



1.5SMC Series

Vishay Semiconductors
formerly General Semiconductor

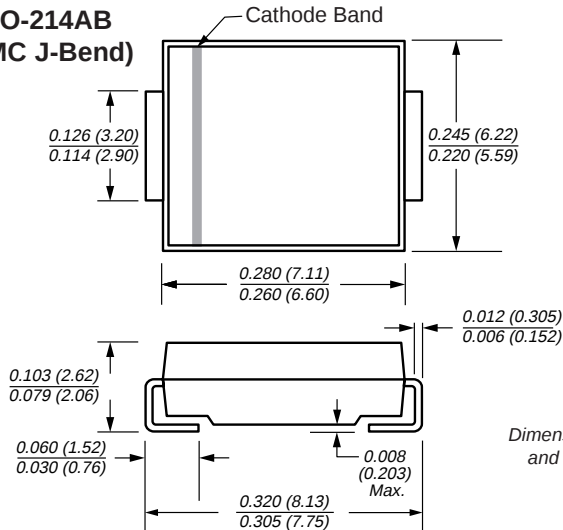
Surface Mount TRANSZORB® Transient Voltage Suppressors

$V_{(BR)}$ Unidirectional
6.8 to 540V

$V_{(BR)}$ Bidirectional
6.8 to 220V

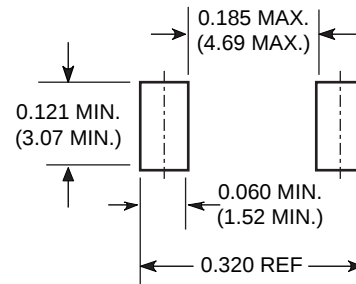
Peak Pulse Power 1500W

DO-214AB
(SMC J-Bend)



Extended
Voltage Range

Mounting Pad Layout



Mechanical Data

Case: JEDEC DO-214AB (SMC) molded plastic over passivated junction

Terminals: Solder plated, solderable per MIL-STD-750, Method 2026. High temperature soldering: 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.

Standard Packaging: 16mm tape (EIA STD RS-481)

Weight: 0.007 oz., 0.21 g

Packaging Codes – Options (Antistatic):

51 – 1K per Bulk box, 10K/carton

57 – 850 per 7" plastic Reel (16mm tape), 8.5K/carton

9A – 3.5K per 13" plastic Reel (16mm tape), 35K/carton

Features

- Low profile package with built-in strain relief for surface mounted applications
- Glass passivated junction
- Low incremental surge resistance
- Low inductance
- Excellent clamping capability
- 1500W peak pulse power capability with a 10/1000µs waveform, repetition rate (duty cycle): 0.01%
- Very fast response time
- Plastic package has Underwriters Laboratory Flammability Classification 94V-0

Devices for Bidirectional Applications

For bi-directional devices, use suffix CA (e.g. 1.5SMC10CA). Electrical characteristics apply in both directions.

Maximum Ratings & Thermal Characteristics

Ratings at 25°C ambient temperature unless otherwise specified.

Parameter	Symbol	Value	Unit
Peak power dissipation with a 10/1000µs waveform ⁽¹⁾⁽²⁾ (Fig. 1)	PPPM	1500	W
Peak pulse current with a 10/1000µs waveform ⁽¹⁾ (Fig. 3)	IPPM	See Next Table	A
Power dissipation on infinite heatsink, $T_A = 50^\circ\text{C}$	$P_{M(AV)}$	6.5	W
Peak forward surge current 8.3ms single half sine-wave uni-directional only ⁽²⁾	I_{FSM}	200	A
Thermal resistance junction to ambient air ⁽³⁾	$R_{\theta JA}$	75	$^\circ\text{C/W}$
Thermal resistance junction to leads	$R_{\theta JL}$	15	$^\circ\text{C/W}$
Operating junction and storage temperature range	T_J, T_{STG}	-65 to +150	$^\circ\text{C}$

Notes: (1) Non-repetitive current pulse, per Fig.3 and derated above $T_A = 25^\circ\text{C}$ 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

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Electrical Characteristics

Ratings at 25°C ambient temperature unless otherwise specified. $V_F = 3.5V$ at $I_F = 100A$ (uni-directional only)

