

Transient Voltage Suppressors (TVS) Data Sheet

Description

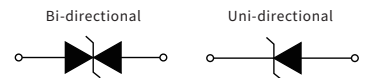
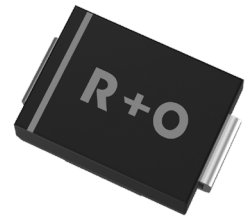
The 1.5SMC series is designed specifically to protect sensitive electronic equipment from voltage transients induced by lightning and other transient voltage events

Features

- For surface mounted applications in order to optimize board space
- Low leakage
- Glass passivated junction
- Low inductance
- Excellent clamping capability
- 5000W peak pulse power capability at 10/1000μs waveform
- Fast response time
- Typical IR less than 5μA above 22V
- High Temperature soldering: 260°C /10 seconds at terminals
- Typical maximum temperature coefficient $\Delta V_{BR} = 0.1\% \times V_{BR}@25^{\circ}\text{C} \times \Delta T$
- Plastic package has Underwriters Laboratory Flammability 94V-0
- Matte tin lead-free Plated
- Meets MSL level 1, per J-STD-020
- Halogen free and RoHS compliant
- Whisker test is conducted based on JEDEC JESD201A per its table 4a and 4c
- IEC 61000-4-2 ESD 30KV(Air),30KV(contact)

Breakdown Voltage
5.8 V to 512 V
Peak Pulse Power
1500 W

DO-214AB(SMC)



Applications

TVS devices are ideal for the protection of I/O interfaces, AC/DC power supply, Low frequency signal transmission line (RS232, RS485, etc.)

Maximum Ratings (Ta=25°C Unless otherwise specified)

PARAMETER	SYMBOL	VALUE	SYMBOL
Peak Pulse Power Dissipation with a 10/1000μs waveform (Fig.1)(Note 1), (Note 2)	P_{PPM}	1500	W
Peak Pulse Current with a 10/1000μs waveform.(Note1, Fig.3)	I_{PP}	See Next Table	A
Power Dissipation on Infinite Heat Sink at Ta=75° C(Fig.5)	$P_{M(AV)}$	6.5	W
Peak Forward Surge Current, 8.3ms Single Half Sine Wave (Note 3, Fig.5)	I_{FSM}	100	A
Operating junction and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C
Typical thermal resistance junction to lead	$R_{\theta J-L}$	15	°C /W
Typical thermal resistance junction to ambient	$R_{\theta J-A}$	75	°C /W

Note :

- (1) Non-repetitive current pulse, per Fig. 3 and derated above Ta = 25°C per Fig. 2.
- (2) Mounted on 8.0mm x 8.0mm Copper Pads to each terminal.
- (3) 8.3ms single half sine-wave, or equivalent square wave, Duty cycle = 4 pulses per minutes maximum.

1.5SMC SERIES

1500W SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSORS

● Package Outline Dimensions (SMC/DO-214AB)

Symbol	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	2.85	3.27	0.112	0.129
B	6.60	7.11	0.261	0.281
C	5.59	6.22	0.221	0.246
D	1.99	2.61	0.078	0.103
E	0.76	1.52	0.030	0.060
F	-	0.20	-	0.008
G	7.75	8.13	0.306	0.321
H	0.15	0.31	0.006	0.012

Cathode Band

Note:
(1) Cathode Band: unidirectional only.
(2) Bidirectional devices without this marking.

● Suggested Pad Layout

Symbol	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
M	3.82	-	0.151	-
J	3.03	-	0.120	-
K	-	3.84	-	0.152

● Electrical Characteristics (Ta=25°C Unless otherwise specified)

