

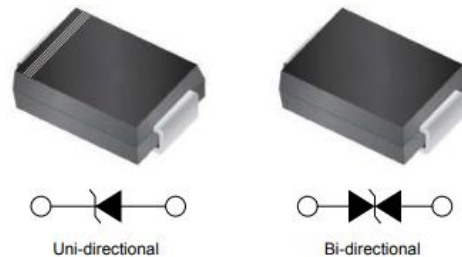
# Transient Voltage Suppression Diodes: 1.5SMC Series

## SMD Type 1500 W



### ■ Features

1. Glass passivated chip
2. 1500W peak pulse power capability at 10/1000μs waveform, repetition rate (duty cycle): 0.01%
3. Excellent clamping capability
4. Very fast response time
5. Low clamping voltage
6. Low leakage current
7. Meets MSL level 1, per J-STD-020, LF maximum peak of 260°C
8. JESD22-A114-B ESD Voltage: HBM 15KV
9. JEDEC EIA/JESD22-C101F ESD Voltage: CDM 500V
10. JEDEC EIA/JESD22-A115 ESD Voltage: MM 400V
11. ESD-immunity acc. IEC 61000-4-2 ±30kV(contact), ±30kV(air)
12. Halogen free and RoHS compliant



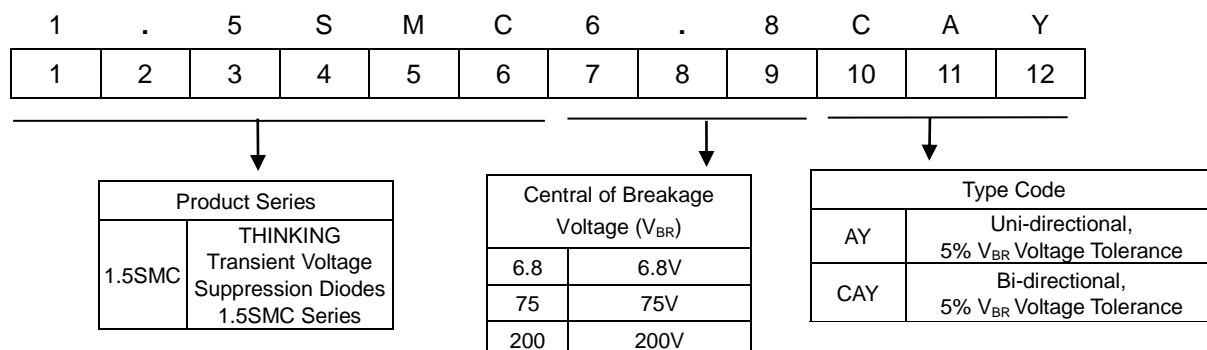
### ■ Recommended Applications

1. Computers
2. Telecom system
3. Industrial equipment
4. Consumer electronic applications
5. Other VCC bus and I/O interfaces

### ■ Mechanical Data

1. Case: Molded plastic, SMC / DO-214AB
2. Epoxy: UL 94V-0 rate flame retardant
3. Terminals: Solderable per MIL-STD-750, method 2026
4. Polarity: Color band denotes cathode end
5. Mounting Position: Any

### ■ Part Number Code

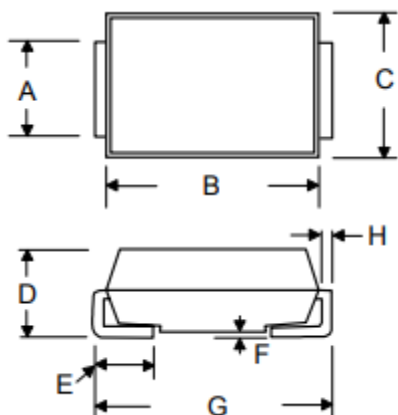


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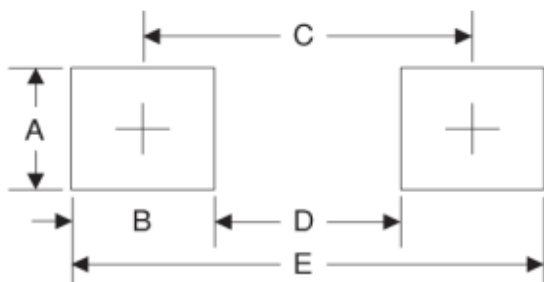
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### Structures and Dimensions



