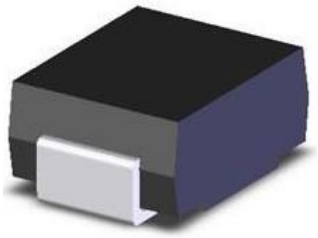
1.5SMC Series Datasheet

Description

The 1.5SMC series is designed specifically to protect sensitive electronic equipment from voltage transients induced by lightning and other transient voltage events. For surface mounted applications in order to optimize board space.

Features



- Halogen free and RoHS compliant
- Low profile package
- Built-in strain relief Design
- Low inductance
- Excellent clamping capability
- 1500W peak pulse power capability at 10/1000μs waveform, repetition rate (duty cycle): 0.01%
- Fast response time: typically less than 1.0ps from 0V to BV min
- Typical IR less than 1μA above 10V devices
- Peak 260℃ high temperature Reflow Soldering withstanding
- Meet MSL level1, per J-STD-020
- IEC-61000-4-2 ESD 30kV(Air), 30kV (Contact)
- Unit Weight: 0.26g/PCS

Applications

TVS components are ideal for the protection of I/O Interfaces, VCC bus and other vulnerable circuits used in telecom, computer, Industrial and consumer electronic applications.

Maximum Ratings and Characteristics

Ratings at 25℃ ambient temperature unless otherwise specified.

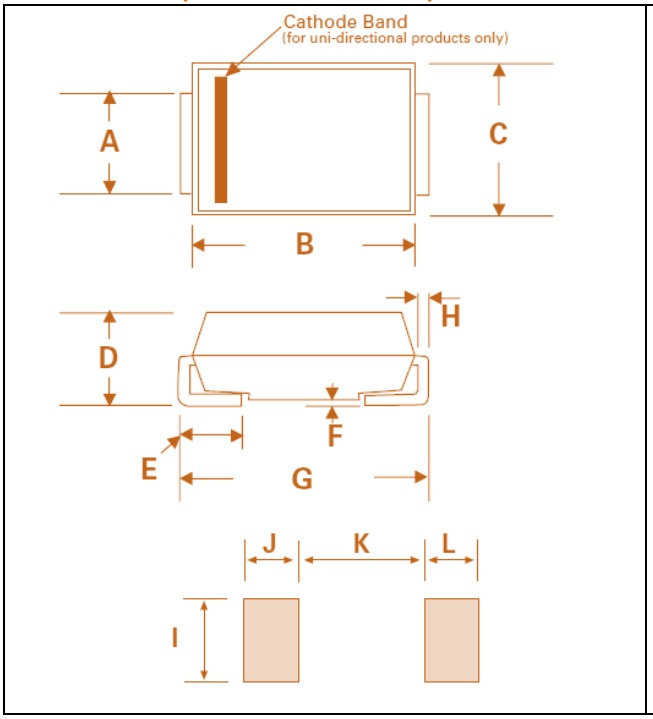
Rating	Symbol	Value	Units
Peak pulse power dissipation at 10/1000μs waveform (Note1, Note2, Fig.1)	P_{PPM}	Minimum 1500	Watts
Peak pulse current of at 10/1000μs waveform (Note 1, Fig.3)	I_{PPM}	See Table	Amps
Steady state power dissipation at T_A=50℃ (Fig.5)	$P_{M(AV)}$	6.5	Watts
Maximum Instantaneous Forward Voltage at 100A for Unidirectional Only	V_F	3.5	V
Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load, (JEDEC Method) (Note3, Fig.6)	I_{FSM}	200	Amps
Operating junction and Storage Temperature Ranges.	T_J,T_{STG}	-55 to +150	℃
Typical thermal resistance junction to lead	$R_{\theta JL}$	15	℃/W
Typical thermal resistance junction to ambient	$R_{\theta JA}$	75	℃/W

Notes: 1. Non-repetitive current pulse, per Fig.3 and Derating above T_A=25℃ per Fig.2.

2. Each terminal is surface Mounted on the 8.0mm×8.0mm copper pads.

3. 8.3ms single half sine-wave or equivalent square wave, duty cycle=4 pulses per minutes maximum.

