

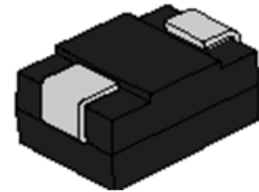


1.5SMCxx(C)AS Series 1500W Transient Voltage Suppressor

Rev.1.1

DESCRIPTION:

TVS diodes can be used in a wide range of applications which like consumer electronic products, automotive industries, munitions, telecommunications, aerospace industries, and intelligent control systems.



SMC



Bi-directional



Uni-directional

Symbol

FEATURES:

- ✧ Low profile package.
- ✧ Low inductance.
- ✧ Excellent clamping capability.
- ✧ 1500W peak pulse power capability at 10/1000μs waveform.
- ✧ Typical I_R less than 1μA above 12V.
- ✧ Fast response time: typically less than 1.0ps from 0V to V_{BR} min.
- ✧ High temperature to reflow soldering: 260°C/40s at terminals.
- ✧ Plastic package has under writers laboratory flammability 94V-0.
- ✧ Meets MSL level 1, per J-STD-020, LF maximum peak of 260°C.
- ✧ Terminal: solder plated, solderable per J-STD-002.
- ✧ For surface mounted applications in order to optimize board space.
- ✧ IEC61000-4-2 (ESD) ±30kV (air), ±30kV (contact).

ABSOLUTE MAXIMUM RATINGS (T_A=25°C, RH=45%-75%, unless otherwise noted)

Parameter	Symbol	Value	Unit
Storage and operating junction temperature range	T _{STG} /T _J	-55 to +150	°C
Peak pulse power dissipation at 10/1000μs waveform	P _{PP}	1500	W
Steady state power dissipation at T _L =75°C	P _{M(AV)}	6.5	W
Maximum instantaneous forward voltage at 100A for unidirectional only	V _F	5.0	V
Peak forward surge current, 8.3ms single half sine wave(Note 1)	I _{FSM}	200	A
Typical thermal resistance junction to lead	R _{θJL}	15	°C/W
Typical thermal resistance junction to ambient	R _{θJA}	75	°C/W

Notes:

1. Measured on 8.3ms single half sine wave or equivalent square wave for unidirectional device only, duty cycle=4 per minute maximum

MARKING



6V8CS : Device Marking Code
1921: the 21th week, 2019

ELECTRICAL CHARACTERISTICS (T_A=25°C)

Part Number		Marking		V _R	I _{R@V_R}	V _{BR@I_T}		I _T	V _{C@I_{PP}}	I _{PP} ^①
Uni-polar	Bi-polar	Uni	Bi	(V)	max(μA)	min(V)	max(V)	mA	V	A
1.5SMC6.8AS	1.5SMC6.8CAS	6V8AS	6V8CS	5.8	300	6.45	7.14	10	10.5	144.8
1.5SMC7.5AS	1.5SMC7.5CAS	7V5AS	7V5CS	6.4	150	7.13	7.88	10	11.3	132.8
1.5SMC8.2AS	1.5SMC8.2CAS	8V2AS	8V2CS	7.02	100	7.79	8.61	10	12.1	124.0
1.5SMC9.1AS	1.5SMC9.1CAS	9V1AS	9V1CS	7.78	50	8.65	9.55	1	13.4	112.0
1.5SMC10AS	1.5SMC10CAS	10AS	10CS	8.55	10	9.50	10.50	1	14.5	103.5
1.5SMC11AS	1.5SMC11CAS	11AS	11CS	9.4	5	10.50	11.60	1	15.6	96.2
1.5SMC12AS	1.5SMC12CAS	12AS	12CS	10.2	5	11.40	12.60	1	16.7	89.8
1.5SMC13AS	1.5SMC13CAS	13AS	13CS	11.1	1	12.40	13.70	1	18.2	82.5
1.5SMC15AS	1.5SMC15CAS	15AS	15CS	12.8	1	14.30	15.80	1	21.2	70.8
1.5SMC16AS	1.5SMC16CAS	16AS	16CS	13.6	1	15.20	16.80	1	22.5	66.7
1.5SMC18AS	1.5SMC18CAS	18AS	18CS	15.3	1	17.10	18.90	1	25.2	59.6
1.5SMC20AS	1.5SMC20CAS	20AS	20CS	17.1	1	19.00	21.00	1	27.7	54.2
1.5SMC22AS	1.5SMC22CAS	22AS	22CS	18.8	1	20.90	23.10	1	30.6	49.1
1.5SMC24AS	1.5SMC24CAS	24AS	24CS	20.5	1	22.80	25.20	1	33.2	45.2
1.5SMC27AS	1.5SMC27CAS	27AS	27CS	23.1	1	25.70	28.40	1	37.5	40.0
1.5SMC30AS	1.5SMC30CAS	30AS	30CS	25.6	1	28.50	31.50	1	41.4	36.3
1.5SMC33AS	1.5SMC33CAS	33AS	33CS	28.2	1	31.40	34.70	1	45.7	32.9
1.5SMC36AS	1.5SMC36CAS	36AS	36CS	30.8	1	34.20	37.80	1	49.9	30.1
1.5SMC39AS	1.5SMC39CAS	39AS	39CS	33.3	1	37.10	41.00	1	53.9	27.9
1.5SMC43AS	1.5SMC43CAS	43AS	43CS	36.8	1	40.90	45.20	1	59.3	25.3
1.5SMC47AS	1.5SMC47CAS	47AS	47CS	40.2	1	44.70	49.40	1	64.8	23.2
1.5SMC51AS	1.5SMC51CAS	51AS	51CS	43.6	1	48.50	53.60	1	70.1	21.4
1.5SMC56AS	1.5SMC56CAS	56AS	56CS	47.8	1	53.20	58.80	1	77.0	19.5

