR	BDR	8.89	9.83	1.0	8.0	50	110.3	13.6
SMCJ8.5(C)	GDS	BDS	9.44	11.5	1.0	8.5	20	94.3	15.9
SMCJ8.5(C)A	GDT	BDT	9.44	10.4	1.0	8.5	20	104.2	14.4
SMCJ9.0(C)	GDU	BDU	10.0	12.2	1.0	9.0	10	88.8	16.9
SMCJ9.0(C)A	GDV	BDV	10.0	11.1	1.0	9.0	10	97.4	15.4
SMCJ10(C)	GDW	BDW	11.1	13.6	1.0	10	5.0	79.8	18.8
SMCJ10(C)A	GDX	BDX	11.1	12.3	1.0	10	5.0	88.2	17.0
SMCJ11(C)	GDY	GDY	12.2	14.9	1.0	11	5.0	74.6	20.1
SMCJ11(C)A	GDZ	GDZ	12.2	13.5	1.0	11	5.0	82.4	18.2
SMCJ12(C)	GED	BED	13.3	16.3	1.0	12	5.0	68.2	22.0
SMCJ12(C)A	GEE	BEE	13.3	14.7	1.0	12	5.0	75.4	19.9
SMCJ13(C)	GEF	GEF	14.4	17.6	1.0	13	1.0	63.0	23.8
SMCJ13(C)A	GEG	GEG	14.4	15.9	1.0	13	1.0	69.8	21.5
SMCJ14(C)	GEH	BEH	15.6	19.1	1.0	14	1.0	58.1	25.8
SMCJ14(C)A	GEK	BEK	15.6	17.2	1.0	14	1.0	64.7	23.2
SMCJ15(C)	GEL	BEL	16.7	20.4	1.0	15	1.0	55.8	26.9
SMCJ15(C)A	GEM	BEM	16.7	18.5	1.0	15	1.0	61.5	24.4
SMCJ16(C)	GEN	GEN	17.8	21.8	1.0	16	1.0	52.1	28.8
SMCJ16(C)A	GEP	GEP	17.8	19.7	1.0	16	1.0	57.7	26.0
SMCJ17(C)	GEQ	GEQ	18.9	23.1	1.0	17	1.0	49.2	30.5
SMCJ17(C)A	GER	GER	18.9	20.9	1.0	17	1.0	54.3	27.6
SMCJ18(C)	GES	BES	20.0	24.4	1.0	18	1.0	46.6	32.2
SMCJ18(C)A	GET	BET	20.0	22.1	1.0	18	1.0	51.4	29.2
SMCJ20(C)	GEU	BEU	22.2	27.1	1.0	20	1.0	41.9	35.8
SMCJ20(C)A	GEV	BEV	22.2	24.5	1.0	20	1.0	46.3	32.4
SMCJ22(C)	GEW	BEW	24.4	29.8	1.0	22	1.0	38.1	39.4
SMCJ22(C)A	GEX	BEX	24.4	26.9	1.0	22	1.0	42.3	35.5
SMCJ24(C)	GEY	BEY	26.7	32.6	1.0	24	1.0	34.9	43.0
SMCJ24(C)A	GEZ	BEZ	26.7	29.5	1.0	24	1.0	38.6	38.9
SMCJ26(C)	GFD	BFD	28.9	35.3	1.0	26	1.0	32.2	46.6
SMCJ26(C)A	GFE	BFE	28.9	31.9	1.0	26	1.0	35.6	42.1
SMCJ28(C)	GFF	BFF	31.1	38.0	1.0	28	1.0	30.0	50.0
SMCJ28(C)A	GFG	BFG	31.1	34.4	1.0	28	1.0	33.0	45.4
SMCJ30(C)	GFH	BFH	33.3	40.7	1.0	30	1.0	28.0	53.5
SMCJ30(C)A	GFK	BFK	33.3	36.8	1.0	30	1.0	31.0	48.4