Dimensions (SMC/DO-214AB)



Dimensions	Inches		Millimeters	
	Min	Max	Min	Max
A	0.114	0.126	2.900	3.200
B	0.260	0.280	6.600	7.110
C	0.220	0.245	5.590	6.220
D	0.079	0.103	2.060	2.620
E	0.030	0.060	0.760	1.520
F	-	0.008	-	0.203
G	0.305	0.320	7.750	8.130
H	0.006	0.012	0.152	0.305
I	0.129	-	3.300	-
J	0.094	-	2.400	-
K	-	0.165		4.200
L	0.094	-	2.400	-

Electrical Characteristics (TA=25℃)

Part Number		Device Marking Code		Reverse Stand-Off Voltage	Breakdown Voltage @I_T		Test Current	Maximum Clamping Voltage @I_{PP}	Peak Pulse Current	Reverse Leakage @V_R
Uni	Bi	UNI	BI	V_R(V)	Min(V)	Max(V)	I_T(mA)	V_C(V)	I_{PP}(A)	I_R(μA)
1.5SMC6.8A	1.5SMC6.8CA	6V8A	6V8C	5.80	6.45	7.14	10	10.5	144.8	1000
1.5SMC7.5A	1.5SMC7.5CA	7V5A	7V5C	6.40	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	9.55	1	13.4	113.4	50
1.5SMC10A	1.5SMC10CA	10A	10C	8.55	9.50	10.50	1	14.5	104.8	10
1.5SMC11A	1.5SMC11CA	11A	11C	9.40	10.50	11.60	1	15.6	97.4	5
1.5SMC12A	1.5SMC12CA	12A	12C	10.20	11.40	12.60	1	16.7	91.0	5
1.5SMC13A	1.5SMC13CA	13A	13C	11.10	12.40	13.70	1	18.2	83.5	1
1.5SMC15A	1.5SMC15CA	15A	15C	12.80	14.30	15.80	1	21.2	71.7	1
1.5SMC16A	1.5SMC16CA	16A	16C	13.60	15.20	16.80	1	22.5	67.6	1
1.5SMC18A	1.5SMC18CA	18A	18C	15.30	17.10	18.90	1	25.2	60.3	1
1.5SMC20A	1.5SMC20CA	20A	20C	17.10	19.00	21.00	1	27.7	54.9	1
1.5SMC22A	1.5SMC22CA	22A	22C	18.80	20.90	23.10	1	30.6	49.7	1
1.5SMC24A	1.5SMC24CA	24A	24C	20.50	22.80	25.20	1	33.2	45.8	1
1.5SMC27A	1.5SMC27CA	27A	27C	23.10	25.70	28.40	1	37.5	40.5	1
1.5SMC30A	1.5SMC30CA	30A	30C	25.60	28.50	31.50	1	41.4	36.7	1
1.5SMC33A	1.5SMC33CA	33A	33C	28.20	31.4	34.7	1	45.7	33.3	1
1.5SMC36A	1.5SMC36CA	36A	36C	30.80	34.2	37.8	1	49.9	30.5	1

Electrical Characteristics (TA=25℃)

