



SMCJ5.0 THRU SMCJ188A TRANSIENT VOLTAGE SUPPRESSORS

Features

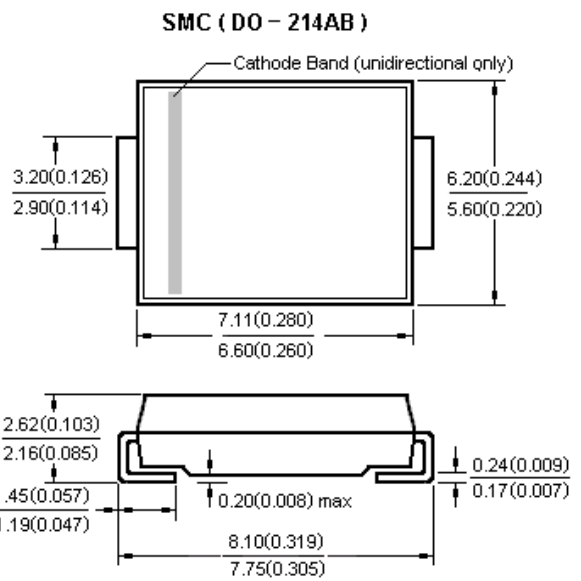
- For surface mounted applications in order to optimize board space
- Low profile space
- Glass passivated chip
- Low inductance
- Excellent clamping capability
- Very fast response time
- Typical I_D less than $1\mu A$ at V_{WM}
- 1500W peak pulse power capability with a 10/1000 μs waveform
- Component in accordance to RoHS 2002/95/1 and WEEE 2002/96/EC



SMC (DO - 214AB)

Mechanical Date

- Case: JEDEC DO-214AB molded plastic over passivated chip
- Terminals: Solder plated, solderable per MIL-STD-750 Method 2026
- Polarity: For uni-directional types the band by laser denotes the cathode, which is positive with respect to the anode under normal TVS operation



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 & Thermal Characteristics

(TA = 25 °C unless otherwise noted)

	Symbol	VALUE	UNIT
Peak pulse power dissipation with a 10/1000 μs waveform (see fig. 1)	P_{PPM}	1500	W
Peak pulse current with a waveform (see fig. 3 , single pulse)	I_{PPM}	See Next Table	A
Peak forward surge current 8.3ms single half sine-wave uni-directional only	I_{FSM}	200	A
Typical thermal resistance, junction to ambient	$R_{\theta JA}$	75	°C / W
Typical thermal resistance, junction to lead	$R_{\theta JL}$	15	°C / W
Operating junction and storage temperature range	T_J T_{STG}	-55 to +150	°C



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TRANSIENT VOLTAGE SUPPRESSORS