Notes: (1) Pulse test: $t_p \leq 50ms$

(2) Surge current waveform per Fig. 3 and derate per Fig. 2

(3) For bi-directional types having V_{WM} of 10 Volts and less, the I_D limit is doubled

(4) All terms and symbols are consistent with ANSI/IEEE C62.35

(5) For the bi-directional SMCJ/SMCJ5.0CA, the maximum $V_{(BR)}$ is 7.25V

ELECTRICAL CHARACTERISTIC

Ratings at 25 °C ambient temperature unless otherwise specified. VF=3.5V at IF=100A (uni-directional only)

Device Type	Device Marking Code		Breakdown Voltage V _(BR) at I _T ⁽¹⁾ (V)		Test Current I _T (mA)	Stand-off Voltage V _{WM} (V)	Maximum Reverse Leakage at V _{WM} I _D (μA) ⁽³⁾	Maximum Peak Pulse Surge Current I _{PPM} (A) ⁽²⁾	Maximum Clamping Voltage at I _{PPM} V _C (V)
	UNI	BI	Min	Max					
SMCJ33(C)	GFL	BFL	36.7	44.9	1.0	33	1.0	25.4	59.0
SMCJ33(C)A	GFM	BFM	36.7	40.6	1.0	33	1.0	28.1	53.3
SMCJ36(C)	GFN	BFN	40.0	48.9	1.0	36	1.0	23.3	64.3
SMCJ36(C)A	GFP	BFP	40.0	44.2	1.0	36	1.0	25.8	58.1
SMCJ40(C)	GFQ	BFQ	44.4	54.3	1.0	40	1.0	21.0	71.4
SMCJ40(C)A	GFR	BFR	44.4	49.1	1.0	40	1.0	23.3	64.5
SMCJ43(C)	GFS	BFS	47.8	58.4	1.0	43	1.0	19.6	76.7
SMCJ43(C)A	GFT	BFT	47.8	52.8	1.0	43	1.0	21.6	69.4
SMCJ45(C)	GFU	GFU	50.0	61.1	1.0	45	1.0	18.7	80.3
SMCJ45(C)A	GFV	GFV	50.0	55.3	1.0	45	1.0	20.6	72.7
SMCJ48(C)	GFW	GFW	53.3	65.1	1.0	48	1.0	17.5	85.5
SMCJ48(C)A	GFX	GFX	53.3	58.9	1.0	48	1.0	19.4	77.4
SMCJ51(C)	GFY	GFY	56.7	69.3	1.0	51	1.0	16.5	91.1
SMCJ51(C)A	GFZ	GFZ	56.7	62.7	1.0	51	1.0	18.2	82.4
SMCJ54(C)	GGD	GGD	60.0	73.3	1.0	54	1.0	15.6	96.3
SMCJ54(C)A	GGE	GGE	60.0	66.3	1.0	54	1.0	17.2	87.1