Part Number		Device Marking Code		Reverse Stand-Off Voltage	Breakdown Voltage @I_T		Test Current	Maximum Clamping Voltage @I_{PP}	Peak Pulse Current	Reverse Leakage @V_R
Uni	Bi	UNI	BI	V_R(V)	Min(V)	Max(V)	I_T(mA)	V_C(V)	I_{PP}(A)	I_R(μA)
1.5SMC39A	1.5SMC39C	39A	39C	33.30	37.1	41.0	1	53.9	28.2	1
1.5SMC43A	1.5SMC43C	43A	43C	36.80	40.9	45.2	1	59.3	25.6	1
1.5SMC47A	1.5SMC47C	47A	47C	40.20	44.7	49.4	1	64.8	23.5	1
1.5SMC51A	1.5SMC51C	51A	51C	43.60	48.5	53.6	1	70.1	21.7	1
1.5SMC56A	1.5SMC56C	56A	56C	47.80	53.2	58.8	1	77.0	19.7	1
1.5SMC62A	1.5SMC62C	62A	62C	53.00	58.9	65.1	1	85.0	17.9	1
1.5SMC68A	1.5SMC68C	68A	68C	58.10	64.6	71.4	1	92.0	16.5	1
1.5SMC75A	1.5SMC75C	75A	75C	64.10	71.3	78.8	1	103.0	14.8	1
1.5SMC82A	1.5SMC82C	82A	82C	70.10	77.9	86.1	1	113.0	13.5	1
1.5SMC91A	1.5SMC91C	91A	91C	77.80	86.5	95.5	1	125.0	12.2	1
1.5SMC100A	1.5SMC100	100A	100C	85.50	95.00	105.0	1	137.0	11.1	1
1.5SMC110A	1.5SMC110	110A	110C	94.00	105.00	116.0	1	152.0	10.0	1
1.5SMC120A	1.5SMC120	120A	120C	102.00	114.0	126.0	1	165.0	9.2	1
1.5SMC130A	1.5SMC130	130A	130C	111.00	124.0	137.0	1	179.0	8.5	1
1.5SMC150A	1.5SMC150	150A	150C	128.00	143.0	158.0	1	207.0	7.3	1
1.5SMC160A	1.5SMC160	160A	160C	136.00	152.0	168.0	1	219.0	6.9	1
1.5SMC170A	1.5SMC170	170A	170C	145.00	162.0	179.0	1	234.0	6.5	1
1.5SMC180A	1.5SMC180	180A	180C	154.00	171.0	189.0	1	246.0	6.2	1
1.5SMC200A	1.5SMC200	200A	200C	171.00	190.0	210.0	1	274.0	5.5	1
1.5SMC220A	1.5SMC220	220A	220C	185.00	209.0	231.0	1	328.0	4.6	1
1.5SMC250A	1.5SMC250	250A	250C	214.00	237.0	263.0	1	344.0	4.4	1
1.5SMC300A	1.5SMC300	300A	300C	256.00	285.0	315.0	1	414.0	3.7	1
1.5SMC350A	1.5SMC350	350A	350C	300.00	332.0	368.0	1	482.0	3.2	1
1.5SMC400A	1.5SMC400	400A	400C	342.00	380.0	420.0	1	548.0	2.8	1
1.5SMC440A	1.5SMC440	440A	440C	376.00	418.0	462.0	1	602.0	2.5	1
1.5SMC480A	1.5SMC480	480A	480C	408.00	456.0	504.0	1	658.0	2.3	1
1.5SMC510A	1.5SMC510	510A	510C	434.00	485.0	535.0	1	698.0	2.1	1
1.5SMC530A	1.5SMC530	530A	530C	450.00	503.5	556.5	1	725.0	2.1	1
1.5SMC540A	1.5SMC540	540A	540C	459.00	513.0	567.0	1	740.0	2.0	1
1.5SMC550A	1.5SMC550	550A	550C	467.00	522.5	577.5	1	760.0	2.0	1

Ratings and Characteristic Curves (Ta=25℃ unless otherwise noted)