TRR Industry No.	TRR House No.	Marking Code		Breakdown Voltage at $I_T^{(1)}$ $V_{(BR)}$ (V)		Test Current I_T (mA)	Stand-off Voltage V_{WM} (V)	Maximum Reverse Leakage at V_{WM} I_D (μ A)	Maximum Peak Pulse Surge Current ⁽²⁾ I_{PPM} (A)	Maximum Clamping Voltage at I_{PPM} V_C (V)
		UNI	BI	Min	Max					
SMCJ5.0	15CT5	GDD	BDD	6.40	7.82	10.0	5.0	1000	156.2	9.6
SMCJ5.0A	15CT5A	GDE	BDE	6.40	7.07	10.0	5.0	1000	163.0	9.2
SMCJ6.0	15CT6	GDF	BDF	6.67	8.15	10.0	6.0	1000	131.6	11.4
SMCJ6.0A	15CT6A	GDG	BDG	6.70	7.37	10.0	6.0	1000	145.6	10.3
SMCJ6.5	15CT6.5	GDH	BDH	7.22	8.82	10.0	6.5	500	122.0	12.3
SMCJ6.5A	15CT6.5A	GDK	BDK	7.22	7.98	10.0	6.5	500	133.9	11.2
SMCJ7.0	15CT7	GDL	BDL	7.78	9.51	10.0	7.0	200	112.8	13.3
SMCJ7.0A	15CT7A	GDM	BDM	7.78	8.60	10.0	7.0	200	125.0	12.0
SMCJ7.5	15CT7.5	GDN	BDN	8.33	10.2	1.0	7.5	100	104.9	14.3
SMCJ7.5A	15CT7.5A	GDP	BDP	8.33	9.21	1.0	7.5	100	116.3	12.9
SMCJ8.0	15CT8	GDQ	BDQ	8.89	10.9	1.0	8.0	50	100.0	15.0
SMCJ8.0A	15CT8A	GDR	BDR	8.89	9.83	1.0	8.0	20	110.3	13.6
SMCJ8.5A	15CT8.5	GDS	BDS	9.44	11.5	1.0	8.5	20	94.3	15.9
SMCJ8.5A	15CT8.5A	GDT	BDT	9.44	10.4	1.0	8.5	10	104.2	14.4
SMCJ9.0	15CT9	GDU	BDU	10.0	12.2	1.0	9.0	10	88.8	16.9
SMCJ9.0A	15CT9A	GDV	BDV	10.0	11.1	1.0	9.0	5	97.4	15.4
SMCJ10	15CT10	GDW	BDW	11.1	13.6	1.0	10	5	79.8	18.8
SMCJ10A	15CT10A	GDX	BDX	11.1	12.3	1.0	10	5	88.2	17.0
SMCJ11	15CT11	GDY	BDY	12.2	14.9	1.0	11	5	74.6	20.1
SMCJ11A	15CT11A	GDZ	BDZ	12.2	13.5	1.0	11	5	82.4	18.2
SMCJ12	15CT12	GED	BED	13.3	16.3	1.0	12	5	68.2	22.0
SMCJ12A	15CT12A	GEE	BEE	13.3	14.7	1.0	12	5	75.4	19.9
SMCJ13	15CT13	GEF	BEF	14.4	17.6	1.0	13	1.0	63.0	23.8
SMCJ13A	15CT13A	GEG	BEG	14.4	15.9	1.0	13	1.0	69.8	21.5
SMCJ14	15CT14	GEH	BEH	15.6	19.1	1.0	14	1.0	58.1	25.8
SMCJ14A	15CT14A	GEK	BEK	15.6	17.2	1.0	14	1.0	64.7	23.2
SMCJ15	15CT15	GEL	BEL	16.7	20.4	1.0	15	1.0	55.8	26.9
SMCJ15A	15CT15A	GEM	BEM	16.7	18.5	1.0	15	1.0	61.5	24.4
SMCJ16	15CT16	GEN	BEN	17.8	21.8	1.0	16	1.0	52.1	28.8
SMCJ16A	15CT16A	GEP	BEP	17.8	19.7	1.0	16	1.0	57.7	26.0
SMCJ17	15CT17	GEQ	BEQ	18.9	23.1	1.0	17	1.0	49.2	30.5
SMCJ17A	15CT17A	GER	BER	18.9	20.9	1.0	17	1.0	54.3	27.6
SMCJ18	15CT18	GES	BES	20.0	24.4	1.0	18	1.0	46.6	32.2
SMCJ18A	15CT18A	GET	BET	20.0	22.1	1.0	18	1.0	51.4	29.2
SMCJ20	15CT20	GEU	BEU	22.2	27.1	1.0	20	1.0	41.9	35.8
SMCJ20A	15CT20A	GEV	BEV	22.2	24.5	1.0	20	1.0	46.3	32.4
SMCJ22	15CT22	GEW	BEW	24.4	29.8	1.0	22	1.0	38.1	39.4
SMCJ22A	15CT22A	GEX	BEX	24.4	26.9	1.0	22	1.0	42.3	35.5
SMCJ24	15CT24	GEY	BEY	26.7	32.6	1.0	24	1.0	34.9	43.0
SMCJ24A	15CT24A	GEZ	BEZ	26.7	29.5	1.0	24	1.0	38.6	38.9
SMCJ26	15CT26	GFD	BFD	28.9	35.3	1.0	26	1.0	32.2	46.6
SMCJ26A	15CT26A	GFE	BFE	28.9	31.9	1.0	26	1.0	35.6	42.1
SMCJ28	15CT28	GFF	BFF	31.1	38.0	1.0	28	1.0	30.0	50.0
SMCJ28A	15CT28A	GFG	BFG	31.1	34.4	1.0	28	1.0	33.0	45.4
SMCJ30	15CT30	GFH	BFH	33.3	40.7	1.0	30	1.0	28.0	53.5
SMCJ30A	15CT30A	GFK	BFK	33.3	36.8	1.0	30	1.0	31.0	48.4
SMCJ33	15CT33	GFL	BFL	36.7	44.9	1.0	33	1.0	25.4	59.0