General Semiconductor Part Number	Device Marking Code		Breakdown Voltage V_{BR} at $I_T^{(1)}$ (V)		Test Current I_T (mA)	Stand-off Voltage V_{WM} (V)	Maximum Reverse Leakage at V_{WM} $I_{D(4)}$ (μA)	Maximum Peak Pulse Current $I_{PPM}^{(2)}$ (A)	Maximum Clamping Voltage at I_{PPM} V_C (V)	Maximum Temp. Coefficient of V_{BR} (% / °C)
	UNI	BI	MIN	MAX						
1.5SMC6.8A	6V8A	6V8C	6.45	7.14	10	5.80	1000	143	10.5	0.057
1.5SMC7.5A	7V5A	7V5C	7.13	7.88	10	6.40	500	133	11.3	0.061
1.5SMC8.2A	8V2A	8V2C	7.79	8.61	10	7.02	200	124	12.1	0.065
1.5SMC9.1A	9V1A	9V1C	8.65	9.55	1.0	7.78	50	112	13.4	0.068
1.5SMC10A	10A	10C	9.50	10.5	1.0	8.55	10	103	14.5	0.073
1.5SMC11A	11A	11C	10.5	11.6	1.0	9.40	5.0	96.2	15.6	0.075
1.5SMC12A	12A	12C	11.4	12.6	1.0	10.2	5.0	89.8	16.7	0.078
1.5SMC13A	13A	13C	12.4	13.7	1.0	11.1	5.0	82.4	18.2	0.081
1.5SMC15A	15A	15C	14.3	15.8	1.0	12.8	1.0	70.8	21.2	0.084
1.5SMC16A	16A	16C	15.2	16.8	1.0	13.6	1.0	66.7	22.5	0.086
1.5SMC18A	18A	18C	17.1	18.9	1.0	15.3	1.0	59.5	25.2	0.089
1.5SMC20A	20A	20C	19.0	21.0	1.0	17.1	1.0	54.2	27.7	0.090
1.5SMC22A	22A	22C	20.9	23.1	1.0	18.8	1.0	49.0	30.6	0.092
1.5SMC24A	24A	24C	22.8	25.2	1.0	20.5	1.0	45.2	33.2	0.09
1.5SMC27A	27A	27C	25.7	28.4	1.0	23.1	1.0	40.0	37.5	0.096
1.5SMC30A	30A	30C	28.5	31.5	1.0	25.6	1.0	36.2	41.4	0.097
1.5SMC33A	33A	33C	31.4	34.7	1.0	28.2	1.0	32.8	45.7	0.098
1.5SMC36A	36A	36C	34.2	37.8	1.0	30.8	1.0	30.1	49.9	0.099
1.5SMC39A	39A	39C	37.1	41.0	1.0	33.3	1.0	27.8	53.9	0.100
1.5SMC43A	43A	43C	40.9	45.2	1.0	36.8	1.0	25.3	59.3	0.101
1.5SMC47A	47A	47C	44.7	49.4	1.0	40.2	1.0	23.1	64.8	0.101
1.5SMC51A	51A	51C	48.5	53.6	1.0	43.6	1.0	21.4	70.1	0.102
1.5SMC56A	56A	56C	53.2	58.8	1.0	47.8	1.0	19.5	77.0	0.103
1.5SMC62A	62A	62C	58.9	65.1	1.0	53.0	1.0	17.6	85.0	0.104
1.5SMC68A	68A	68C	64.6	71.4	1.0	58.1	1.0	16.3	92.0	0.104
1.5SMC75A	75A	75C	71.3	78.8	1.0	64.1	1.0	14.6	104	0.105
1.5SMC82A	82A	82C	77.9	86.1	1.0	70.1	1.0	13.3	113	0.105
1.5SMC91A	91A	91C	86.5	95.5	1.0	77.8	1.0	12.0	125	0.106
1.5SMC100A	100A	100C	95.0	105	1.0	85.5	1.0	10.9	137	0.106
1.5SMC110A	110A	110C	105	116	1.0	94.0	1.0	9.9	152	0.107
1.5SMC120A	120A	120C	114	126	1.0	102	1.0	9.1	165	0.107
1.5SMC130A	130A	130C	124	137	1.0	111	1.0	8.4	179	0.107
1.5SMC150A	150A	150C	143	158	1.0	128	1.0	7.2	207	0.106
1.5SMC160A	160A	160C	152	168	1.0	136	1.0	6.8	219	0.108
1.5SMC170A	170A	170C	162	179	1.0	145	1.0	6.4	234	0.108
1.5SMC180A	180A	180C	171	189	1.0	154	1.0	6.1	246	0.108
1.5SMC200A	200A	200C	190	210	1.0	171	1.0	5.5	274	0.108
1.5SMC220A	220A	220C	209	231	1.0	185	1.0	4.6	328	0.108
1.5SMC250A	250A	—	237	263	1.0	214	1.0	4.4	344	0.110
1.5SMC300A	300A	—	285	315	1.0	256	1.0	3.6	414	0.110
1.5SMC350A	350A	—	333	368	1.0	300	1.0	3.1	482	0.110
1.5SMC400A	400A	—	380	420	1.0	342	1.0	2.7	548	0.110
1.5SMC440A	440A	—	418	462	1.0	376	1.0	2.5	602	0.110
1.5SMC480A	480A	—	456	504	1.0	408	1.0	2.28	658	0.110
1.5SMC510A	510A	—	485	535	1.0	434	1.0	2.15	698	0.110
1.5SMC540A	540A	—	513	567	1.0	459	1.0	2.03	740	0.110

- Notes: (1) Pulse test: $t_p \leq 50ms$
(2) Surge current waveform per Fig. 3 and derate per Fig. 2
(3) All terms and symbols are consistent with ANSI/IEEE CA62.35
(4) For bidirectional types with V_R 10 volts and less, the I_D limit is doubled