Part Number		Marking		Reverse Stand-Off Voltage	Breakdown Voltage V_{BR} (V) @ I_T		Test Current	Maximum Clamping Voltage @ I_{PP}	Peak Pulse Current	Reverse Leakage @ V_{RWM}
Uni	Bi	Uni	Bi	V_{RWM} (V)	Min.	Max.	I_T (mA)	V_C (V)	I_{PP} (A)	I_R (μA)
1.5SMC6.8A	1.5SMC6.8CA	6V8A	6V8C	5.8	6.45	7.14	10	10.5	144.8	1000
1.5SMC7.5A	1.5SMC7.5CA	7V5A	7V5C	6.4	7.13	7.88	10	11.3	134.5	500
1.5SMC8.2A	1.5SMC8.2CA	8V2A	8V2C	7.02	7.79	8.61	10	12.1	125.6	200
1.5SMC9.1A	1.5SMC9.1CA	9V1A	9V1C	7.78	8.65	9.5	1	13.4	113.4	50
1.5SMC10A	1.5SMC10CA	10A	10A	8.55	9.5	10.5	1	14.5	104.8	10
1.5SMC11A	1.5SMC11CA	11A	11C	9.4	10.5	11.6	1	15.6	97.4	5
1.5SMC12A	1.5SMC12CA	12A	12C	10.2	11.4	12.6	1	16.7	91.0	5
1.5SMC13A	1.5SMC13CA	13A	13C	11.1	12.4	13.7	1	18.2	83.5	1
1.5SMC15A	1.5SMC15CA	15A	15C	12.8	14.3	15.8	1	21.2	71.7	1
1.5SMC16A	1.5SMC16CA	16A	16C	13.6	15.2	16.8	1	22.5	67.6	1
1.5SMC18A	1.5SMC18CA	18A	18C	15.3	17.1	18.9	1	25.2	60.3	1
1.5SMC20A	1.5SMC20CA	20A	20C	17.1	19	21	1	27.7	54.9	1
1.5SMC22A	1.5SMC22CA	22A	22C	18.8	20.9	23.1	1	30.6	49.7	1
1.5SMC24A	1.5SMC24CA	24A	24C	20.5	22.8	25.2	1	33.2	45.8	1
1.5SMC27A	1.5SMC27CA	27A	27C	23.1	25.7	28.4	1	37.5	40.5	1
1.5SMC30A	1.5SMC30CA	30A	30C	25.6	28.5	31.5	1	41.4	36.7	1

1.5SMC SERIES

1500W SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSORS

● Electrical Characteristics (Ta=25°C Unless otherwise specified)

Part Number		Marking		Reverse Stand-Off Voltage	Breakdown Voltage V_{BR} (V) @ I_T		Test Current	Maximum Clamping Voltage@ I_{PP}	Peak Pulse Current	Reverse Leakage @ V_{RWM}
Uni	Bi	Uni	Bi	V_{RWM} (V)	Min.	Max.	I_T (mA)	V_C (V)	I_{PP} (A)	I_R (μ A)
1.5SMC33A	1.5SMC33CA	33A	33C	28.2	31.4	34.7	1	45.7	33.3	1
1.5SMC36A	1.5SMC36CA	36A	36C	30.8	34.2	37.8	1	49.9	30.5	1
1.5SMC39A	1.5SMC39CA	39A	39C	33.3	37.1	41	1	53.9	28.2	1
1.5SMC43A	1.5SMC43CA	43A	43C	36.8	40.9	45.2	1	59.3	25.6	1
1.5SMC47A	1.5SMC47CA	47A	47C	40.2	44.7	49.4	1	64.8	23.5	1
1.5SMC51A	1.5SMC51CA	51A	51C	43.6	48.5	53.6	1	70.1	21.7	1
1.5SMC56A	1.5SMC56CA	56A	56C	47.8	53.2	58.8	1	77	19.7	1
1.5SMC62A	1.5SMC62CA	62A	62C	53	58.9	65.1	1	85	17.9	1
1.5SMC68A	1.5SMC68CA	68A	68C	58.1	64.6	71.4	1	92	16.5	1
1.5SMC75A	1.5SMC75CA	75A	75C	64.1	71.3	78.8	1	103	14.8	1
1.5SMC82A	1.5SMC82CA	82A	82C	70.1	77.9	86.1	1	113	13.5	1
1.5SMC91A	1.5SMC91CA	91A	91C	77.8	86.5	95.50	1	125	12.2	1
1.5SMC100A	1.5SMC100CA	100A	100C	85.5	95	105	1	137	11.1	1
1.5SMC110A	1.5SMC110CA	110A	110C	94	105	116	1	152	10	1
1.5SMC120A	1.5SMC120CA	120A	120C	102	114	126	1	165	9.2	1
1.5SMC130A	1.5SMC130CA	130A	130C	111	124	137	1	179	8.5	1
1.5SMC150A	1.5SMC150CA	150A	150C	128	143	158	1	207	7.3	1
1.5SMC160A	1.5SMC160CA	160A	160C	136	152	168	1	219	6.9	1
1.5SMC170A	1.5SMC170CA	170A	170C	145	162	179	1	234	6.5	1
1.5SMC180A	1.5SMC180CA	180A	180C	154	171	189	1	246	6.2	1
1.5SMC200A	1.5SMC200CA	200A	200C	171	190	210	1	274	5.5	1
1.5SMC220A	1.5SMC220CA	220A	220C	185	209	231	1	328	4.6	1
1.5SMC250A	1.5SMC250CA	250A	250C	214	237	263	1	344	4.4	1
1.5SMC300A	1.5SMC300CA	300A	300C	256	285	315	1	414	3.7	1
1.5SMC350A	1.5SMC350CA	350A	350C	300	332	368	1	482	3.2	1
1.5SMC400A	1.5SMC400CA	400A	400C	342	380	420	1	548	2.8	1
1.5SMC440A	1.5SMC440CA	440A	440C	376	418	462	1	602	2.5	1
1.5SMC480A	1.5SMC480CA	480A	480C	408	456	504	1	658	2.3	1
1.5SMC510A	1.5SMC510CA	510A	510C	434	485	535	1	698	2.1	1
1.5SMC530A	1.5SMC530CA	530A	530C	451	503.5	556.5	1	725	2.1	1
1.5SMC540A	1.5SMC540CA	540A	540C	460	513	567	1	740	2.0	1
1.5SMC550A	1.5SMC550CA	550A	550C	468	522.5	577.5	1	760	2.0	1
1.5SMC600A	1.5SMC600CA	600A	600C	512	570	630	1	828	1.9	1