Symbol	Dimensions in millimeters	
	Min	Max
A	2.90	3.20
B	6.60	7.11
C	5.59	6.22
D	2.06	2.62
E	0.76	1.52
F	-	0.20
G	7.75	8.13
H	0.15	0.31



Symbol	Unit (mm)	Unit (inch)
A	3.30	0.130
B	2.50	0.098
C	6.80	0.268
D	4.40	0.173
E	9.40	0.370

### Maximum Rating ( $T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Peak power dissipation with a 10/1000 $\mu\text{s}$ waveform (Note 1,2)	$P_{PPM}$	1500	W
Peak pulse current with 10/1000 $\mu\text{s}$ waveform (Note 1)	$I_{PPM}$	See next table	A
Peak forward surge current, 8.3 ms single half sine-wave (Note 3)	$I_{FSM}$	200	A
Power dissipation on infinite heatsink at $T_L=75^\circ\text{C}$	$P_D$	6.5	W
Typical thermal resistance junction to ambient	$R_{\theta JA}$	75	$^\circ\text{C/W}$
Typical thermal resistance junction to lead	$R_{\theta JL}$	15	$^\circ\text{C/W}$
Operating junction and storage temperature range	$T_J, T_{STG}$	-55 to +150	$^\circ\text{C}$

Note:

1. Non-repetitive current pulse, per Fig. 3 and derated above  $T_A=25^\circ\text{C}$  per Fig. 2.
2. Mounted on 8.0 x 8.0mm copper pad to each terminal.
3. Measured on 8.3ms single half sine wave or equivalent square wave for unidirectional device only, duty cycle=4 per minute maximum.

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### ■ Electrical Characteristics (T<sub>A</sub>=25°C unless otherwise noted)

Part No. (Uni)	Part No. (Bi)	Reverse Stand off Voltage	Breakage Voltage V <sub>BR</sub> @ I <sub>T</sub>		Test Current I <sub>T</sub> ( mA )	Max. Clamping Voltage V <sub>C</sub> @ I <sub>pp</sub>	Max. Peak Pulse Current	Max. Reverse Leakage I <sub>R</sub> @ V <sub>RWM</sub>	Marking Code	
			V <sub>RWM</sub> ( V )	Min( V )		Max( V )	V <sub>C</sub> ( V )	I <sub>pp</sub> (A)	I <sub>R</sub> (μA)	Uni
1.5SMC6.8AY	1.5SMC6.8CAY	5.8	6.45	7.14	10	10.5	143	1000	6V8A	6V8C
1.5SMC7.5AY	1.5SMC7.5CAY	6.4	7.13	7.88	10	11.3	133	500	7V5A	7V5C
1.5SMC8.2AY	1.5SMC8.2CAY	7.02	7.79	8.61	10	12.1	124	200	8V2A	8V2C
1.5SMC9.1AY	1.5SMC9.1CAY	7.78	8.65	9.55	1	13.4	112	50	9V1A	9V1C
1.5SMC10AY	1.5SMC10CAY	8.55	9.5	10.5	1	14.5	103	10	10A	10C
1.5SMC11AY	1.5SMC11CAY	9.4	10.5	11.6	1	15.6	96.2	5	11A	11C
1.5SMC12AY	1.5SMC12CAY	10.2	11.4	12.6	1	16.7	89.8	5	12A	12C
1.5SMC13AY	1.5SMC13CAY	11.1	12.4	13.7	1	18.2	82.4	5	13A	13C
1.5SMC15AY	1.5SMC15CAY	12.8	14.3	15.8	1	21.2	70.8	1	15A	15C
1.5SMC16AY	1.5SMC16CAY	13.6	15.2	16.8	1	22.5	66.7	1	16A	16C
1.5SMC18AY	1.5SMC18CAY	15.3	17.1	18.9	1	25.2	59.5	1	18A	18C
1.5SMC20AY	1.5SMC20CAY	17.1	19	21	1	27.7	54.2	1	20A	20C
1.5SMC22AY	1.5SMC22CAY	18.8	20.9	23.1	1	30.6	49	1	22A	22C
1.5SMC24AY	1.5SMC24CAY	20.5	22.8	25.2	1	33.2	45.2	1	24A	24C
1.5SMC27AY	1.5SMC27CAY	23.1	25.7	28.4	1	37.5	40	1	27A	27C
1.5SMC30AY	1.5SMC30CAY	25.6	28.5	31.5	1	41.4	36.2	1	30A	30C
1.5SMC33AY	1.5SMC33CAY	28.2	31.4	34.7	1	45.7	32.8	1	33A	33C
1.5SMC36AY	1.5SMC36CAY	30.8	34.2	37.8	1	49.9	30.1	1	36A	36C
1.5SMC39AY	1.5SMC39CAY	33.3	37.1	41	1	53.9	27.8	1	39A	39C
1.5SMC43AY	1.5SMC43CAY	36.8	40.9	45.2	1	59.3	25.3	1	43A	43C
1.5SMC47AY	1.5SMC47CAY	40.2	44.7	49.4	1	64.8	23.1	1	47A	47C
1.5SMC51AY	1.5SMC51CAY	43.6	48.5	53.6	1	70.1	21.4	1	51A	51C
1.5SMC56AY	1.5SMC56CAY	47.8	53.2	58.8	1	77	19.5	1	56A	56C
1.5SMC62AY	1.5SMC62CAY	53	58.9	65.1	1	85	17.6	1	62A	62C
1.5SMC68AY	1.5SMC68CAY	58.1	64.6	71.4	1	92	16.3	1	68A	68C
1.5SMC75A	1.5SMC75CAY	64.1	71.3	78.8	1	104	14.6	1	75A	75C
1.5SMC82AY	1.5SMC82CAY	70.1	77.9	86.1	1	113	13.3	1	82A	82C
1.5SMC91AY	1.5SMC91CAY	77.8	86.5	95.5	1	125	12	1	91A	91C
1.5SMC100AY	1.5SMC100CAY	85.5	95	105	1	137	10.9	1	100A	100C