SMCJ58(C)	GGF	GGF	64.4	78.7	1.0	58	1.0	14.6	103
SMCJ58(C)A	GGG	GGG	64.4	71.2	1.0	58	1.0	16.0	93
SMCJ60(C)	GGH	GGH	66.7	81.5	1.0	60	1.0	14.0	107
SMCJ60(C)A	GGK	GGK	66.7	73.7	1.0	60	1.0	15.5	96
SMCJ64(C)	GGL	GGL	71.1	86.9	1.0	64	1.0	13.2	114
SMCJ64(C)A	GGM	GGM	71.1	78.6	1.0	64	1.0	14.6	103
SMCJ70(C)	GGN	GGN	77.8	95.1	1.0	70	1.0	12.0	125
SMCJ70(C)A	GGP	GGP	77.8	86.0	1.0	70	1.0	13.3	113
SMCJ75(C)	GGQ	GGQ	83.3	102	1.0	75	1.0	11.2	134
SMCJ75(C)A	GGR	GGR	83.3	92.1	1.0	75	1.0	12.4	121
SMCJ78(C)	GGS	GGS	86.7	106	1.0	78	1.0	10.8	139
SMCJ78(C)A	GGT	GGT	86.7	95.8	1.0	78	1.0	11.9	126
SMCJ85(C)	GGU	GGU	94.4	115	1.0	85	1.0	9.9	151
SMCJ85(C)A	GGV	GGV	94.4	104	1.0	85	1.0	10.9	137
SMCJ90(C)	GGW	GGW	100	122	1.0	90	1.0	9.4	160
SMCJ90(C)A	GGX	GGX	100	111	1.0	90	1.0	10.3	146
SMCJ100(C)	GGY	GGY	111	136	1.0	100	1.0	8.4	179
SMCJ100(C)A	GGZ	GGZ	111	123	1.0	100	1.0	9.3	162
SMCJ110(C)	GHD	GHD	122	149	1.0	110	1.0	7.7	196
SMCJ110(C)A	GHE	GHE	122	135	1.0	110	1.0	8.5	177
SMCJ120(C)	GHF	GHF	133	163	1.0	120	1.0	7.0	214
SMCJ120(C)A	GHG	GHG	133	147	1.0	120	1.0	7.8	193
SMCJ130(C)	GHH	GHH	144	176	1.0	130	1.0	6.5	231
SMCJ130(C)A	GHK	GHK	144	159	1.0	130	1.0	7.2	209
SMCJ150(C)	GHL	GHL	167	204	1.0	150	1.0	5.6	268
SMCJ150(C)A	GHM	GHM	167	185	1.0	150	1.0	6.2	243
SMCJ160(C)	GHN	GHN	178	218	1.0	160	1.0	5.2	287
SMCJ160(C)A	GHP	GHP	178	197	1.0	160	1.0	5.8	259
SMCJ170(C)	GHQ	GHQ	189	231	1.0	170	1.0	4.9	304
SMCJ170(C)A	GHR	GHR	189	209	1.0	170	1.0	5.5	275
SMCJ188(C)	GHT	GHT	209	255	1.0	188	1.0	4.4	344
SMCJ188(C)A	GHS	GHS	209	231	1.0	188	1.0	4.6	328

