

1.5SMC SERIES

SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSORS

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SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSORS



康 比 電 子
HORNBY ELECTRONIC

REVERSE VOLTAGE: 6.8 to 440 VOLTS

PEAK PULSE POWER: 1500 WATTS

FEATURES

- Plastic package has Underwriters Laboratory Flammability Classification 94V-0
- 1500W peak pulse power capability on 10/1000 μ s waveform, repetition rate (duty cycle): 0.01%
- Excellent clamping capability
- Low incremental surge resistance
- Very fast response time

MECHANICAL DATA

Case: Molded plastic, DO-214AB(SMC)

Epoxy: UL 94V-O rate flame retardant

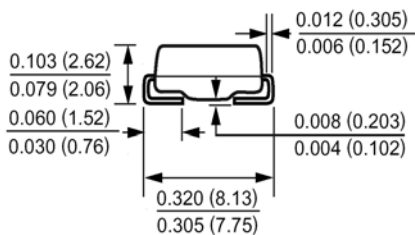
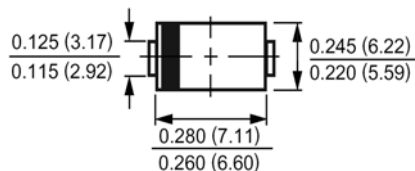
Lead: Axial leads, solderable per MIL-STD-202, method 208 guaranteed

Polarity: Color band denotes cathode except bipolar

Packaging: 16mm tape per EIA STD RS-481

Weight: 0.007 ounce, 0.21 gram

DO-214AB(SMC)



Dimensions in inches and (millimeters)

Maximum Ratings and Electrical Characteristics

Ratings at 25°C ambient temperature unless otherwise specified.

Single phase, half wave, 60Hz, resistive or inductive load.

For capacitive load, derate current by 20%.

	Symbols	Limit	Units
Peak power dissipation with a 10/1000 μ s waveform (Note 1 , 2) (Fig. 1)	P _{PPM}	Minimum 1500	Watts
Peak pulse current with a 10/1000 μ s waveform (Note 1) (Fig. 3)	I _{PPM}	See Next Table	Amp
Power dissipation on infinite heatsink, T _A = 50°C	P _{M(AV)}	6.5	Watts
Peak forward surge current, 8.3ms single half sine-wave unidirectional only (Note 2)	I _{FSM}	200	Amp
Maximum instantaneous forward voltage at 100A for unidirectional only (Note 4)	V _F	3.5/5.0	Volts
Typical thermal resistance junction-to-lead	R _{θJL}	15	°C/W
Thermal resistance junction to ambient air (Note 3)	R _{θJA}	75	°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 0.31 x 0.31" (8.0 x 8.0mm) copper pads to each terminal

3- Mounted on minimum recommended pad layout

4- V_F = 3.5V for 1.5SMC200(A) & below; V_F = 5.0V for 1.5SMC220(A) & above

Devices for Bidirectional Applications:

1- For bi-directional, use C or CA suffix for types 1.5SMC6.8 thru types 1.5SMC440A(e.g. 1.5SMC6.8C, 1.5SMC440CA).

2- Electrical characteristics apply in both directions.

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Single phase, half wave, 60Hz, resistive or inductive load.

For capacitive load, derate current by 20%.