Note :

(1) Suffix 'A' denotes 5% tolerance device.

(2) Add suffix 'CA' after part number to specify Bi-directional devices.

(3) For Bi-Directional devices having VR of 18 volts and less, the IR limit is double.

● Ratings And Characteristics Curves ($T_a=25^\circ\text{C}$ Unless otherwise specified)

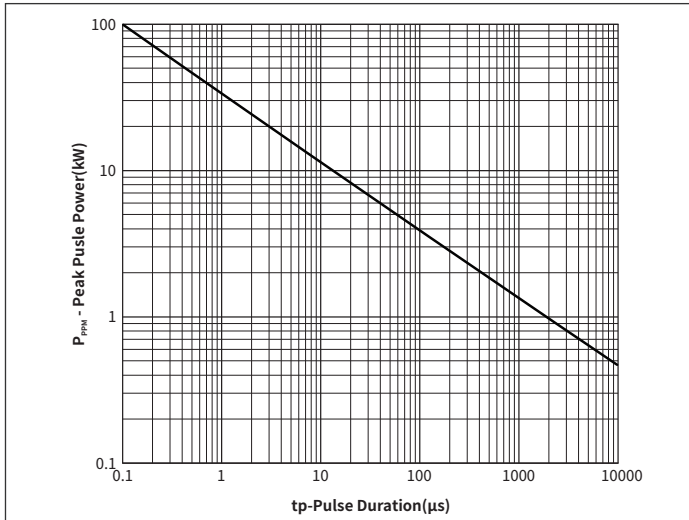


Fig. 1 Peak Pulse Power Rating Curve