Figure 1. Peak Pulse Power Rating Curve

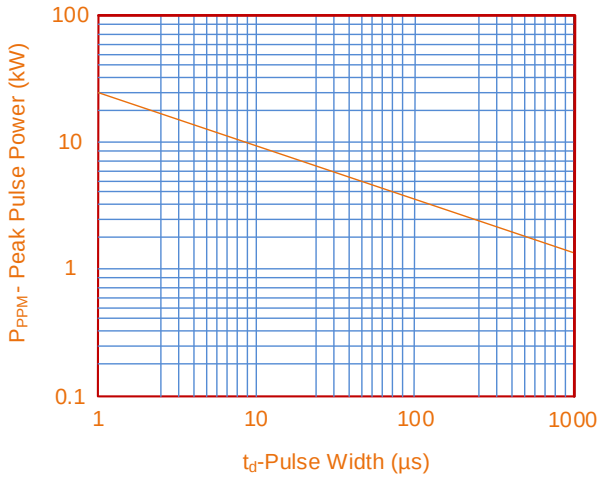


Figure 2. Pulse Derating Curve

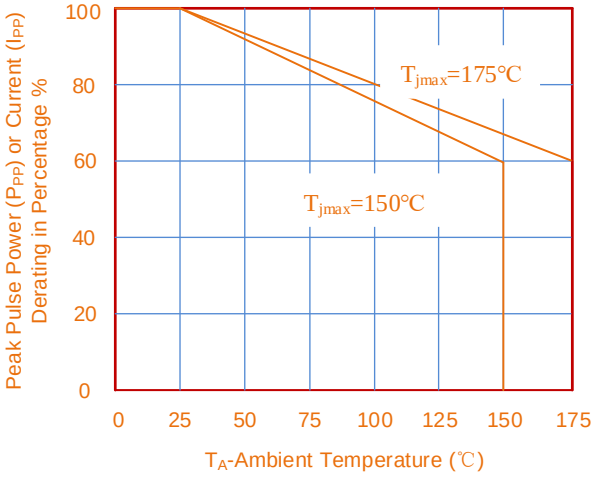


Figure 3. Pulse Waveform

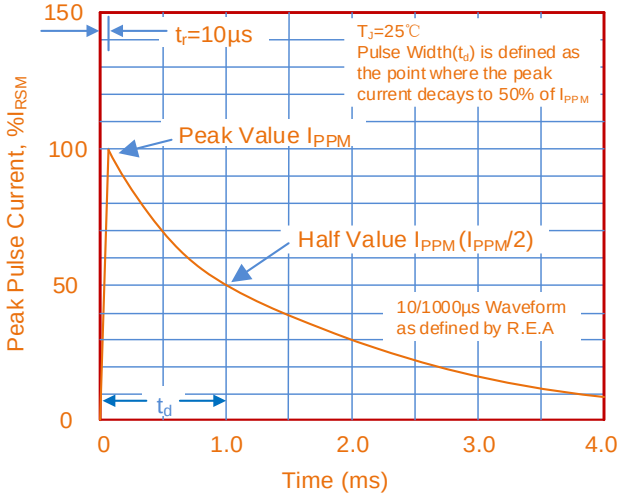


Figure 4. Typical Junction Capacitance

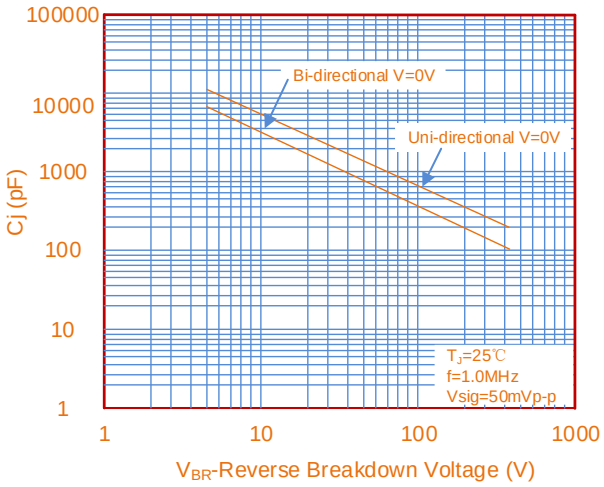