Device Type	Breakdown Voltage		Test Current	Reverse Stand off Voltage	Maximum Reverse Leakage at V_{WM}	Maximum Peak Pulse Current	Maximum Clamping Voltage at I_{PPM}	Maximum Temperature Coefficient of V_{BR}
	V_{BR} at I_T (Note 1)		I_T	V_{WM}	I_D (Note 3)	I_{PPM} (Note 2)	V_C	/
	Volts (min.)	Volts (max.)	mAmps	Volts	uAmps	Amps	Volts	% / °C
1.5SMC6.8	6.12	7.48	10	5.50	1000	139.0	10.8	0.057
1.5SMC6.8A	6.45	7.14	10	5.80	1000	143.0	10.5	0.057
1.5SMC7.5	6.75	8.25	10	6.05	500	128.0	11.7	0.061
1.5SMC7.5A	7.13	7.88	10	6.40	500	133.0	11.3	0.061
1.5SMC8.2	7.38	9.02	10	6.63	200	120.0	12.5	0.065
1.5SMC8.2A	7.79	8.61	10	7.02	200	124.0	12.1	0.065
1.5SMC9.1	8.19	10.0	1.0	7.37	50	109.0	13.8	0.068
1.5SMC9.1A	8.65	9.55	1.0	7.78	50	112.0	13.4	0.068
1.5SMC10	9.00	11.0	1.0	8.10	10	100.0	15.0	0.073
1.5SMC10A	9.50	10.5	1.0	8.55	10	103.0	14.5	0.073
1.5SMC11	9.90	12.1	1.0	8.92	5.0	92.6	16.2	0.075
1.5SMC11A	10.5	11.6	1.0	9.40	5.0	96.2	15.6	0.075
1.5SMC12	10.8	13.2	1.0	9.72	5.0	86.7	17.3	0.078
1.5SMC12A	11.4	12.6	1.0	10.2	5.0	89.8	16.7	0.078
1.5SMC13	11.7	14.3	1.0	10.5	5.0	78.9	19.0	0.081
1.5SMC13A	12.4	13.7	1.0	11.1	5.0	82.4	18.2	0.081
1.5SMC15	13.5	16.5	1.0	12.1	5.0	68.2	22.0	0.084
1.5SMC15A	14.3	15.8	1.0	12.8	5.0	70.8	21.2	0.084
1.5SMC16	14.4	17.6	1.0	12.9	5.0	63.8	23.5	0.086
1.5SMC16A	15.2	16.8	1.0	13.6	5.0	66.7	22.5	0.086
1.5SMC18	16.2	19.8	1.0	14.5	5.0	56.6	26.5	0.088
1.5SMC18A	17.1	18.9	1.0	15.3	5.0	59.5	25.2	0.088
1.5SMC20A	18.0	22.0	1.0	16.2	5.0	51.5	29.1	0.090
1.5SMC20A	19.0	21.0	1.0	17.1	5.0	54.2	27.7	0.090
1.5SMC22	19.8	24.2	1.0	17.8	5.0	47.0	31.9	0.092
1.5SMC22A	20.9	23.1	1.0	18.8	5.0	49.0	30.6	0.092
1.5SMC24	21.6	26.4	1.0	19.4	5.0	43.2	34.7	0.094
1.5SMC24A	22.8	25.2	1.0	20.5	5.0	45.2	33.2	0.094
1.5SMC27	24.3	29.7	1.0	21.8	5.0	38.4	39.1	0.096
1.5SMC27A	25.7	28.4	1.0	23.1	5.0	40.0	37.5	0.096
1.5SMC30	27.0	33.0	1.0	24.3	5.0	34.5	43.5	0.097
1.5SMC30A	28.5	31.5	1.0	25.6	5.0	36.2	41.4	0.097
1.5SMC33	29.7	36.3	1.0	26.8	5.0	31.4	47.7	0.098
1.5SMC33A	31.4	34.7	1.0	28.2	5.0	32.8	45.7	0.098
1.5SMC36	32.4	39.6	1.0	29.1	5.0	28.8	52.0	0.099
1.5SMC36A	34.2	37.8	1.0	30.8	5.0	30.1	49.9	0.099
1.5SMC39	35.1	42.9	1.0	31.6	5.0	26.6	56.4	0.100
1.5SMC39A	37.1	41.0	1.0	33.3	5.0	27.8	53.9	0.100
1.5SMC43	38.7	47.3	1.0	34.8	5.0	24.2	61.9	0.101
1.5SMC43A	40.9	45.2	1.0	36.8	5.0	25.3	59.3	0.101
1.5SMC47	42.3	51.7	1.0	38.1	5.0	22.1	67.8	0.101
1.5SMC47A	44.7	49.4	1.0	40.2	5.0	23.1	64.8	0.101
1.5SMC51	45.9	56.1	1.0	41.3	5.0	20.4	73.5	0.102
1.5SMC51A	48.5	53.6	1.0	43.6	5.0	21.4	70.1	0.102
1.5SMC56	50.4	61.8	1.0	45.4	5.0	18.6	80.5	0.103
1.5SMC56A	53.2	58.8	1.0	47.8	5.0	19.5	77.0	0.103