Notes: (1) Pulse test: t_p ≤ 50ms

(2) Surge current waveform per Fig. 3 and derate per Fig. 2

(3) For bi-directional types having V_{WM} of 10 Volts and less, the I_D limit is doubled

(4) All terms and symbols are consistent with ANSI/IEEE C62.35

RATINGS AND CHARACTERISTIC CURVES SMCJ5.0 THRU SMCJ188CA

Fig. 1D Peak Pulse Power Rating Curve

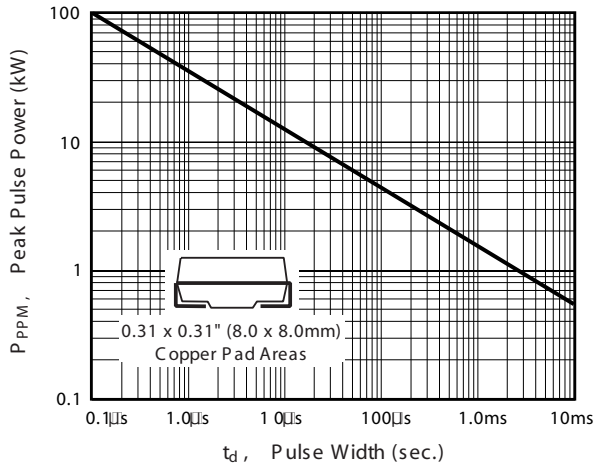


Fig. 2D Pulse Derating Curve

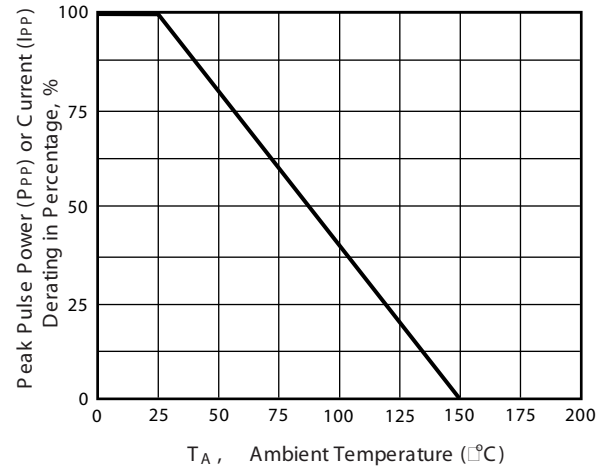


Fig. 3D Pulse Waveform

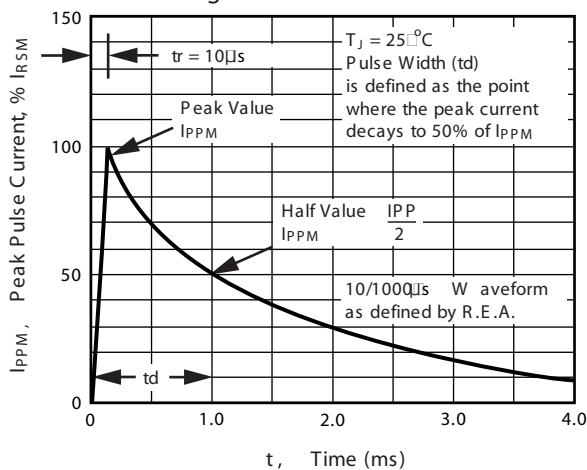


Fig. 4D Typical Junction Capacitance Uni-Directional

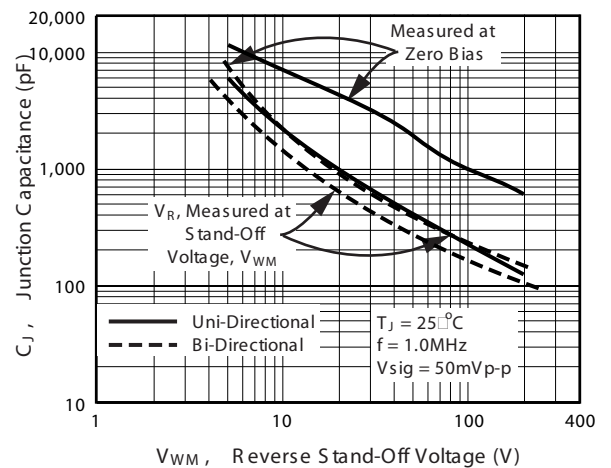


Fig. 5D Typical Transient Thermal Impedance

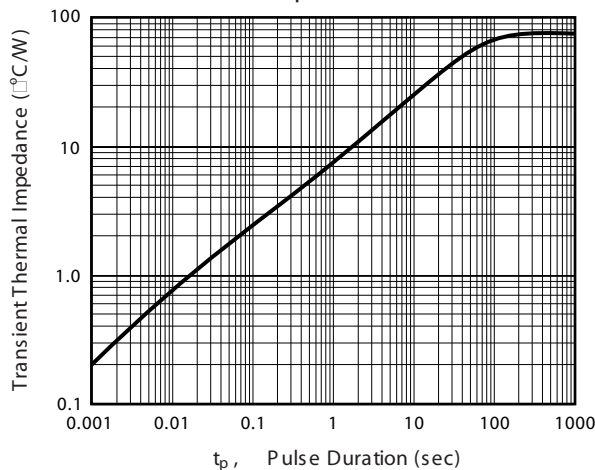


Fig. 6 - Maximum Non-Repetitive Forward Surge Current Uni-Directional Use Only

