



SMB10J5.0 thru 40A and SMB8J5.0C thru 40CA

New Product

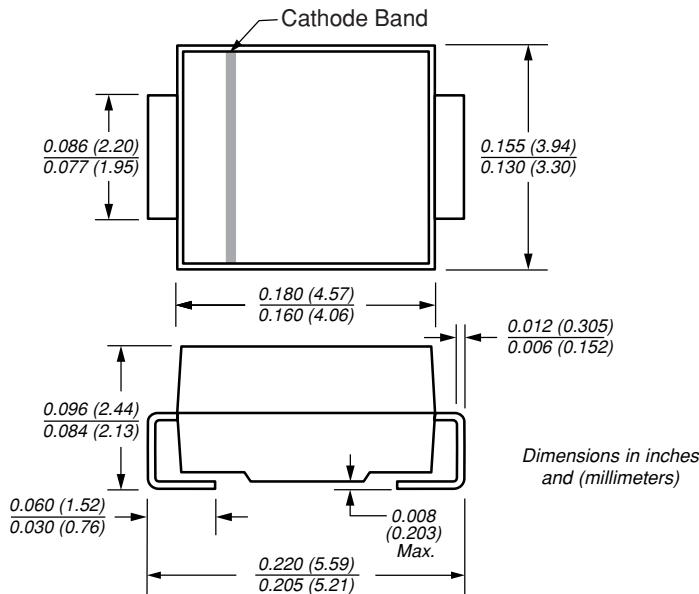
Vishay Semiconductors
formerly General Semiconductor



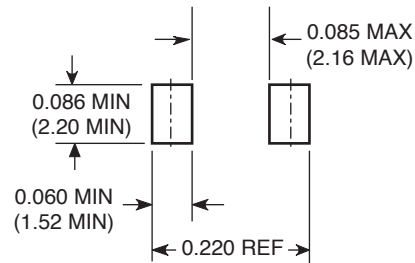
High Power Density Surface Mount TRANSZORB® Transient Voltage Suppressors

Stand-off Voltage 5.0 to 40V
Peak Pulse Power 1000W (unidirectional)
800W (bidirectional)

DO-214AA (SMB)



Mounting Pad Layout



Mechanical Data

Case: JEDEC DO-214AA molded plastic over passivated chip

Terminals: Solder plated, solderable per MIL-STD-750, Method 2026

High temperature soldering guaranteed:
250°C/10 seconds at terminals

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:** 0.003oz., 0.093g

Features

- 1000W for unidirectional and 800W for bidirectional peak pulse power capability with a 10/1000µs waveform, repetition rate (duty cycle): 0.01%
- Plastic package has Underwriters Laboratory Flammability Classification 94V-0
- Low profile package with built-in strain relief for surface mounted applications
- Glass passivated junction
- Low incremental surge resistance, excellent clamping capability
- Very fast response time

Devices for Bidirectional Applications

For bi-directional devices, use suffix C or CA (e.g. SMB8J10CA). Electrical characteristics apply in both directions.

Maximum Ratings & Thermal Characteristics Ratings at 25°C ambient temperature unless otherwise specified.

Parameter	Symbol	Value	Unit
Peak pulse power dissipation with a 10/1000µs waveform ^(1,2) (see fig. 1)	PPPM	1000 800	W
Peak pulse current with a 10/1000µs waveform ⁽¹⁾	IPPM	See Next Table	A
Peak forward surge current 8.3ms single half sine-wave uni-directional only ⁽²⁾	IFSM	100	A
Typical thermal resistance, junction to ambient ⁽³⁾	R _{θJA}	72	°C/W
Typical thermal resistance, junction to lead	R _{θJL}	20	°C/W
Operating junction and storage temperature range	T _J , T _{STG}	-55 to +150	°C

Notes: (1) Non-repetitive current pulse, per Fig. 3 and derated above T_A = 25°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

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Unidirectional Electrical Characteristics

Ratings at 25°C ambient temperature unless otherwise specified. $V_F = 3.5V$ at $I_F = 50A$ (uni-directional only)