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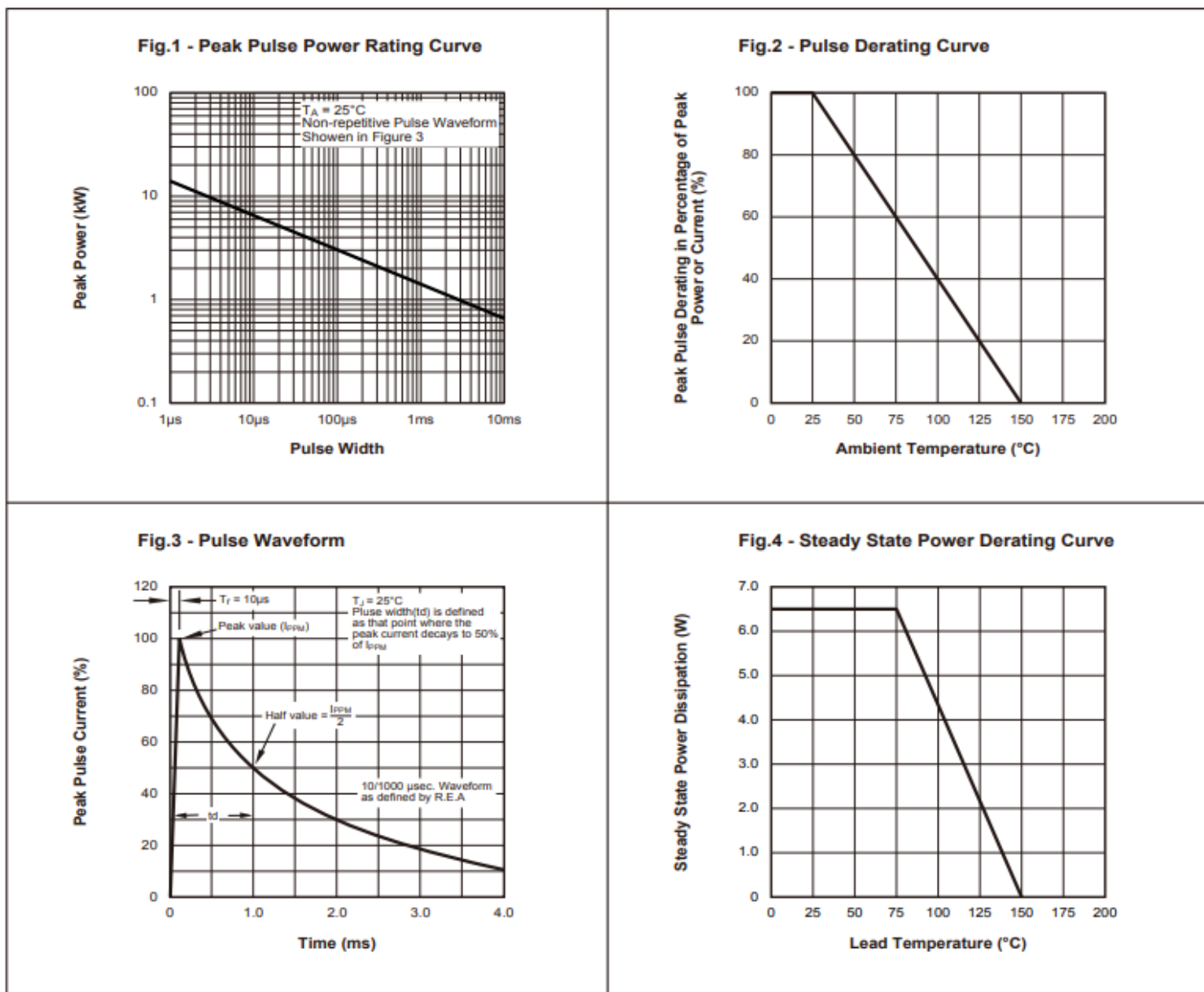
Part No. (Uni)	Part No. (Bi)	Reverse Stand off Voltage	Breakage Voltage V <sub>BR</sub> @ I <sub>T</sub>		Test Current I <sub>T</sub> (mA)	Max. Clamping Voltage V <sub>C</sub> @ I <sub>pp</sub>	Max. Peak Pulse Current I <sub>pp</sub> (A)	Max. Reverse Leakage I <sub>R</sub> @V <sub>RWM</sub>	Marking Code	
			V <sub>RWM</sub> (V)	Min(V)					Max(V)	Uni
1.5SMC110AY	1.5SMC110CAY	94	105	116	1	152	9.9	1	110A	110C
1.5SMC120AY	1.5SMC120CAY	102	114	126	1	165	9.1	1	120A	120C
1.5SMC130AY	1.5SMC130CAY	111	124	137	1	179	8.4	1	130A	130C
1.5SMC150AY	1.5SMC150CAY	128	143	158	1	207	7.2	1	150A	150C
1.5SMC160AY	1.5SMC160CAY	136	152	168	1	219	6.8	1	160A	160C
