

Transient Voltage Suppressor: SMCJ5.0 - SMCJ188CA

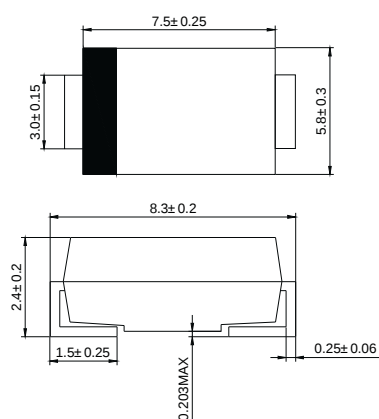
Features:

- 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 secs at terminals

Mechanical Data:

- Case: JEDEC DO-214AB moulded plastic over glass passivated junction
- Polarity: For uni-directional types the colour band denotes the cathode, which is positive with respect to the anode under normal TVS operation
- Weight: 0.007 ounces, 0.21 grams
- Flammability: epoxy is rated UL 94V-0

DO-214AB(SMC)



Dimensions in millimeters

Devices for Bidirectional Applications:

For bi-directional devices, use suffix C or CA (eg SMCJ10C, SMCJ10CA). Electrical characteristics apply in both directions. No colour band on bi-directional devices.

Maximum Ratings & Characteristics: $T_{amb}=25^{\circ}\text{C}$, unless otherwise specified.

	Symbol:	Value:	Unit:
Peak power dissipation with a 10/1000 μ s waveform (NOTE1,2,FIG1)	P_{PPM}	Minimum 1500	W
Peak pulse current with a 10/1000 μ s waveform (NOTE1)	I_{PPM}	See table below	A
Peak forward surge current, 8.3ms single half sine-wave uni-directional only (NOTE2)	I_{FSM}	200.0	A
Typical thermal resistance, junction to ambient (NOTE3)	R_{thJA}	100.0	$^{\circ}\text{C}/\text{W}$
Typical thermal resistance, junction to lead	R_{thJL}	20	$^{\circ}\text{C}/\text{W}$
Operational junction and storage temperature range	T_J, T_{STG}	-55 to +150	$^{\circ}\text{C}$

Notes:

1. Non-repetitive current pulses, per fig.3 and derated above $T_A=25^{\circ}\text{C}$ per fig.2
2. Mounted on 0.2 x 0.2" (5.0 x 5.0mm) copper pads to each terminal
3. Mounted on minimum recommended pad layout

Electrical Characteristics: $T_{amb}=25^{\circ}C$ unless otherwise specified $V_F=3.5V$ @ $I_F=50A$ (uni-directional only)