Device Type	Device Marking Code	Breakdown Voltage $V_{(BR)}$ (V) ⁽¹⁾		Test Current at I_T (mA)	Stand-off Voltage V_{WM} (V)	Maximum Reverse Leakage at V_{WM} I_D (μA)	Maximum Peak Pulse Surge Current I_{PPM} (A) ⁽²⁾	Maximum Clamping Voltage at I_{PPM} V_C (V)
		Min	Max					
SMB10J5.0	1AD	6.40	7.82	10	5.0	1000	104.2	9.6
SMB10J5.0A	1AE	6.40	7.07	10	5.0	1000	108.7	9.2
SMB10J6.0	1AF	6.67	8.15	10	6.0	1000	87.7	11.4
SMB10J6.0A	1AG	6.67	7.37	10	6.0	1000	97.1	10.3
SMB10J6.5	1AH	7.22	8.82	10	6.5	500	81.3	12.3
SMB10J6.5A	1AK	7.22	7.98	10	6.5	500	89.3	11.2
SMB10J7.0	1AL	7.78	9.51	10	7.0	200	75.2	13.3
SMB10J7.0A	1AM	7.78	8.60	10	7.0	200	83.3	12.0
SMB10J7.5	1AN	8.33	10.2	1.0	7.5	100	69.9	14.3
SMB10J7.5A	1AP	8.33	9.21	1.0	7.5	100	77.5	12.9
SMB10J8.0	1AQ	8.89	10.9	1.0	8.0	50	66.7	15.0
SMB10J8.0A	1AR	8.89	9.83	1.0	8.0	50	73.5	13.6
SMB10J8.5	1AS	9.44	11.5	1.0	8.5	20	62.9	15.9
SMB10J8.5A	1AT	9.44	10.4	1.0	8.5	20	69.4	14.4
SMB10J9.0	1AU	10.0	12.2	1.0	9.0	10	59.2	16.9
SMB10J9.0A	1AV	10.0	11.1	1.0	9.0	10	64.9	15.4
SMB10J10	1AW	11.1	13.6	1.0	10	5.0	53.2	18.8
SMB10J10A	1AX	11.1	12.3	1.0	10	5.0	58.8	17.0
SMB10J11	1AY	12.2	14.9	1.0	11	5.0	49.8	20.1
SMB10J11A	1AZ	12.2	13.5	1.0	11	5.0	54.9	18.2
SMB10J12	1BD	13.3	16.3	1.0	12	5.0	45.5	22.0
SMB10J12A	1BE	13.3	14.7	1.0	12	5.0	50.3	19.9
SMB10J13	1BF	14.4	17.6	1.0	13	1.0	42.0	23.8
SMB10J13A	1BG	14.4	15.9	1.0	13	1.0	46.5	21.5
SMB10J14	1BH	15.6	19.1	1.0	14	1.0	38.8	25.8
SMB10J14A	1BK	15.6	17.2	1.0	14	1.0	43.1	23.2
SMB10J15	1BL	16.7	20.4	1.0	15	1.0	37.2	26.9
SMB10J15A	1BM	16.7	18.5	1.0	15	1.0	41.0	24.4
SMB10J16	1BN	17.8	21.8	1.0	16	1.0	34.7	28.8
SMB10J16A	1BP	17.8	19.7	1.0	16	1.0	38.5	26.0
SMB10J17	1BQ	18.9	23.1	1.0	17	1.0	32.8	30.5
SMB10J17A	1BR	18.9	20.9	1.0	17	1.0	36.2	27.6
SMB10J18	1BS	20.0	24.4	1.0	18	1.0	31.1	32.2
SMB10J18A	1BT	20.0	22.1	1.0	18	1.0	34.2	29.2
SMB10J20	1BU	22.2	27.1	1.0	20	1.0	27.9	35.8
SMB10J20A	1BV	22.2	24.5	1.0	20	1.0	30.9	32.4
SMB10J22	1BW	24.4	29.8	1.0	22	1.0	25.4	39.4
SMB10J22A	1BX	24.4	26.9	1.0	22	1.0	28.2	35.5
SMB10J24	1BY	26.7	32.6	1.0	24	1.0	23.3	43.0
SMB10J24A	1BZ	26.7	29.5	1.0	24	1.0	25.7	38.9
SMB10J26	1CD	28.9	35.3	1.0	26	1.0	21.5	46.6
SMB10J26A	1CE	28.9	31.9	1.0	26	1.0	23.8	42.1
SMB10J28	1CF	31.1	38.0	1.0	28	1.0	20.0	50.0
SMB10J28A	1CG	31.1	34.4	1.0	28	1.0	22.0	45.4
SMB10J30	1CH	33.3	40.7	1.0	30	1.0	18.7	53.5
SMB10J30A	1CK	33.3	36.8	1.0	30	1.0	20.7	48.4

Notes: (1) $V_{(BR)}$ measured after I_T applied for 300 μs square wave pulse or equivalent