Figure 5. Steady State Power Dissipation Derating Curve

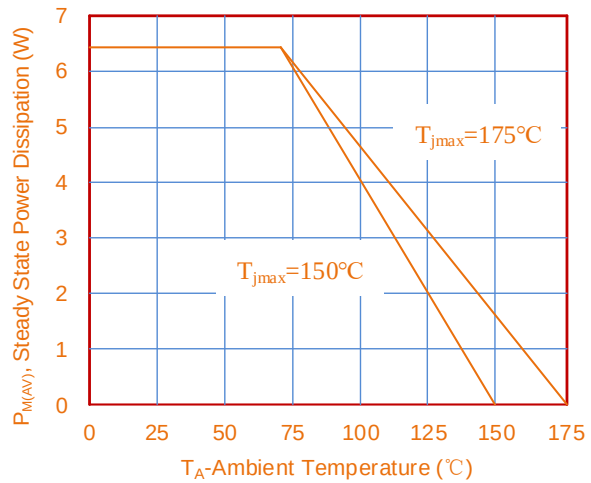
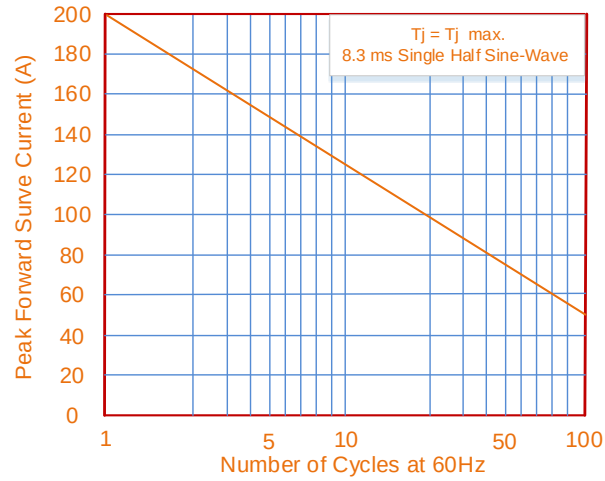
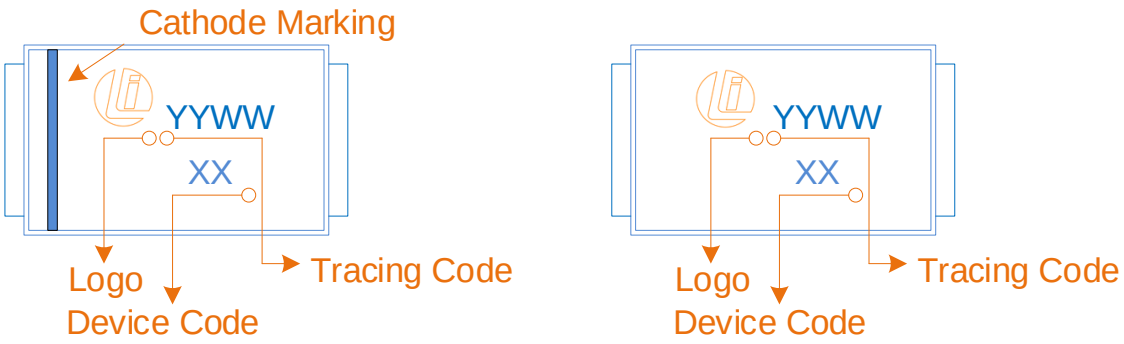


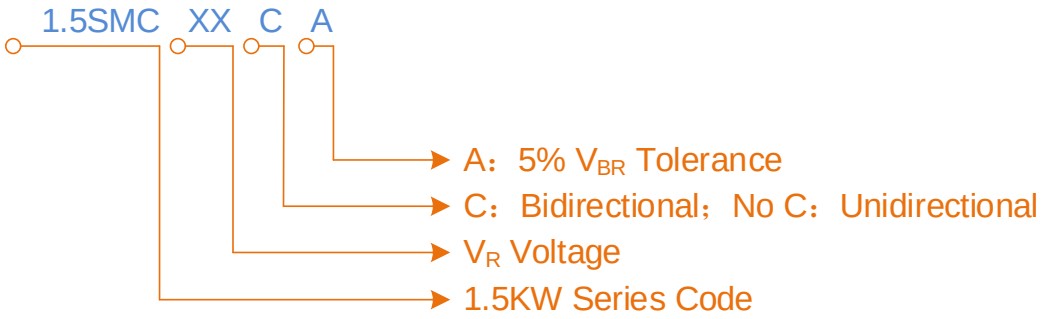
Figure 6. Maximum Non-Repetitive Forward Surge Current Uni-Directional Only