Type: Part No add C for Bi-directional	Device Marking Code:		$V_{(BR)}$			V_{WM}	I_{RM} @ V_{WM}	I_{PPM}	V_c @ I_{PPM}
	UNI	BI	Min (V)	Max (V)	mA (@ I_r)	V	μA	A	V
SMCJ5.0 (C)	GDD	BDD	6.40	7.82	10	5.0	800	62.5	9.6
SMCJ5.0 (C)A	DGE	BGE	6.40	7.07	10	5.0	800	65.2	9.2
SMCJ6.0 (C)	GDF	BDF	6.67	8.15	10	6.0	800	52.6	11.4
SMCJ6.0 (C)A	GDG	BDG	6.67	8.15	10	6.0	800	58.3	10.3
SMCJ6.5 (C)	GDH	BDH	7.22	8.82	10	6.5	500	48.8	12.3
SMCJ6.5 (C)A	GDK	BDK	7.22	7.98	10	6.5	500	53.6	11.2
SMCJ7.0 (C)	GDL	BDL	7.78	9.51	10	7.0	200	45.1	13.3
SMCJ7.0 (C)A	GDM	BDM	7.78	8.60	10	7.0	200	50.0	12.0
SMCJ7.5 (C)	GDN	BDN	8.33	10.2	1.0	7.5	100	42.0	14.3
SMCJ7.5 (C)A	GDP	BDP	8.33	9.21	1.0	.5	100	46.5	12.9
SMCJ8.0 (C)	GDQ	BDQ	8.89	10.9	1.0	8.0	50	40.0	15.0
SMCJ8.0 (C)A	GDR	BDR	8.89	9.83	1.0	8.0	50	44.1	13.6
SMCJ8.5 (C)	GDS	BDS	9.44	11.5	1.0	8.5	20	37.7	15.9
SMCJ8.5 (C)A	GDT	BDT	9.44	10.4	1.0	8.5	20	41.7	14.4
SMCJ9.0 (C)	GDU	BDU	10.0	12.2	1.0	9.0	10	35.5	16.9
SMCJ9.0 (C)A	GDV	BDV	10.0	11.1	1.0	9.0	10	39.0	15.4
SMCJ10 (C)	GDW	BDW	11.1	13.6	1.0	10	5.0	31.9	18.8
SMCJ10 (C)A	GDX	BDX	11.1	12.3	1.0	10	5.0	35.3	17.0
SMCJ11 (C)	GDY	BDY	12.2	14.9	1.0	11	5.0	29.9	20.1
SMCJ11 (C)A	GDZ	BDZ	12.2	13.5	1.0	11	5.0	33.0	18.2
SMCJ12 (C)	GED	BED	13.3	16.2	1.0	12	5.0	27.3	22.0
SMCJ12 (C)A	GEE	BEE	13.3	14.7	1.0	12	5.0	30.2	19.9
SMCJ13 (C)	GEF	BEF	14.4	17.6	1.0	13	5.0	25.2	23.8
SMCJ13 (C)A	GEG	BEG	14.4	15.9	1.0	13	5.0	27.9	21.5
SMCJ14 (C)	GEH	BEH	15.6	19.1	1.0	14	5.0	23.3	25.8
SMCJ14 (C)A	GEK	BEK	15.6	17.2	1.0	14	5.0	25.9	23.2
SMCJ15 (C)	GEL	BEL	16.7	20.4	1.0	15	5.0	22.3	26.9
SMCJ15 (C)A	GEM	BEM	16.7	18.5	1.0	15	5.0	24.6	24.4
SMCJ16 (C)	GEN	BEN	17.8	21.8	1.0	16	5.0	20.8	28.8
SMCJ16 (C)A	GEP	BEP	17.8	19.7	1.0	16	5.0	23.1	26.0
SMCJ17 (C)	GEQ	BEQ	18.9	23.1	1.0	17	5.0	19.7	30.5
SMCJ17 (C)A	GER	BER	18.9	20.9	1.0	17	5.0	21.7	27.6
SMCJ18 (C)	GES	BES	20.0	24.4	1.0	18	5.0	18.6	32.2
SMCJ18 (C)A	GET	BET	20.0	22.1	1.0	18	5.0	20.5	29.2
SMCJ20 (C)	GEU	BEU	22.2	27.1	1.0	20	5.0	16.8	35.8
SMCJ20 (C)A	GEV	BEV	22.2	24.5	1.0	20	5.0	18.5	32.4

Electrical Characteristics: $T_{amb}=25^{\circ}\text{C}$ unless otherwise specified $V_F=3.5\text{V}$ @ $I_F=50\text{A}$ (uni-directional only)