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

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



Unidirectional Electrical Characteristics

Ratings at 25°C ambient temperature unless otherwise specified. $V_F = 3.5V$ at $I_F = 50A$ (uni-directional only)

Device Type	Device Marking Code	Breakdown Voltage $V_{(BR)}$ (V) ⁽¹⁾		Test Current at I_T (mA)	Stand-off Voltage V_{WM} (V)	Maximum Reverse Leakage at V_{WM} I_D (μA)	Maximum Peak Pulse Surge Current I_{PPM} (A) ⁽²⁾	Maximum Clamping Voltage at I_{PPM} V_C (V)
		Min	Max					
SMB10J33	1CL	36.7	44.9	1.0	33	1.0	16.9	59.0
SMB10J33A	1CM	36.7	40.6	1.0	33	1.0	18.8	53.3
SMB10J36	1CN	40.0	48.9	1.0	36	1.0	15.6	64.3
SMB10J36A	1CP	40.0	44.2	1.0	36	1.0	17.2	58.1
SMB10J40	1CQ	44.4	54.3	1.0	40	1.0	14.0	71.4
SMB10J40A	1CR	44.4	49.1	1.0	40	1.0	15.5	64.5

- Notes:** (1) $V_{(BR)}$ measured after I_T applied for 300 μs square wave pulse or equivalent
(2) Surge current waveform per Fig. 3 and derate per Fig. 2
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SMB10J5.0 thru 40A and SMB8J5.0C thru 40CA



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Bidirectional Electrical Characteristics

Ratings at 25°C ambient temperature unless otherwise specified.

Device Type	Device Marking Code	Breakdown Voltage V _(BR) (V) ⁽¹⁾		Test Current at 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)
		Min	Max					
SMB8J5.0C	1AD	6.40	7.82	10	5.0	2000	83.3	9.6
SMB8J5.0CA	1AE	6.40	7.25	10	5.0	2000	87.0	9.2
SMB8J6.0C	1AF	6.67	8.15	10	6.0	2000	70.2	11.4
SMB8J6.0CA	1AG	6.67	7.37	10	6.0	2000	77.7	10.3
SMB8J6.5C	1AH	7.22	8.82	10	6.5	1000	65.0	12.3
SMB8J6.5CA	1AK	7.22	7.98	10	6.5	1000	71.4	11.2
SMB8J7.0C	1AL	7.78	9.51	10	7.0	400	60.2	13.3
SMB8J7.0CA	1AM	7.78	8.60	10	7.0	400	66.7	12.0
SMB8J7.5C	1AN	8.33	10.2	1.0	7.5	200	55.9	14.3
SMB8J7.5CA	1AP	8.33	9.21	1.0	7.5	200	62.0	12.9
SMB8J8.0C	1AQ	8.89	10.9	1.0	8.0	100	53.3	15.0
SMB8J8.0CA	1AR	8.89	9.83	1.0	8.0	100	58.8	13.6
SMB8J8.5C	1AS	9.44	11.5	1.0	8.5	40	50.3	15.9
SMB8J8.5CA	1AT	9.44	10.4	1.0	8.5	40	55.6	14.4
SMB8J9.0C	1AU	10.0	12.2	1.0	9.0	20	47.3	16.9
SMB8J9.0CA	1AV	10.0	11.1	1.0	9.0	20	51.9	15.4
SMB8J10C	1AW	11.1	13.6	1.0	10	10	42.6	18.8
SMB8J10CA	1AX	11.1	12.3	1.0	10	10	47.1	17.0
SMB8J11C	1AY	12.2	14.9	1.0	11	5.0	39.8	20.1
SMB8J11CA	1AZ	12.2	13.5	1.0	11	5.0	44.0	18.2
SMB8J12C	1BD	13.3	16.3	1.0	12	5.0	36.4	22.0
SMB8J12CA	1BE	13.3	14.7	1.0	12	5.0	40.2	19.9
SMB8J13C	1BF	14.4	17.6	1.0	13	1.0	33.6	23.8
SMB8J13CA	1BG	14.4	15.9	1.0	13	1.0	37.2	21.5
SMB8J14C	1BH	15.6	19.1	1.0	14	1.0	31.0	25.8
SMB8J14CA	1BK	15.6	17.2	1.0	14	1.0	34.5	23.2
SMB8J15C	1BL	16.7	20.4	1.0	15	1.0	29.7	26.9
SMB8J15CA	1BM	16.7	18.5	1.0	15	1.0	32.8	24.4
SMB8J16C	1BN	17.8	21.8	1.0	16	1.0	27.8	28.8
SMB8J16CA	1BP	17.8	19.7	1.0	16	1.0	30.8	26.0
SMB8J17C	1BQ	18.9	23.1	1.0	17	1.0	26.2	30.5
SMB8J17CA	1BR	18.9	20.9	1.0	17	1.0	29.0	27.6
SMB8J18C	1BS	20.0	24.4	1.0	18	1.0	24.8	32.2
SMB8J18CA	1BT	20.0	22.1	1.0	18	1.0	27.4	29.2
SMB8J20C	1BU	22.2	27.1	1.0	20	1.0	22.3	35.8
SMB8J20CA	1BV	22.2	24.5	1.0	20	1.0	24.7	32.4
SMB8J22C	1BW	24.4	29.8	1.0	22	1.0	20.3	39.4
SMB8J22CA	1BX	24.4	26.9	1.0	22	1.0	22.5	35.5
SMB8J24C	1BY	26.7	32.6	1.0	24	1.0	18.6	43.0
SMB8J24CA	1BZ	26.7	29.5	1.0	24	1.0	20.6	38.9
SMB8J26C	1CD	28.9	35.3	1.0	26	1.0	17.2	46.6
SMB8J26CA	1CE	28.9	31.9	1.0	26	1.0	19.0	42.1
SMB8J28C	1CF	31.1	38.0	1.0	28	1.0	16.0	50.0
SMB8J28CA	1CG	31.1	34.4	1.0	28	1.0	17.6	45.4
SMB8J30C	1CH	33.3	40.7	1.0	30	1.0	15.0	53.5
SMB8J30CA	1CK	33.3	36.8	1.0	30	1.0	16.5	48.4