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

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

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





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TRANSIENT VOLTAGE SUPPRESSORS

TRR Industry No.	TRR House No.	Marking Code		Breakdown Voltage at $I_T^{(1)}$ $V_{(BR)}$ (V)		Test Current I_T (mA)	Stand-off Voltage V_{WM} (V)	Maximum Reverse Leakage at V_{WM} I_D (μ A)	Maximum Peak Pulse Surge Current ⁽²⁾ I_{PPM} (A)	Maximum Clamping Voltage at I_{PPM} V_C (V)
		UNI	BI	Min	Max					
SMCJ33A	15CT33A	GFM	BFM	36.70	40.60	1.0	33.0	1	28.1	53.3
SMCJ36	15CT36	GFN	BFN	40.00	48.90	1.0	36.0	1	23.3	64.3
SMCJ36A	15CT36A	GFP	BFP	40.00	44.20	1.0	36.0	1	25.8	58.1
SMCJ40	15CT40	GFQ	BFQ	44.40	54.30	1.0	40.0	1	21.0	71.4
SMCJ40A	15CT40A	GFR	BFR	44.40	49.10	1.0	40.0	1	23.3	64.5
SMCJ43	15CT43	GFS	BFS	47.80	58.40	1.0	43.0	1	19.6	76.7
SMCJ43A	15CT43A	GFT	BFT	47.80	52.80	1.0	43.0	1	21.6	69.4
SMCJ45	15CT45	GFU	BFU	50.00	61.10	1.0	45.0	1	18.7	80.3
SMCJ45A	15CT45A	GFV	BFV	50.00	55.3	1.0	45.0	1	20.6	72.7
SMCJ48	15CT48	GFW	BFW	53.30	65.10	1.0	48.0	1	17.5	85.5
SMCJ48A	15CT48A	GFX	BFX	53.30	58.9	1.0	48.0	1	19.4	77.4
SMCJ51	15CT51	GFY	BFY	56.70	69.30	1.0	51.0	1	16.5	91.1
SMCJ51A	15CT51A	GFZ	BFZ	56.70	62.7	1.0	51.0	1	18.2	82.4
SMCJ54	15CT54	GGD	BGD	60.00	73.3	1.0	54.0	1	15.6	96.3
SMCJ54A	15CT54A	GGE	BGE	60.0	66.3	1.0	54.0	1.0	17.2	87.1
SMCJ58	15CT58	GGF	BGF	64.4	78.7	1.0	58.0	1.0	14.6	103.0
SMCJ58A	15CT58A	GGG	BGG	64.4	71.2	1.0	58	1.0	16.0	93.6
SMCJ60	15CT60	GGH	BGH	66.7	81.5	1.0	60	1.0	14.0	107.0
SMCJ60A	15CT60A	GGK	BGK	66.7	73.7	1.0	60	1.0	15.5	96.8
SMCJ64	15CT64	GGL	BGL	71.1	86.9	1.0	64	1.0	13.2	114.0
SMCJ64A	15CT64A	GGM	BGM	71.1	78.6	1.0	64	1.0	14.6	103.0