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Device Type	Breakdown Voltage		Test Current	Reverse Stand off Voltage	Maximum Reverse Leakage at V _{WM}	Maximum Peak Pulse Current	Maximum Clamping Voltage at I _{PPM}	Maximum Temperature Coefficient of V _{BR}
	V _{BR} at I _T (Note 1)		I _T	V _{WM}	I _D (Note 3)	I _{PPM} (Note 2)	V _C	/
	Volts (min.)	Volts (max.)	mAmps	Volts	uAmps	Amps	Volts	% / °C
1.5SMC62	55.8	68.2	1.0	50.2	5.0	16.9	89.0	0.104
1.5SMC62A	58.9	65.1	1.0	53.0	5.0	17.6	85.0	0.104
1.5SMC68	61.2	74.8	1.0	55.1	5.0	15.3	98.0	0.104
1.5SMC68A	64.6	71.4	1.0	58.1	5.0	16.3	92.0	0.104
1.5SMC75	67.5	82.5	1.0	60.7	5.0	13.9	108	0.105
1.5SMC75A	71.3	78.8	1.0	64.1	5.0	14.6	103	0.105
1.5SMC82	73.8	90.2	1.0	66.4	5.0	12.7	118	0.105
1.5SMC82A	77.9	86.1	1.0	70.1	5.0	13.3	113	0.105
1.5SMC91	81.9	100	1.0	73.7	5.0	11.5	131	0.106
1.5SMC91A	86.5	95.5	1.0	77.8	5.0	12.0	125	0.106
1.5SMC100	90.0	110	1.0	81.0	5.0	10.4	144	0.106
1.5SMC100A	95.0	105	1.0	85.5	5.0	10.9	137	0.106
1.5SMC110	99.0	121	1.0	89.2	5.0	9.5	158	0.107
1.5SMC110A	105	116	1.0	94.0	5.0	9.9	152	0.107
1.5SMC120	108	132	1.0	97.2	5.0	8.7	173	0.107
1.5SMC120A	114	126	1.0	102	5.0	9.1	165	0.107
1.5SMC130	117	143	1.0	105	5.0	8.0	187	0.107
1.5SMC130A	124	137	1.0	111	5.0	8.4	179	0.107
1.5SMC150	135	165	1.0	121	5.0	7.0	215	0.108
1.5SMC150A	143	158	1.0	128	5.0	7.2	207	0.108
1.5SMC160	144	176	1.0	130	5.0	6.5	230	0.108
1.5SMC160A	152	168	1.0	136	5.0	6.8	219	0.108
1.5SMC170	153	187	1.0	138	5.0	6.1	244	0.108
1.5SMC170A	162	179	1.0	145	5.0	6.4	234	0.108
1.5SMC180	162	198	1.0	146	5.0	5.8	258	0.108
1.5SMC180A	171	189	1.0	154	5.0	6.1	246	0.108
1.5SMC200	180	220	1.0	162	5.0	5.2	287	0.108
1.5SMC200A	190	210	1.0	171	5.0	5.5	274	0.108
1.5SMC220	198	242	1.0	175	5.0	4.4	344	0.108
1.5SMC220A	209	231	1.0	185	5.0	4.6	328	0.108
1.5SMC250	225	275	1.0	202	5.0	4.2	360	0.110
1.5SMC250A	237	263	1.0	214	5.0	4.4	344	0.110
1.5SMC300	270	330	1.0	243	5.0	3.5	430	0.110
1.5SMC300A	285	315	1.0	256	5.0	3.6	414	0.110
1.5SMC350	315	385	1.0	284	5.0	3.0	504	0.110
1.5SMC350A	333	368	1.0	300	5.0	3.1	482	0.110
1.5SMC400	360	440	1.0	324	5.0	2.6	574	0.110
1.5SMC400A	380	420	1.0	342	5.0	2.7	548	0.110
1.5SMC440	396	484	1.0	356	5.0	2.4	631	0.110
1.5SMC440A	418	462	1.0	376	5.0	2.5	602	0.110

NOTES:

- 1- Pulse test: $t_p \leq 50\text{ms}$
- 2- Surge current waveform per Fig. 3 and derated per Fig. 2
- 3- For bidirectional 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

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RATINGS AND CHARACTERISTIC CURVES