Notes: (1) V_(BR) measured after I_T applied for 300μs square wave pulse or equivalent

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

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



Bidirectional Electrical Characteristics

Ratings at 25°C ambient temperature unless otherwise specified.

Device Type	Device Marking Code	Breakdown Voltage $V_{(BR)}$ (V) ⁽¹⁾		Test Current at I_T (mA)	Stand-off Voltage V_{WM} (V)	Maximum Reverse Leakage at V_{WM} I_D (μ A) ⁽³⁾	Maximum Peak Pulse Surge Current I_{PPM} (A) ⁽²⁾	Maximum Clamping Voltage at I_{PPM} V_C (V)
		Min	Max					
SMB8J33C	1CL	36.7	44.9	1.0	33	1.0	13.6	59.0
SMB8J33CA	1CM	36.7	40.6	1.0	33	1.0	15.0	53.3
SMB8J36C	1CN	40.0	48.9	1.0	36	1.0	12.4	64.3
SMB8J36CA	1CP	40.0	44.2	1.0	36	1.0	13.8	58.1
SMB8J40C	1CQ	44.4	54.3	1.0	40	1.0	11.2	71.4
SMB8J40CA	1CR	44.4	49.1	1.0	40	1.0	12.4	64.5

Notes: (1) $V_{(BR)}$ measured after I_T applied for 300 μ s square wave pulse or equivalent

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

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SMB10J5.0 thru 40A and SMB8J5.0C thru 40CA