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

Fig. 1 – Peak Pulse Power Rating Curve

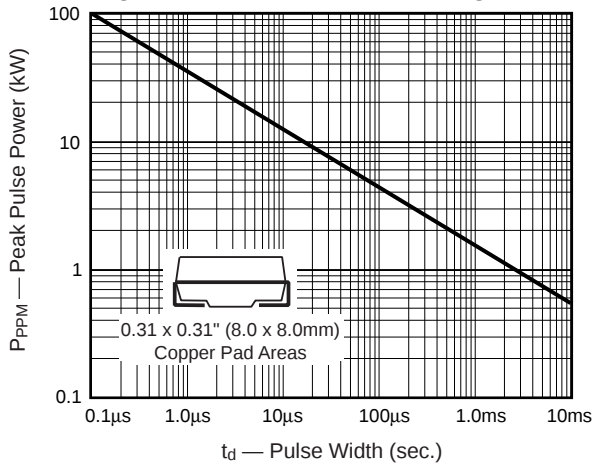


Fig. 2 – Pulse Derating Curve

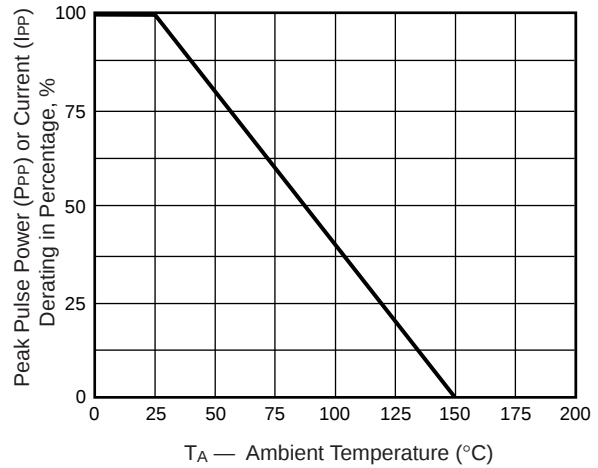


Fig. 3 – Pulse Waveform

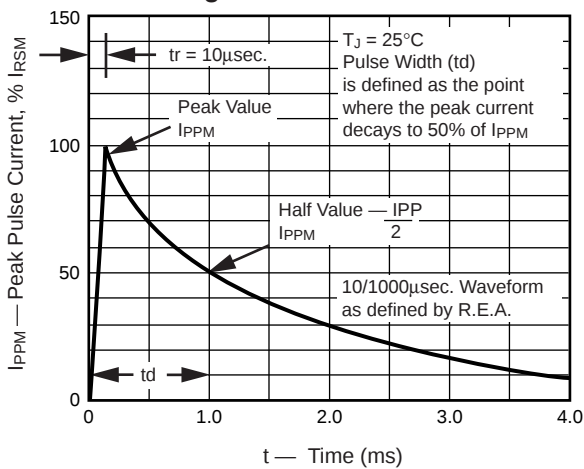


Fig. 4 – Typical Junction Capacitance Uni-Directional

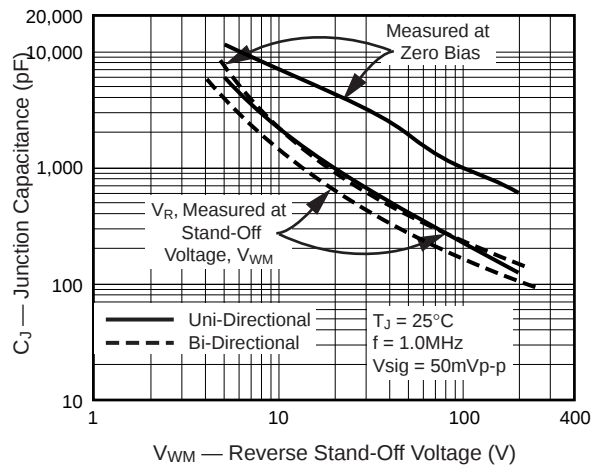


Fig. 5 – Typical Transient Thermal Impedance

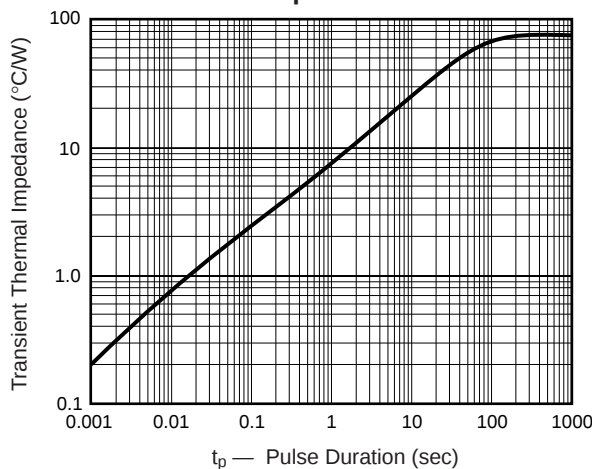


Fig. 6 - Maximum Non-Repetitive Forward Surge Current Uni-Directional Use Only