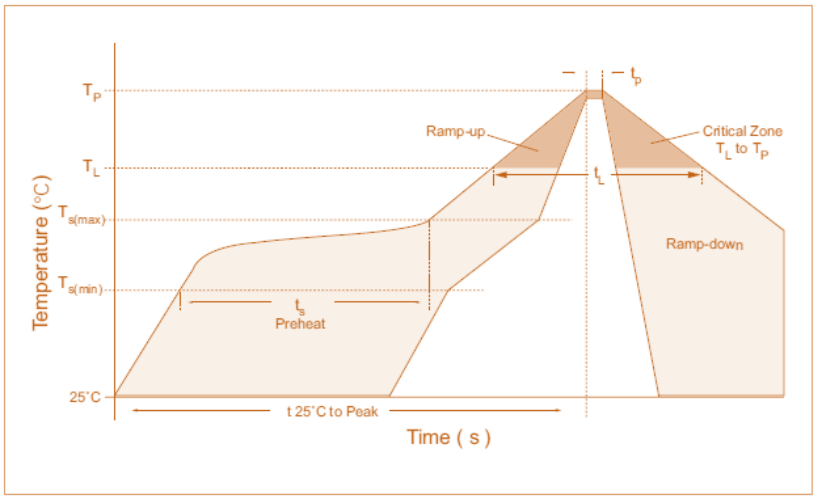
Marking Code



Part Number Code



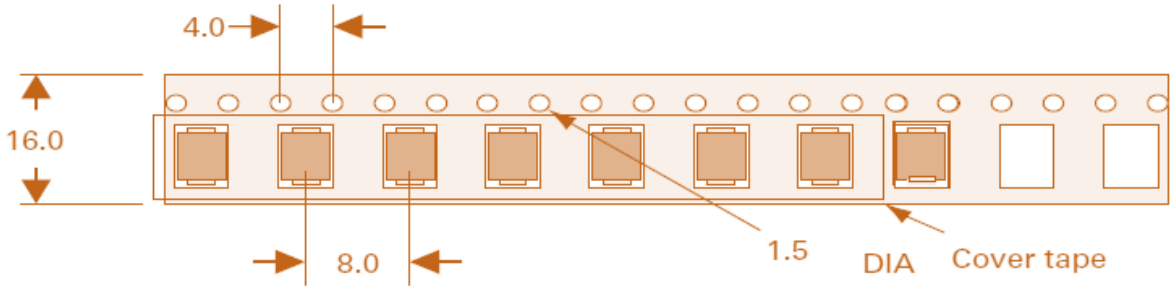
Soldering Parameters



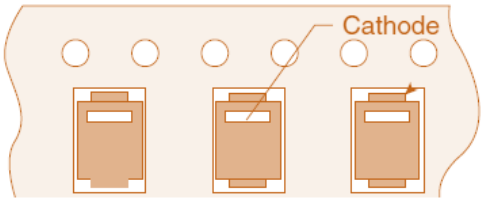
Reflow Condition		Lead–free Soldering
Pre Heat	- Temperature Min ($T_{s(min)}$)	150°C
	- Temperature Max ($T_{s(max)}$)	200°C
	- Time (min to max) (t_s)	60 – 180 secs
Average ramp up rate (Liquidus Temp (T_A) to peak		3°C/second max
$T_{S(max)}$ to T_A - Ramp-up Rate		3°C/second max
Reflow	- Temperature (T_A)	217°C
	- Time (min to max) (t_s)	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 (T_p)		8 minutes Max.
Do not exceed Temperature		260°C

Packaging Specification

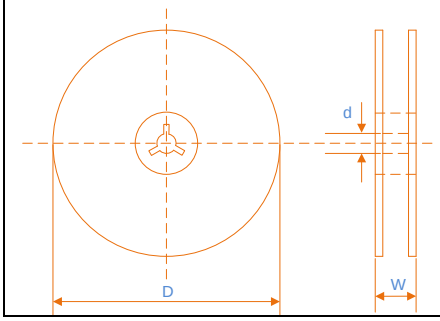
Tape



For Uni-Devices



13 Inches Reel



D	Φ330.0±2.0
d	Φ13.5±0.5
W	20.0±2.0

Quantity: 3000PCS/Reel