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

Fig. 1 – Peak Pulse Power Rating Curve

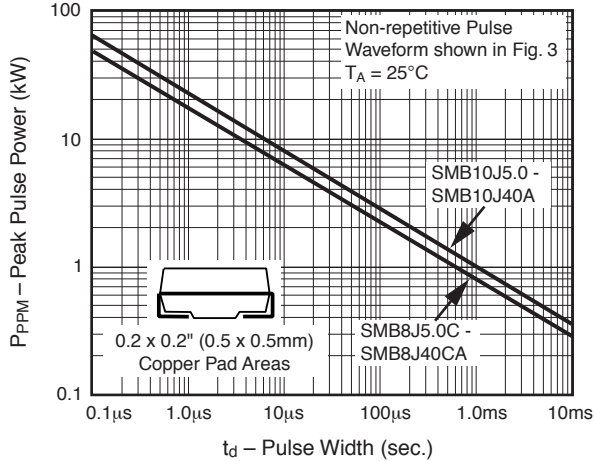


Fig. 2 – Pulse Derating Curve

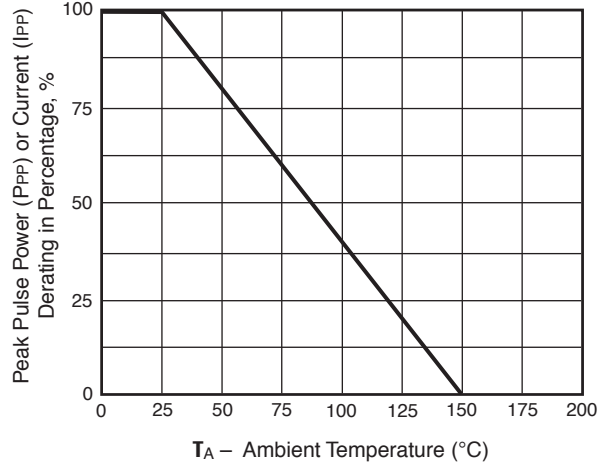


Fig. 3 – Pulse Waveform

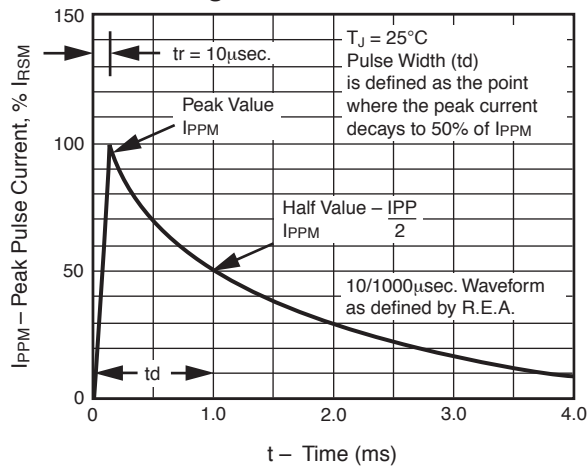


Fig. 4 – Typical Junction Capacitance

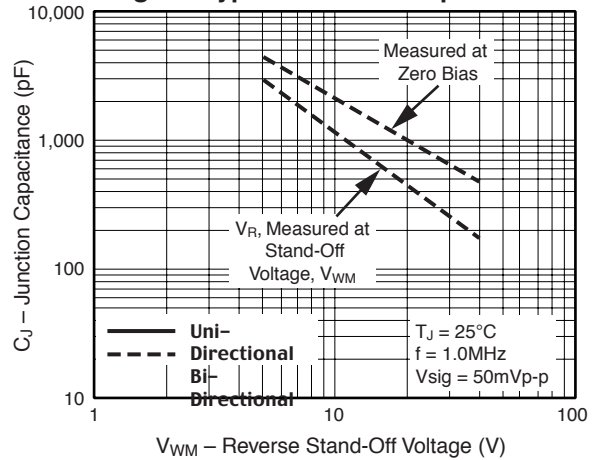


Fig. 5 – Typical Transient Thermal Impedance

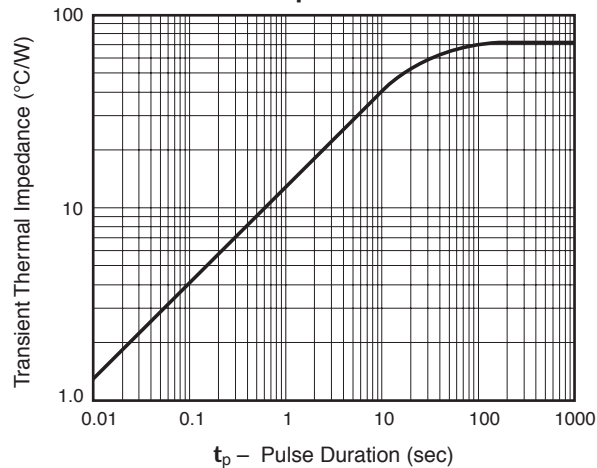
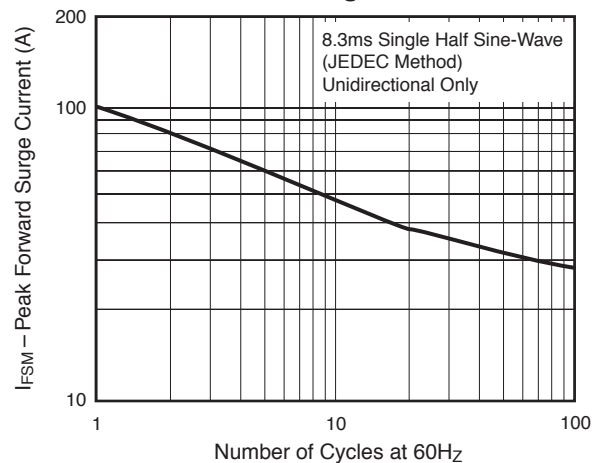


Fig. 6 – Maximum Non-Repetitive Peak Forward Surge Current





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