ELECTRICAL CHARACTERISTICS (T_A=25°C, continued)

Part Number		Marking		V _R	I _{R@V_R}	V _{BR@I_T}		I _T	V _{C@I_{PP}}	I _{PP} ^①
Uni-polar	Bi-polar	Uni	Bi	(V)	max(μA)	min(V)	max(V)	mA	V	A
1.5SMC62AS	1.5SMC62CAS	62AS	62CS	53.0	1	58.90	65.10	1	85.0	17.7
1.5SMC68AS	1.5SMC68CAS	68AS	68CS	58.1	1	64.60	71.40	1	92.0	16.4
1.5SMC75AS	1.5SMC75CAS	75AS	75CS	64.1	1	71.30	78.80	1	103.0	14.6
1.5SMC82AS	1.5SMC82CAS	82AS	82CS	70.1	1	77.90	86.10	1	113.0	13.3
1.5SMC91AS	1.5SMC91CAS	91AS	91CS	77.8	1	86.50	95.50	1	125.0	12.0
1.5SMC100AS	1.5SMC100CAS	100AS	100CS	85.5	1	95.00	105.0	1	137.0	11.0
1.5SMC110AS	1.5SMC110CAS	110AS	110CS	94.0	1	105.0	116.0	1	152.0	10.0
1.5SMC120AS	1.5SMC120CAS	120AS	120CS	102	1	114.0	126.0	1	165.0	9.1

① Surge waveform: 10/1000μs

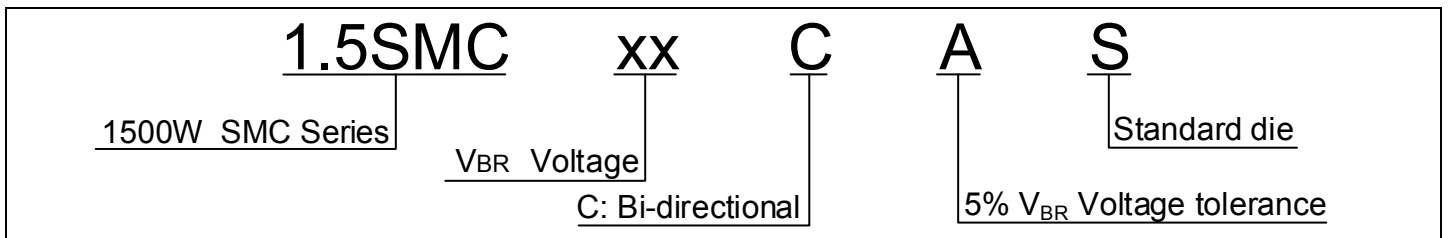
V_R: Stand-off voltage -- Maximum voltage that can be applied

V_{BR}: Breakdown voltage

V_C: Clamping voltage -- Peak voltage measured across the suppressor at a specified I_{PP}

I_R: Reverse leakage current

ORDERING INFORMATION



RATINGS AND V-I CHARACTERISTICS CURVES (T_A=25°C, unless otherwise noted)