SMCJ70	15CT70	GGN	BGN	77.8	95.1	1.0	70	1.0	12.0	125.0
SMCJ70A	15CT70A	GGP	BGP	77.8	86.0	1.0	70	1.0	13.3	113.0
SMCJ75	15CT75	GGQ	BGQ	83.3	102.0	1.0	75	1.0	11.2	134.0
SMCJ75A	15CT75A	GGR	BGR	83.3	92.1	1.0	75	1.0	12.4	121.0
SMCJ78	15CT78	GGS	BGS	86.7	106.0	1.0	78	1.0	10.8	139.0
SMCJ78A	15CT78A	GGT	BGT	86.7	95.8	1.0	78	1.0	11.9	126.0
SMCJ85	15CT85	GGU	BGU	94.4	115.0	1.0	85	1.0	9.9	151.0
SMCJ85A	15CT85A	GGV	BGV	94.4	104.0	1.0	85	1.0	10.9	137.0
SMCJ90	15CT90	GGW	BGW	100.0	122.0	1.0	90	1.0	9.4	160.0
SMCJ90A	15CT90A	GGX	BGX	100.0	111.0	1.0	90	1.0	10.3	146.0
SMCJ100	15CT100	GGY	BGY	111.0	136.0	1.0	100	1.0	8.4	179.0
SMCJ100A	15CT100A	GGZ	BGZ	111.0	123.0	1.0	100	1.0	9.3	162.0
SMCJ110	15CT110	GHD	BHD	122.0	149.0	1.0	110	1.0	7.7	196.0
SMCJ110A	15CT110A	GHE	BHE	122.0	135.0	1.0	110	1.0	8.5	177.0
SMCJ120	15CT120	GHF	BHF	133.0	163.0	1.0	120	1.0	7.0	214.0
SMCJ120A	15CT120A	GHG	BHG	133.0	147.0	1.0	120	1.0	7.8	193.0
SMCJ130	15CT130	GHH	BHH	144.0	176.0	1.0	130	1.0	6.5	231.0
SMCJ130A	15CT130A	GHK	BHK	144.0	159.0	1.0	130	1.0	7.2	209.0
SMCJ150	15CT150	GHL	BHL	167.0	204.0	1.0	150	1.0	5.6	268.0
SMCJ150A	15CT150A	GHM	BHM	167.0	185.0	1.0	150	1.0	6.2	243.0
SMCJ160	15CT160	GHN	BHN	178.0	218.0	1.0	160	1.0	5.2	287.0
SMCJ160A	15CT160A	GHP	BHP	178.0	197.0	1.0	160	1.0	5.8	259.0
SMCJ170	15CT170	GHQ	BHQ	189.0	231.0	1.0	170	1.0	4.9	304.0
SMCJ170A	15CT170A	GHR	BHR	189.0	209.0	1.0	170	1.0	5.5	275.0
SMCJ188	15CT188	GHS	BHS	209.0	255.0	1.0	188	1.0	4.4	344.0
SMCJ188A	15CT188A	GHT	BHT	209.0	231.0	1.0	188	1.0	4.6	328.0

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

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

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





Characteristic Curves ($T_A=25^\circ\text{C}$ unless otherwise noted)