Type: Part No add C for Bi-directional	Device Marking Code:		$V_{(BR)}$			V_{WM}	$I_{RM} @ V_{WM}$	I_{PPM}	$V_C @ I_{PPM}$
	UNI	BI	Min (V)	Max (V)	mA (@ I_F)	V	μA	A	V
SMCJ22 (C)	GEW	BEW	24.4	29.8	1.0	22	5.0	15.2	39.4
SMCJ22 (C)A	GEX	BEX	24.4	26.9	1.0	22	5.0	16.9	35.5
SMCJ24 (C)	GEY	BEY	26.7	32.6	1.0	24	5.0	14.0	43.0
SMCJ24 (C)A	GEZ	BEZ	26.7	29.5	1.0	24	5.0	15.4	38.9
SMCJ26 (C)	GFD	BFD	28.9	35.3	1.0	26	5.0	12.9	46.6
SMCJ26 (C)A	GFE	BFE	28.9	31.9	1.0	26	5.0	14.3	42.1
SMCJ28 (C)	GFF	BFF	31.1	38.0	1.0	28	5.0	12.0	50.0
SMCJ28 (C)A	GFG	BFG	31.1	34.4	1.0	28	5.0	13.2	45.4
SMCJ30 (C)	GFH	BFH	33.3	40.7	1.0	30	5.0	11.2	53.5
SMCJ30 (C)A	GFK	BFK	33.3	36.8	1.0	30	5.0	12.4	48.4
SMCJ33 (C)	GFL	BFL	36.7	44.9	1.0	33	5.0	10.2	59.0
SMCJ33 (C)A	GFM	BFM	36.7	40.6	1.0	33	5.0	11.3	53.3
SMCJ36 (C)	GFN	BFN	40.0	48.9	1.0	36	5.0	9.3	64.3
SMCJ36 (C)A	GFP	BFP	40.0	44.2	1.0	36	5.0	10.3	58.1
SMCJ40 (C)	GFQ	BFQ	44.4	54.3	1.0	40	5.0	8.4	71.4
SMCJ40 (C)A	GFR	BFR	44.4	49.1	1.0	40	5.0	9.3	64.5
SMCJ43 (C)	GFS	BFS	47.8	58.4	1.0	43	5.0	7.8	76.7
SMCJ43 (C)A	GFT	BFT	47.8	52.8	1.0	43	5.0	8.6	69.4
SMCJ45 (C)	GFU	BFU	50.0	61.1	1.0	45	5.0	7.5	80.3
SMCJ45 (C)A	GFV	BFV	50.0	55.3	1.0	45	5.0	8.3	72.7
SMCJ48 (C)	GEH	BEH	53.3	65.1	1.0	48	5.0	7.0	85.5
SMCJ48 (C)A	GEK	BEK	53.3	58.9	1.0	48	5.0	7.8	77.4
SMCJ51 (C)	GEL	BEL	56.7	69.3	1.0	51	5.0	6.6	91.1
SMCJ51 (C)A	GEM	BEM	56.7	62.7	1.0	51	5.0	7.3	82.4
SMCJ54 (C)	GFW	BFW	60.0	73.3	1.0	54	5.0	6.2	96.3
SMCJ54 (C)A	GFX	BFX	60.0	66.3	1.0	54	5.0	6.9	87.1
SMCJ58 (C)	GFY	BFY	64.4	78.7	1.0	58	5.0	5.8	103
SMCJ58 (C)A	GFZ	BFZ	64.4	71.2	1.0	58	5.0	6.4	93.6
SMCJ60 (C)	GGD	BGD	66.7	81.5	1.0	60	5.0	5.6	107
SMCJ60 (C)A	GGE	BGE	66.7	73.7	1.0	60	5.0	6.2	96.8
SMCJ64 (C)	GGF	BGF	71.1	86.9	1.0	64	5.0	5.3	114
SMCJ64 (C)A	GGG	BGG	71.1	78.6	1.0	64	5.0	5.8	103
SMCJ70 (C)	GGH	BGH	77.8	95.1	1.0	70	5.0	4.8	125
SMCJ70 (C)A	GGK	BGK	77.8	86.0	1.0	70	5.0	5.3	113
SMCJ75 (C)	GGL	BGL	83.3	102	1.0	75	5.0	4.5	134
SMCJ75 (C)A	GGM	BGM	83.3	92.1	1.0	75	5.0	5.0	121

Electrical Characteristics: Tamb=25°C unless otherwise specified V_F=3.5V @ I_F=50A (uni-directional only)

Type: Part No add C for Bi-directional	Device Marking Code:		V _(BR)			V _{WM}	I _{RM} @ V _{WM}	I _{PPM}	V _c @ I _{PPM}
	UNI	BI	Min (V)	Max (V)	mA (@I _r)	V	μA	A	V
SMCJ78 (C)	GGN	BGN	86.7	106	1.0	78	5.0	4.3	139
SMCJ78 (C)A	GGP	BGP	86.7	95.8	1.0	78	5.0	4.8	126
SMCJ85 (C)	GGQ	BGQ	94.4	115	1.0	85	5.0	4.0	151
SMCJ85 (C)A	GGR	BGR	94.4	104	1.0	85	5.0	4.4	137
SMCJ90 (C)	GGS	BGS	100	122	1.0	90	5.0	3.8	160
SMCJ90 (C)A	GGT	BGT	100	111	1.0	90	5.0	4.1	146
SMCJ100 (C)	GGU	BGU	111	136	1.0	100	5.0	3.4	179
SMCJ100 (C)A	GGV	BGV	111	123	1.0	100	5.0	3.7	162
SMCJ110 (C)	GGW	BGW	122	149	1.0	110	5.0	3.1	196
SMCJ110 (C)A	GGX	BGX	122	135	1.0	110	5.0	3.4	177
SMCJ120 (C)	GGY	BGY	133	163	1.0	120	5.0	2.8	214
SMCJ120 (C)A	GGZ	BGZ	133	147	1.0	120	5.0	3.1	193
SMCJ130 (C)	GHD	BHD	144	176	1.0	130	5.0	2.6	231
SMCJ130 (C)A	GHE	BHE	144	159	1.0	130	5.0	2.9	209
SMCJ150 (C)	GHF	BHF	167	204	1.0	150	5.0	2.2	268
SMCJ150 (C)A	GHG	BHG	167	185	1.0	150	5.0	2.5	243
SMCJ160 (C)	GHH	BHH	178	218	1.0	160	5.0	2.1	287
SMCJ160 (C)A	GHK	BHK	178	197	1.0	160	5.0	2.3	259
SMCJ170 (C)	GHL	BHL	189	231	1.0	170	5.0	2.0	304
SMCJ170 (C)A	GHM	BHM	189	209	1.0	170	5.0	2.2	275
SMCJ188 (C)	GHN	BHN	209	255	1.0	168	5.0	1.7	344
SMCJ188 (C)A	GHP	BHP	209	231	1.0	188	5.0	2.0	328

