



SMBJ5.0 THRU SMBJ188A

TRANSIENT VOLTAGE SUPPRESSORS

Features

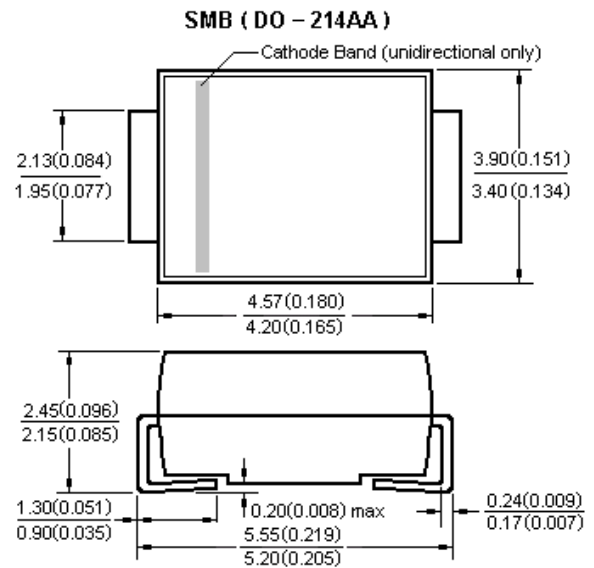
- For surface mounted applications in order to optimize board space
- Low profile space
- Glass passivated chip
- Low inductance
- Excellent clamping capability
- Very fast response time
- Typical I_D less than $1\mu A$ at V_{WM}
- 600W peak pulse power capability with a 10/1000 μs waveform
- Component in accordance to RoHS 2002/95/1 and WEEE 2002/96/EC

Mechanical Date

- Case: JEDEC DO-214AA 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



SMB (DO – 214AA)



Dimensions in millimeters and (inches)

Devices for Bidirectional Applications

- For bi-directional devices, use suffix C or CA (e.g.SMBJ10C, SMBJ10CA).
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}	600	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}	100	A
Typical thermal resistance, junction to ambient	$R_{\theta JA}$	100	°C / W
Typical thermal resistance, junction to lead	$R_{\theta JL}$	20	°C / W
Operating junction and storage temperature range	$T_J T_{STG}$	-55 to +150	°C