Fig. 1-- Peak Pulse Power Rating Cure

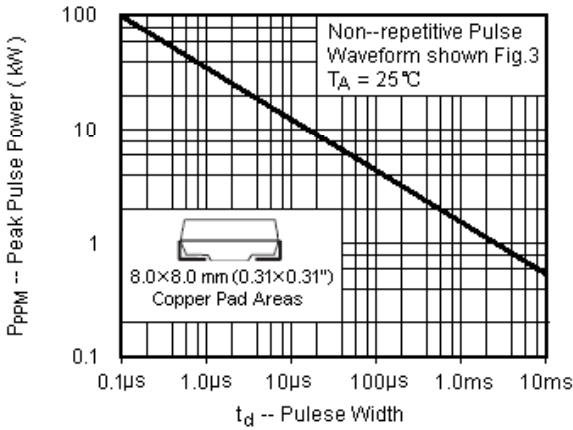


Fig.2-- Pulse Derating Cure

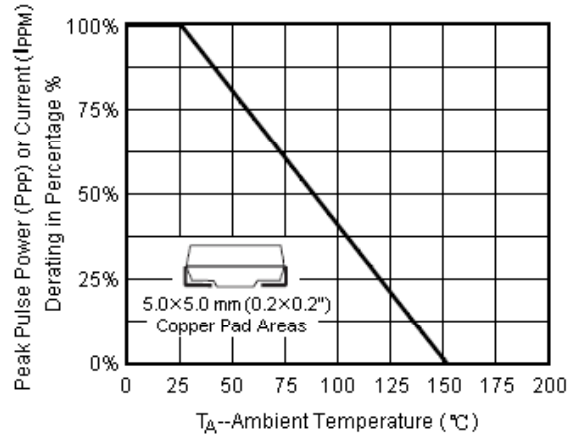


Fig. 3-- Pulse Waveform

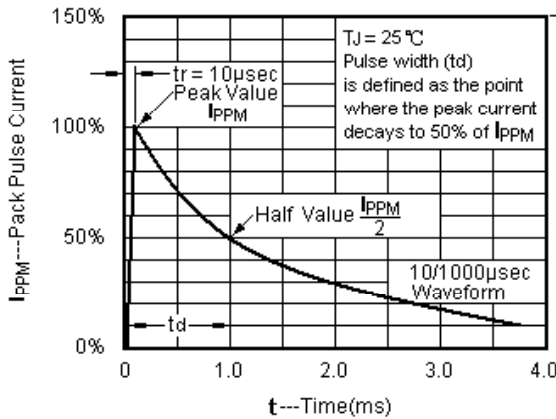


Fig. 4 -- Typical Junction Capacitance

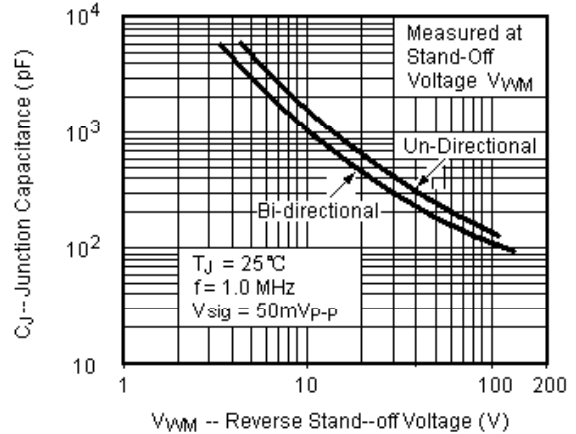


Fig. 5 -- Typical Transient Thermal Impedance

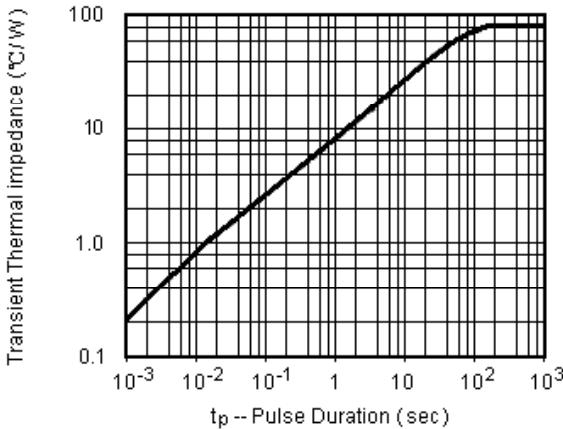


Fig. 6 -- Maximum Non-Repetitive Forward Surge Current (Uni-Directional Only)