Fig. 1 – Peak Pulse Power Rating Curve

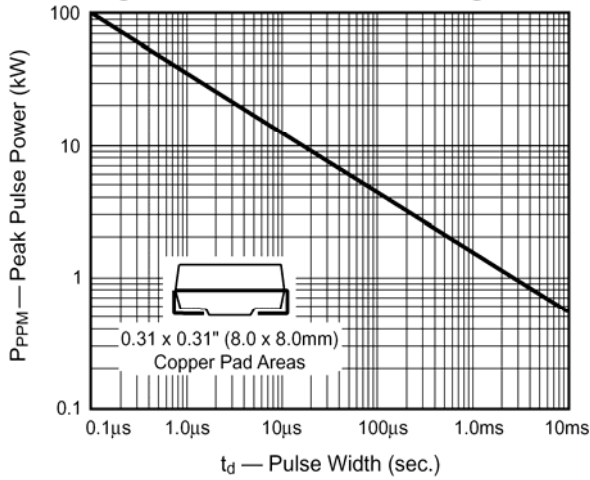


Fig. 2 – Pulse Derating Curve

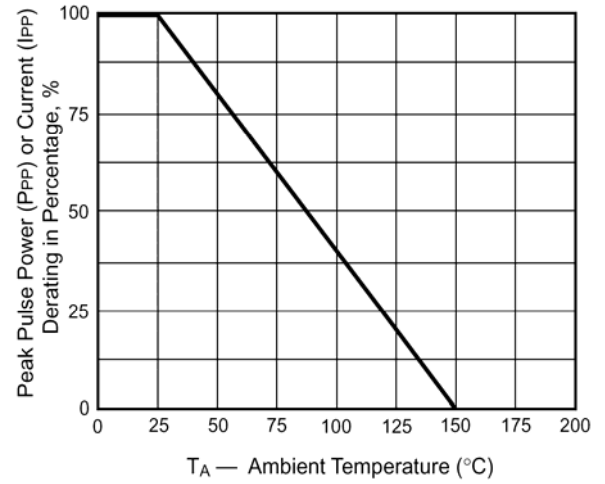


Fig. 3 – Pulse Waveform

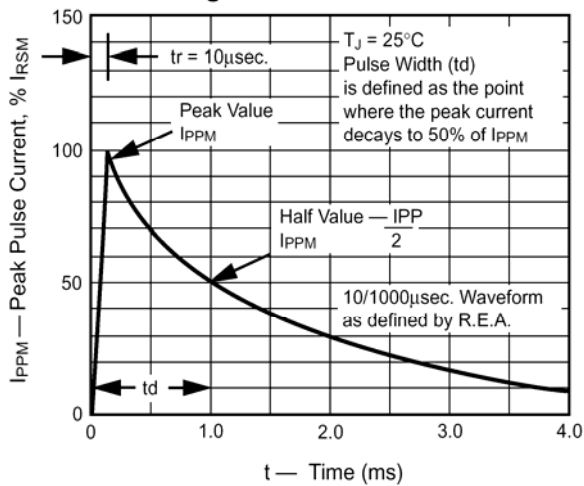


Fig. 4 – Typical Junction Capacitance Uni-Directional

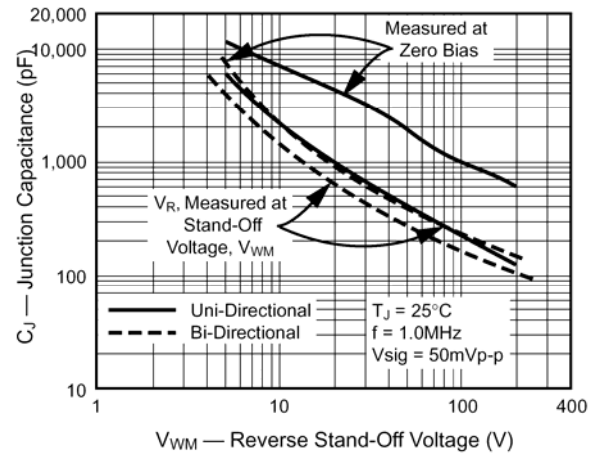


Fig. 5 – Typical Transient Thermal Impedance

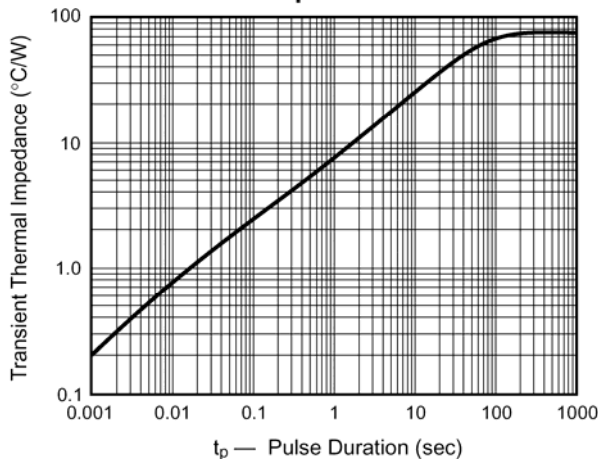


Fig. 6 - Maximum Non-Repetitive Forward Surge Current Uni-Directional Use Only