FIG.1:V- I curve characteristics (Uni-directional)

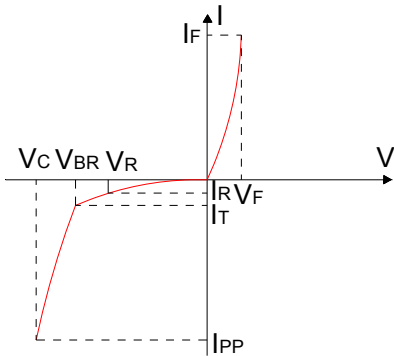


FIG.2:V- I curve characteristics (Bi-directional)

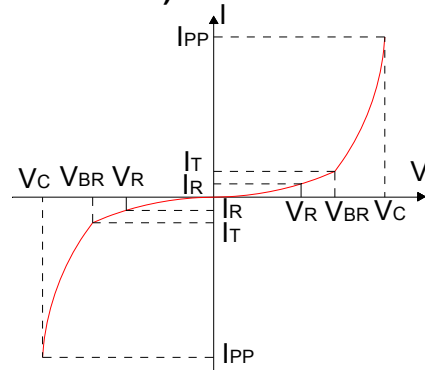


FIG.3: Pulse waveform

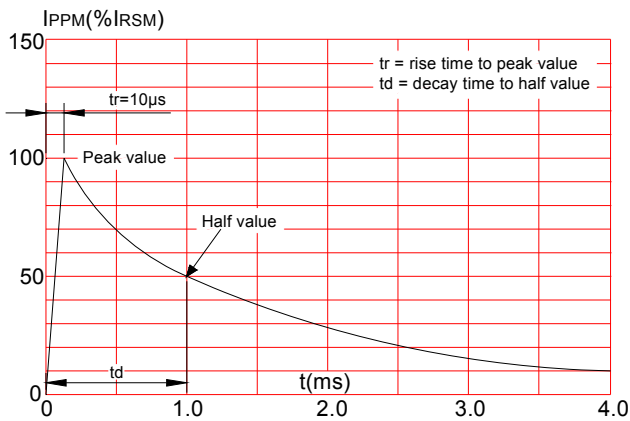
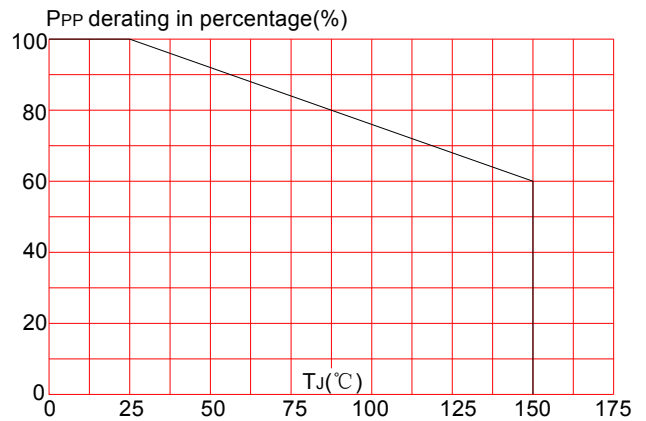
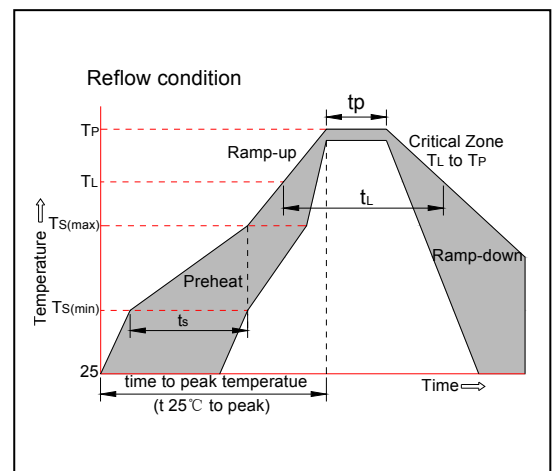