1.5SMC170AY	1.5SMC170CAY	145	162	179	1	234	6.4	1	170A	170C
1.5SMC180AY	1.5SMC180CAY	154	171	189	1	246	6.1	1	180A	180C
1.5SMC200AY	1.5SMC200CAY	171	190	210	1	274	5.5	1	200A	200C
1.5SMC220AY	1.5SMC220CAY	185	209	231	1	328	4.6	1	220A	220C
1.5SMC250AY	1.5SMC250CAY	214	237	263	1	344	4.4	1	250A	250C
1.5SMC300AY	1.5SMC300CAY	256	285	315	1	414	3.7	1	300A	300C
1.5SMC350AY	1.5SMC350CAY	300	332	368	1	482	3.2	1	350A	350C
1.5SMC400AY	1.5SMC400CAY	342	380	420	1	548	2.8	1	400A	400C
1.5SMC440AY	1.5SMC440CAY	376	418	462	1	602	2.5	1	440A	440C
1.5SMC480AY	1.5SMC480CAY	408	456	504	1	658	2.3	1	480A	480C
1.5SMC510AY	1.5SMC510CAY	434	485	535	1	698	2.1	1	510A	510C
1.5SMC530AY	1.5SMC530CAY	450	503.5	556.5	1	725	2.1	1	530A	530C
1.5SMC540AY	1.5SMC540CAY	459	513	567	1	740	2	1	540A	540C