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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					
SMBJ5.0	6BT5	KD	AD	6.40	7.82	10.0	5.0	800	62.5	9.6
SMBJ5.0A	6BT5A	KE	AE	6.40	7.07	10.0	5.0	800	65.2	9.2
SMBJ6.0	6BT6	KF	AF	6.67	8.15	10.0	6.0	800	52.6	11.4
SMBJ6.0A	6BT6B	KG	AG	6.70	7.37	10.0	6.0	800	58.3	10.3
SMBJ6.5	6BT6.5	KH	AH	7.22	8.82	10.0	6.5	500	48.8	12.3
SMBJ6.5A	6BT6.5A	KK	AK	7.22	7.98	10.0	6.5	500	53.6	11.2
SMBJ7.0	6BT7	KL	AL	7.78	9.51	10.0	7.0	200	45.1	13.3
SMBJ7.0A	6BT7A	KM	AM	7.78	8.60	10.0	7.0	200	50.0	12.0
SMBJ7.5	6BT7.5	KN	AN	8.33	10.2	1.0	7.5	100	42.0	14.3
SMBJ7.5A	6BT7.5A	KP	AP	8.33	9.21	1.0	7.5	100	46.5	12.9
SMBJ8.0	6BT8	KQ	AQ	8.89	10.9	1.0	8.0	50	40.0	15.0
SMBJ8.0A	6BT8A	KR	AR	8.89	9.83	1.0	8.0	50	44.1	13.6
SMBJ8.5A	6BT8.5	KS	AS	9.44	11.5	1.0	8.0	10	37.7	15.9
SMBJ8.5A	6BT8.5A	KT	AT	9.44	10.4	1.0	8.5	10	41.7	14.4
SMBJ9.0	6BT9	KU	AU	10.0	12.2	1.0	9.0	1.0	35.5	16.9
SMBJ9.0A	6BT9A	KV	AV	10.0	11.1	1.0	9.0	1.0	39.0	15.4
SMBJ10	6BT10	KW	AW	11.1	13.6	1.0	10	1.0	31.9	18.8
SMBJ10A	6BT10A	KX	AX	11.1	12.3	1.0	10	1.0	35.3	17.0
SMBJ11	6BT11	KY	AY	12.2	14.9	1.0	11	1.0	29.9	20.1
SMBJ11A	6BT11A	KZ	AZ	12.2	13.5	1.0	11	1.0	33.0	18.2
SMBJ12	6BT12	LD	BD	13.3	16.3	1.0	12	1.0	27.3	22.0
SMBJ12A	6BT12A	LE	BE	13.3	14.7	1.0	12	1.0	30.2	19.9
SMBJ13	6BT13	LF	BF	14.4	17.6	1.0	13	1.0	25.2	23.8
SMBJ13A	6BT13A	LG	BG	14.4	15.9	1.0	13	1.0	27.9	21.5
SMBJ14	6BT14	LH	BH	15.6	19.1	1.0	14	1.0	23.3	25.8
SMBJ14A	6BT16B	LK	BK	15.6	17.2	1.0	14	1.0	25.8	23.2
SMBJ15	6BT15	LL	BL	16.7	20.4	1.0	15	1.0	22.3	26.9
SMBJ15A	6BT15A	LM	BM	16.7	18.5	1.0	15	1.0	24.6	24.4
SMBJ16	6BT16	LN	BN	17.8	21.8	1.0	16	1.0	20.8	28.8
SMBJ16A	6BT16B	LP	BP	17.8	19.7	1.0	16	1.0	23.1	26.0
SMBJ17	6BT17	LQ	BQ	18.9	23.1	1.0	17	1.0	19.7	30.5
SMBJ17A	6BT17A	LR	BR	18.9	20.9	1.0	17	1.0	21.7	27.6
SMBJ18	6BT18	LS	BS	20.0	24.4	1.0	18	1.0	18.6	32.2
SMBJ18A	6BT18A	LT	BT	20.0	22.1	1.0	18	1.0	20.5	29.2
SMBJ20	6BT20	LU	BU	22.2	27.1	1.0	20	1.0	16.7	35.8
SMBJ20A	6BT20A	LV	BV	22.2	24.5	1.0	20	1.0	18.5	32.4
SMBJ22	6BT22	LW	BW	24.4	29.8	1.0	22	1.0	15.2	39.4
SMBJ22A	6BT22A	LX	BX	24.4	26.9	1.0	22	1.0	16.9	35.5
SMBJ24	6BT24	LY	BY	26.7	32.6	1.0	24	1.0	14.0	43.0
SMBJ24A	6BT26B	LZ	BZ	26.7	29.5	1.0	24	1.0	15.4	38.9
SMBJ26	6BT26	MD	CD	28.9	35.3	1.0	26	1.0	12.9	46.6
SMBJ26A	6BT26B	ME	CE	28.9	31.9	1.0	26	1.0	14.3	42.1
SMBJ28	6BT28	MF	CF	31.1	38.0	1.0	28	1.0	12.0	50.0
SMBJ28A	6BT28A	MG	CG	31.1	34.4	1.0	28	1.0	13.2	45.4
SMBJ30	6BT30	MH	CH	33.3	40.7	1.0	30	1.0	11.2	53.5
SMBJ30A	6BT30A	MK	CK	33.3	36.8	1.0	30	1.0	12.4	48.4
SMBJ33	6BT33	ML	CL	36.7	44.9	1.0	33	1.0	10.2	59.0