FIG.4: Pulse derating curve

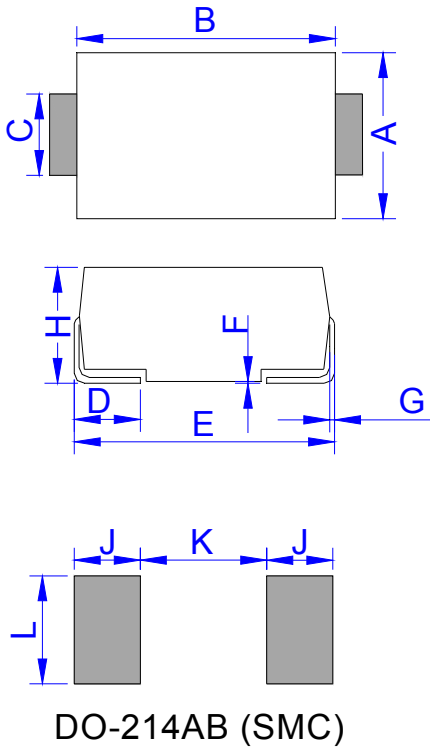


SOLDERING PARAMETERS

Reflow Condition		Pb-Free assembly (see figure at right)
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 _L)to peak)		3°C/sec. Max
T _{s(max)} to T _L - Ramp-up Rate		3°C/sec. Max
Reflow	-Temperature(T _L)(Liquidus)	+217°C
	-Temperature(t _L)	60-150 secs.
Peak Temp (T _p)		+260(+0/-5)°C
Time within 5°C of actual Peak Temp (t _p)		20-40secs.
Ramp-down Rate		6°C/sec. Max
Time 25°C to Peak Temp (T _p)		8 min. Max
Do not exceed		+260°C

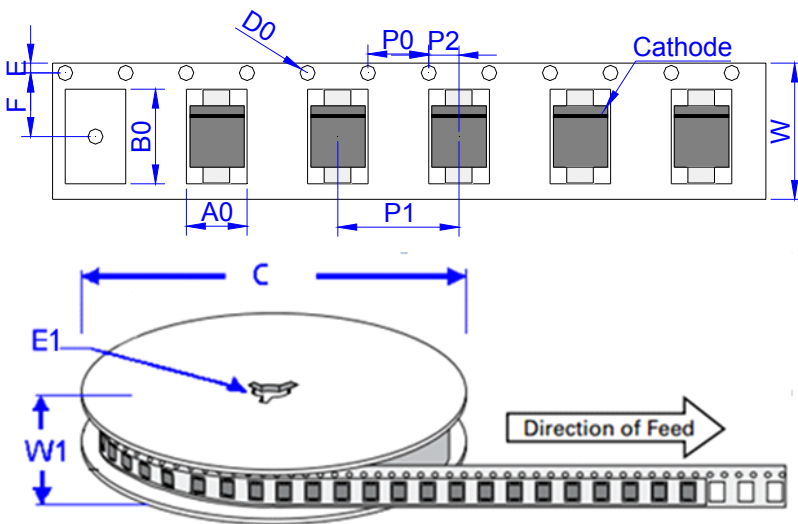


PACKAGE MECHANICAL DATA



Ref.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	5.75	6.25	0.226	0.246
B	6.90	7.40	0.272	0.291
C	2.75	3.25	0.108	0.128
D	0.95	1.52	0.037	0.060
E	7.70	8.20	0.303	0.323
F	0.051	0.203	0.002	0.008
G	0.15	0.31	0.006	0.012
H	2.15	2.62	0.085	0.103
J	2.40		0.094	
K		4.20		0.165
L	3.30		0.130	

TAPE AND REEL SPECIFICATION-SMC



Ref.	Dimensions	
	Millimeters	Inches
A0	6.05 ± 0.3	0.238 ± 0.012
B0	8.31 ± 0.3	0.327 ± 0.012
C	330.0	13.0
D0	1.55 ± 0.1	0.061 ± 0.004
E	1.75 ± 0.2	0.069 ± 0.008
E1	13.3 ± 0.3	0.524 ± 0.012
F	7.50 ± 0.2	0.295 ± 0.008
P0	4.00 ± 0.2	0.157 ± 0.008
P1	8.00 ± 0.2	0.3145 ± 0.008
P2	2.00 ± 0.2	0.079 ± 0.008
W	16.0 ± 0.2	0.630 ± 0.008
W1	19.7 ± 2.0	0.776 ± 0.079

PART No.	UNIT WEIGHT (g/PCS) typ.	REEL (PCS)	PER CARTON (PCS)	DESCRIPTION
1.5SMCxxAS/CAS	0.256	3,000	48,000	13 inch reel pack

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