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### ■ Typical Characteristics (T<sub>A</sub>=25°C unless otherwise noted)

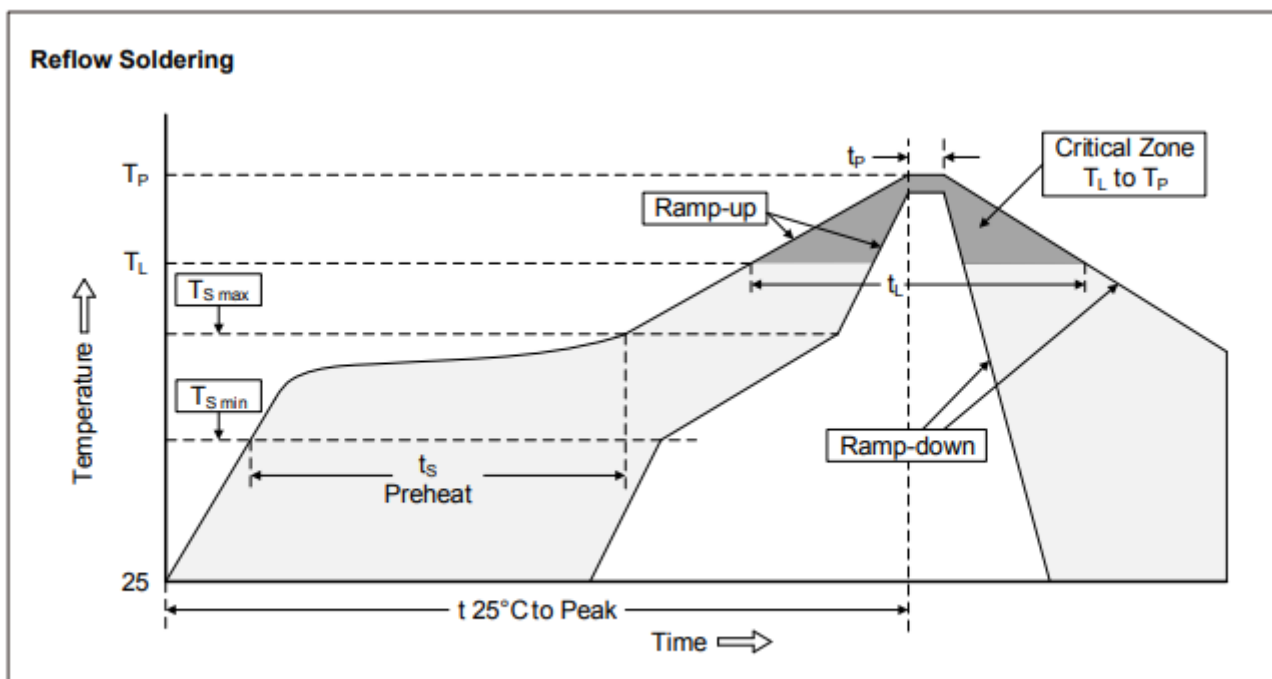


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### ■ Soldering Recommendation



### Recommended Conditions

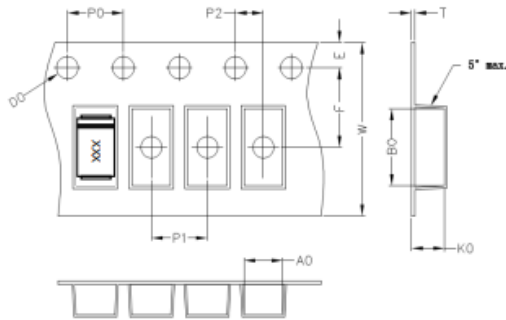
Profile Feature	Pb-Free Assembly
Average ramp-up rate ( $T_L$ to $T_P$ )	3°C/second max.
Preheat	
-Temperature Min ( $T_{S\ min}$ )	150°C
-Temperature Max ( $T_{S\ max}$ )	200°C
-Time (min to max) ( $t_s$ )	60-180 seconds
$T_{S\ max}$ to $T_L$	
-Ramp-up Rate	3°C/second max.
Time maintained above:	
-Temperature ( $T_L$ )	217°C
-Time ( $t_L$ )	60-150 seconds
Peak Temperature ( $T_P$ )	260°C
Time within 5°C of actual Peak Temperature ( $t_P$ )	20-40 seconds
Ramp-down Rate	6°C/second max.
Time 25°C to Peak Temperature	8 minutes max.

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### ■ Packaging



A0	B0	K0	D0	E	F
6.05	8.31	2.54	1.55	1.75	7.50
P0	P1	P2	T	W	Tolerance
4.0	8.0	2.0	0.25	16	0.1

### ■ Quantity

114

Series Type	Packaging option	Base quantity	Packaging specification
1.5SMC	Tape and reel	3000pcs/reel	EIA STD RS-481 <sub>116</sub>

### ■ Warehouse Storage Conditions of product

- Storage condition:
  1. Storage Temperature: -10°C~+40°C
  2. Relative Humidity:  $\cong 75\%RH$
  3. Keep away from corrosive atmosphere and sunlight.
- Period of Storage: 1 year.