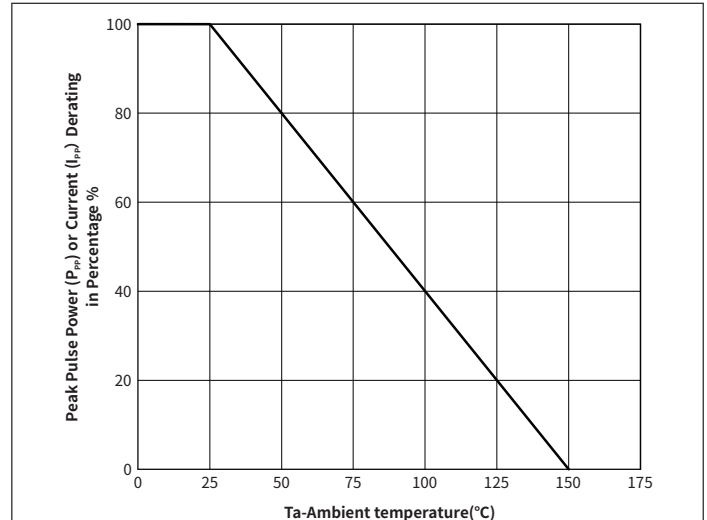


Fig.2 Pulse Derating Curve

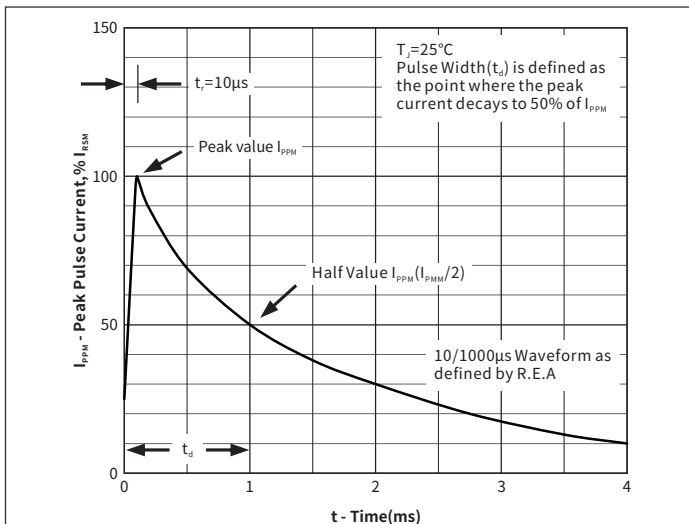


Fig.3 Pulse Waveform

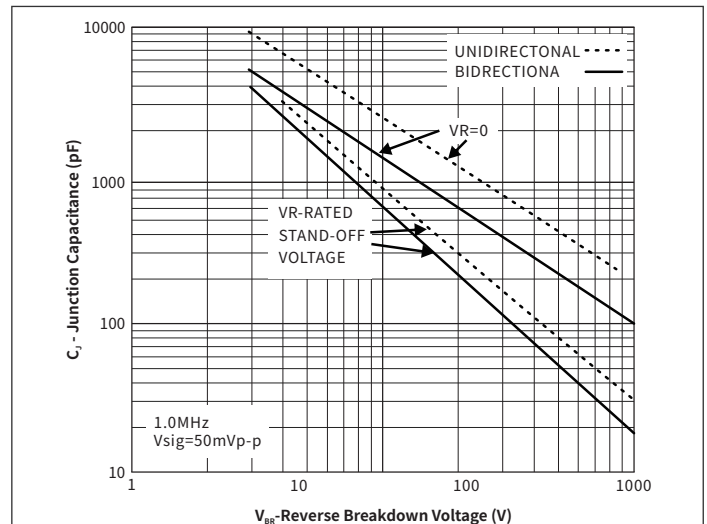


Fig.4 Typical Junction Capacitance

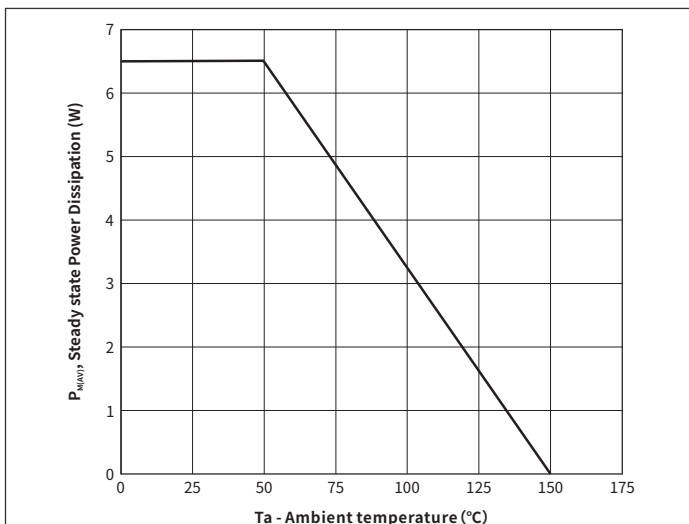


Fig.5 Steady State Power Dissipation Derating Curve

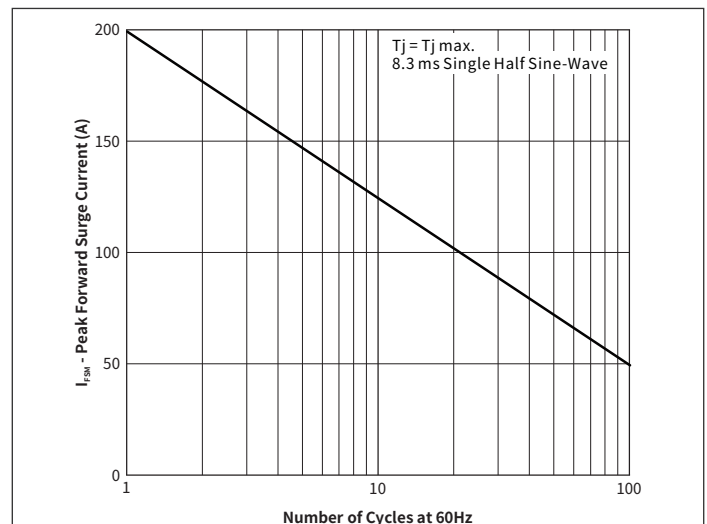