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Ratings & Characteristic Curves

FIG.1 – PEAK PULSE POWER RATING CURVE

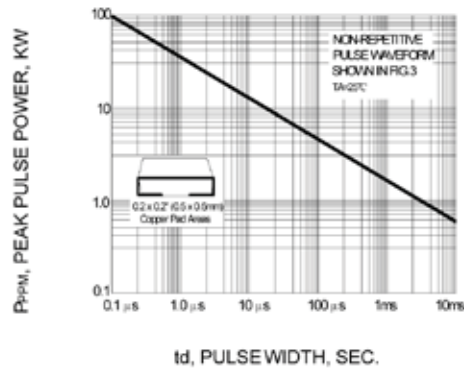


FIG.2 – PULSE DERATING CURVE

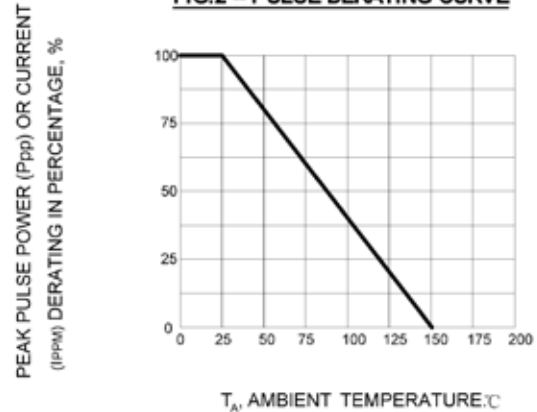


FIG.3 – PULSE WAVEFORM

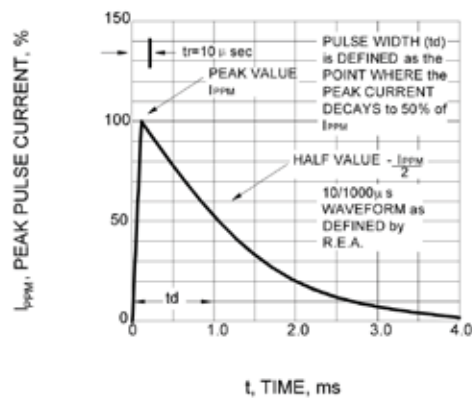


FIG.4 – TYPICAL JUNCTION CAPACITANCE UNIDIRECTIONAL

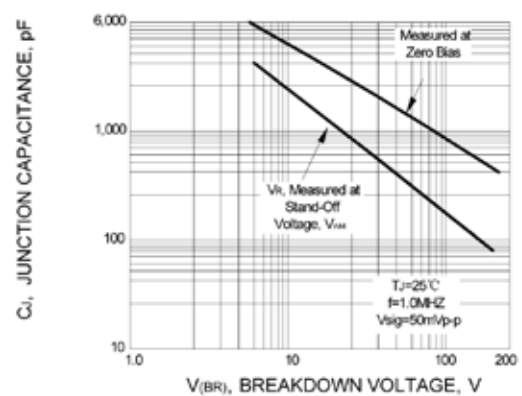


FIG.5 – TYPICAL TRANSIENT THERMAL IMPEDANCE

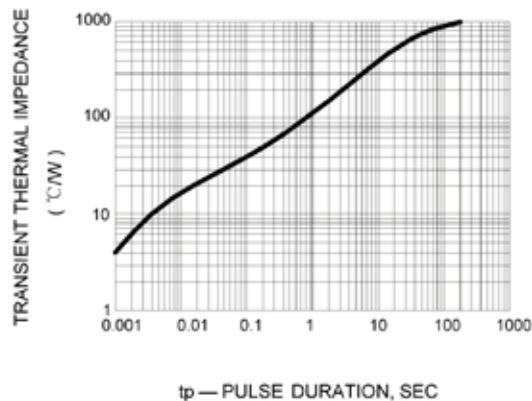


FIG.6 – MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT