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

(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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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					
SMBJ33A	6BT33A	MM	CM	36.70	40.60	1.0	33.0	1	11.3	53.3
SMBJ36	6BT36	MN	CN	40.00	48.90	1.0	36.0	1	9.3	64.3
SMBJ36A	6BT36A	MP	CP	40.00	44.20	1.0	36.0	1	10.3	58.1
SMBJ40	6BT40	MQ	CQ	44.40	54.30	1.0	40.0	1	8.4	71.4
SMBJ40A	6BT40A	MR	CR	44.40	49.10	1.0	40.0	1	9.3	64.5
SMBJ43	6BT43	MS	CS	47.80	58.40	1.0	43.0	1	7.8	76.7
SMBJ43A	6BT43A	MT	CT	47.80	52.80	1.0	43.0	1	8.6	69.4
SMBJ45	6BT45	MU	CU	50.00	61.10	1.0	45.0	1	7.5	80.3
SMBJ45A	6BT45A	MV	CV	50.00	55.3	1.0	45.0	1	8.3	72.7
SMBJ48	6BT48	MW	CW	53.30	65.10	1.0	48.0	1	7.0	85.5
SMBJ48A	6BT48A	MX	CX	53.30	58.9	1.0	48.0	1	7.8	77.4
SMBJ51	6BT51	MY	CY	56.70	69.30	1.0	51.0	1	6.6	91.1
SMBJ51A	6BT51A	MZ	CZ	56.70	62.7	1.0	51.0	1	7.3	82.4
SMBJ54	6BT54	ND	DD	60.00	73.3	1.0	54.0	1	6.2	96.3
SMBJ54A	6BT56B	NE	DE	60.0	66.3	1.0	54.0	1.0	6.9	87.1
SMBJ58	6BT58	NF	DF	64.4	78.7	1.0	58.0	1.0	5.8	103.0
SMBJ58A	6BT58A	NG	DG	64.4	71.2	1.0	58	1.0	6.4	93.6
SMBJ60	6BT60	NH	DH	66.7	81.5	1.0	60	1.0	5.6	107.0
SMBJ60A	6BT60A	NK	DK	66.7	73.7	1.0	60	1.0	6.2	96.8
SMBJ64	6BT64	NL	DL	71.1	86.9	1.0	64	1.0	5.3	114.0
SMBJ64A	6BT66B	NM	DM	71.1	78.6	1.0	64	1.0	5.8	103.0
SMBJ70	6BT70	NN	DN	77.8	95.1	1.0	70	1.0	4.8	125.0
SMBJ70A	6BT70A	NP	DP	77.8	86.0	1.0	70	1.0	5.3	113.0
SMBJ75	6BT75	NQ	DQ	83.3	102.0	1.0	75	1.0	4.5	134.0
SMBJ75A	6BT75A	NR	DR	83.3	92.1	1.0	75	1.0	5.0	121.0
SMBJ78	6BT78	NS	DS	86.7	106.0	1.0	78	1.0	4.3	139.0
SMBJ78A	6BT78A	NT	DT	86.7	95.8	1.0	78	1.0	4.7	126.0
SMBJ85	6BT85	NU	DU	94.4	115.0	1.0	85	1.0	3.9	151.0
SMBJ85A	6BT85A	NV	DV	94.4	104.0	1.0	85	1.0	4.4	137.0
SMBJ90	6BT90	NW	DW	100.0	122.0	1.0	90	1.0	3.8	160.0
SMBJ90A	6BT90A	NX	DX	100.0	111.0	1.0	90	1.0	4.1	146.0
SMBJ100	6BT100	NY	DY	111.0	136.0	1.0	100	1.0	3.4	179.0
SMBJ100A	6BT100A	NZ	DZ	111.0	123.0	1.0	100	1.0	3.7	162.0
SMBJ110	6BT110	PD	ED	122.0	149.0	1.0	110	1.0	3.1	196.0
SMBJ110A	6BT110A	PE	EE	122.0	135.0	1.0	110	1.0	3.4	177.0
SMBJ120	6BT120	PF	VF	133.0	163.0	1.0	120	1.0	2.8	214.0
SMBJ120A	6BT120A	PG	VG	133.0	147.0	1.0	120	1.0	3.1	193.0
SMBJ130	6BT130	PH	VH	144.0	176.0	1.0	130	1.0	2.6	231.0
SMBJ130A	6BT130A	PK	VK	144.0	159.0	1.0	130	1.0	2.9	209.0
SMBJ150	6BT150	PL	VL	167.0	204.0	1.0	150	1.0	2.2	268.0
SMBJ150A	6BT150A	PM	VM	167.0	185.0	1.0	150	1.0	2.5	243.0
SMBJ160	6BT160	PN	VN	178.0	218.0	1.0	160	1.0	2.1	287.0
SMBJ160A	6BT160A	PP	VP	178.0	197.0	1.0	160	1.0	2.3	259.0
SMBJ170	6BT170	PQ	VQ	189.0	231.0	1.0	170	1.0	2.0	304.0
SMBJ170A	6BT170A	PR	VR	189.0	209.0	1.0	170	1.0	2.2	275.0
SMBJ188	6BT188	PS	VS	209.0	255.0	1.0	188	1.0	1.7	344.0
SMBJ188A	6BT188A	PT	VT	209.0	231.0	1.0	188	1.0	2.0	328.0

Notes: (1) Pulse test : $T_p \cong 50\text{ms}$

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

Fig. 1 -- Peak Pulse Power Rating Curve

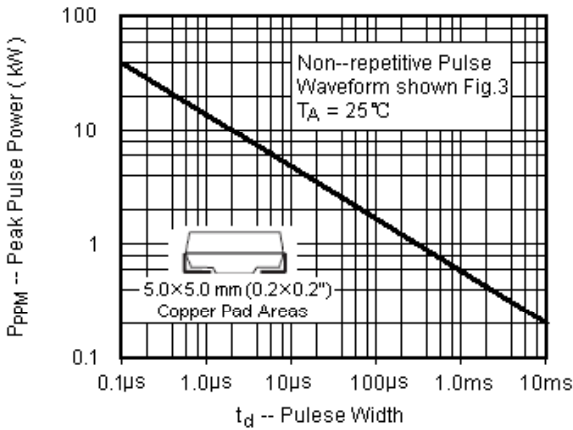


Fig. 2 -- Pulse Derating Curve

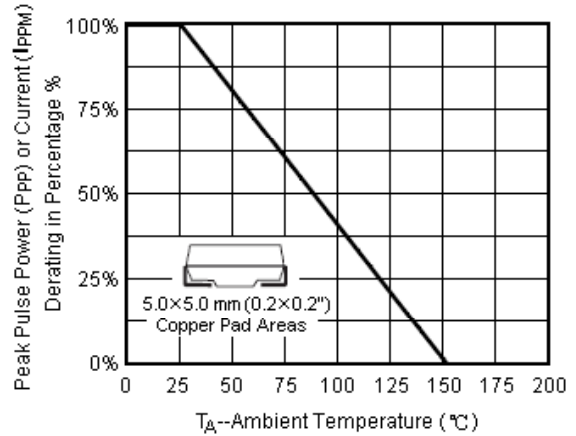


Fig. 3 -- Pulse Waveform

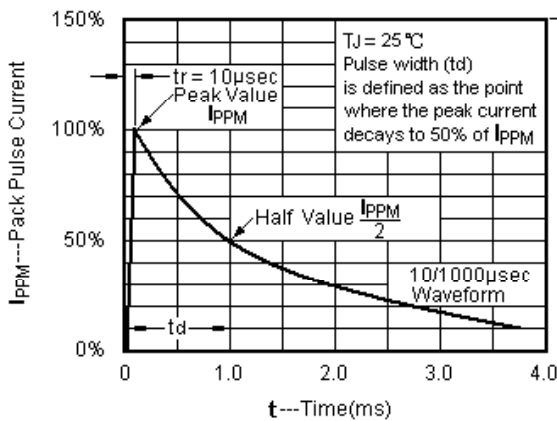


Fig. 4 -- Typical Junction Capacitance

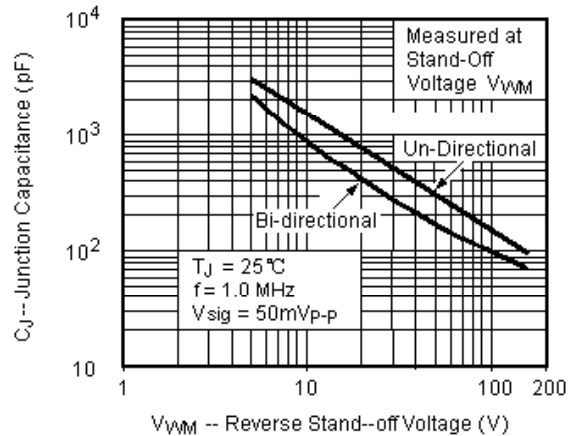


Fig. 5 -- Typical Transient Thermal Impedance

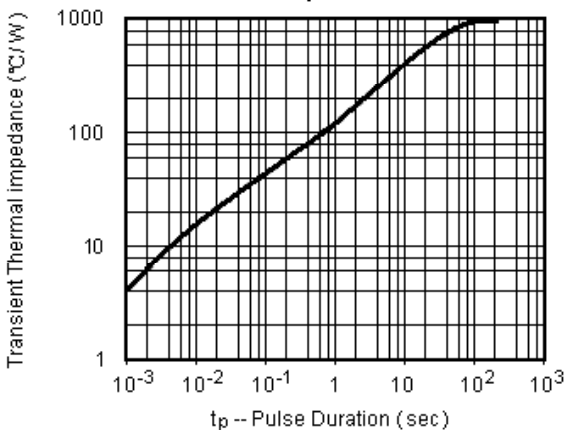


Fig. 6 -- Maximum Non-Repetitive Forward Surge Current (Uni-Directional Only)