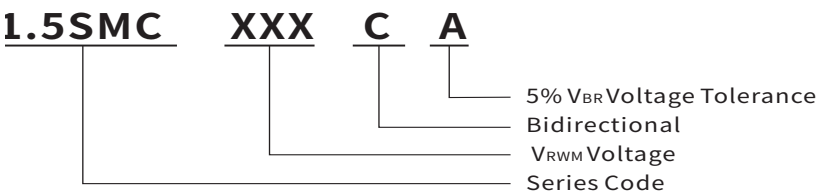


Fig.6 Maximum Non-Repetitive Forward Surge Current Uni-Directional Only

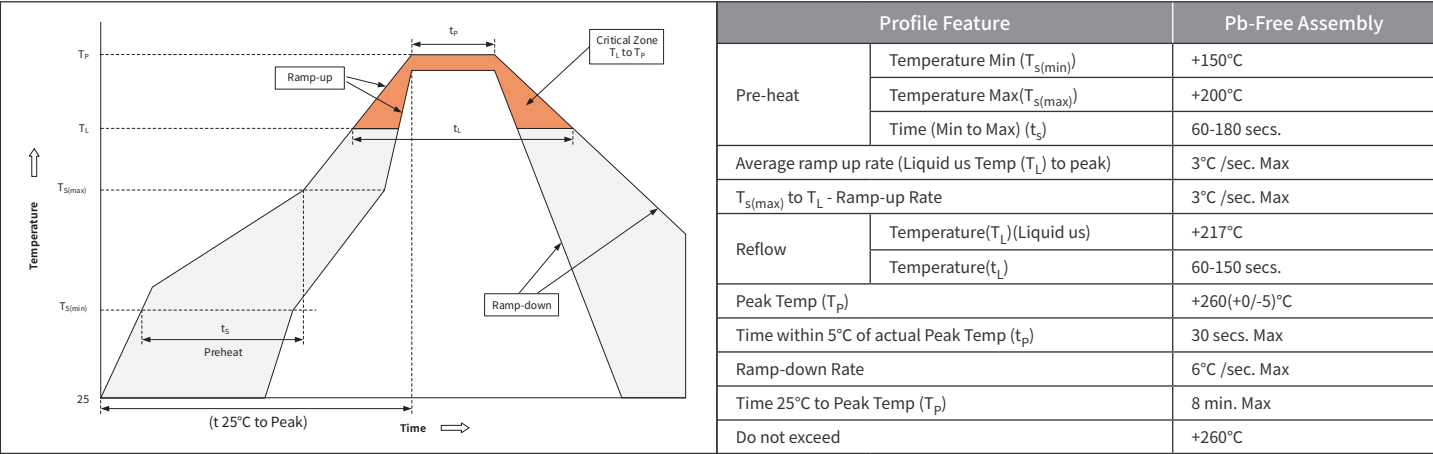
● Ordering Information

PACKAGE	PACKAGE CODE	UNIT WEIGHT(g)	REEL(pcs)	BOX(pcs)	CARTON(pcs)	DELIVERY MODE
SMC	R3	0.257	3000	6000	48000	13"

● Part Numbering



● Soldering Parameters



● Packaging (SMC/DO-214AB)

