

INDIVIDUAL SPECIFICATION SHEET

Product Name: Transient Voltage Suppressors

Part Number: SMCJ 1500W Series

Revision: A



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Rev.	Effective Date	Changed Contents
A	2018-11-29	New Release

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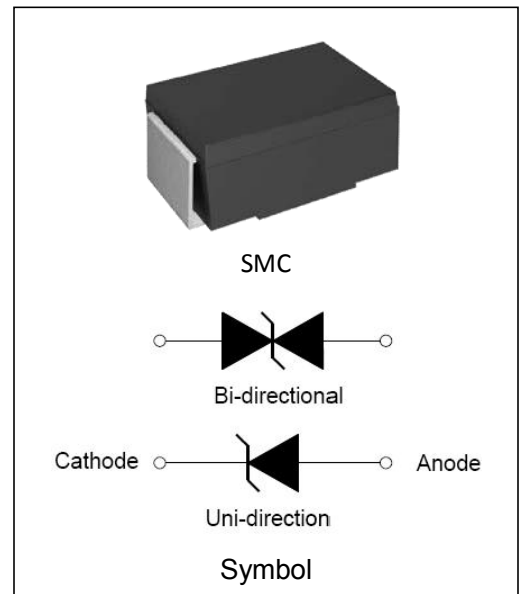


DESCRIPTION:

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.

FEATURES:

- ✧ Glass passivated or planar junction
- ✧ Excellent clamping capability
- ✧ Repetition rate (duty cycle): 0.01%
- ✧ Typical I_R less than $1\mu A$ above 10V.
- ✧ Low profile package and low inductance
- ✧ 1500W Peak Pulse power capability at $10 \times 1000\mu s$ waveform.
- ✧ Fast response time: typically less than 1.0ps from 0V to V_{BR} min.
- ✧ High temperature soldering: $260^\circ C/10s$ at terminals.
- ✧ Plastic package has Underwriters Laboratory Flammability 94V-0.
- ✧ For surface mounted applications in order to optimize board space



ABSOLUTE MAXIMUM RATINGS ($T_A=25^\circ C$, RH=45%-75%, unless otherwise noted)

Parameter	Symbol	Value	Unit
Storage temperature range	T_{stg}	-55 to +150	$^\circ C$
Operating junction temperature range	T_j	-55 to +150	$^\circ C$
Steady state power dissipation at $T_L=75^\circ C$	$P_{M(AV)}$	8.0	W
Peak pulse power dissipation on 10/1000 μs waveform	P_{PP}	1500	W
Maximum Instantaneous Forward Voltage at 60A for Unidirectional	V_F	5.0	V

ELECTRICAL CHARACTERISTICS (T_A=25°C)

Part Number		V _R	I _R @V _R	V _{BR} @I _T		I _T	V _C @I _{PP}	I _{PP} ^①
Uni-Polar	Bi-Polar	V	μA	min(V)	max(V)	mA	max(V)	A
SMCJ5.0A	SMCJ5.0CA	5.0	300	6.40	7.00	10	9.2	163.0
SMCJ6.0A	SMCJ6.0CA	6.0	250	6.67	7.37	10	10.3	145.6
SMCJ6.5A	SMCJ6.5CA	6.5	150	7.22	7.98	10	11.2	134.0
SMCJ7.0A	SMCJ7.0CA	7.0	100	7.78	8.60	10	12.0	125.0
SMCJ7.5A	SMCJ7.5CA	7.5	50	8.33	9.21	1	12.9	116.3
SMCJ8.0A	SMCJ8.0CA	8.0	30	8.89	9.83	1	13.6	110.3
SMCJ8.5A	SMCJ8.5CA	8.5	20	9.44	10.40	1	14.4	104.2
SMCJ9.0A	SMCJ9.0CA	9.0	10	10.00	11.10	1	15.4	97.4
SMCJ10A	SMCJ10CA	10	5	11.10	12.30	1	17.0	88.2
SMCJ11A	SMCJ11CA	11	2	12.20	13.50	1	18.2	82.4
SMCJ12A	SMCJ12CA	12	1	13.30	14.70	1	19.9	75.4
SMCJ13A	SMCJ13CA	13	1	14.40	15.90	1	21.5	69.8
SMCJ14A	SMCJ14CA	14	1	15.60	17.20	1	23.2	64.7
SMCJ15A	SMCJ15CA	15	1	16.70	18.50	1	24.4	61.5
SMCJ16A	SMCJ16CA	16	1	17.80	19.70	1	26.0	57.7
SMCJ17A	SMCJ17CA	17	1	18.90	20.90	1	27.6	54.4
SMCJ18A	SMCJ18CA	18	1	20.00	22.10	1	29.2	51.4
SMCJ20A	SMCJ20CA	20	1	22.20	24.50	1	32.4	46.3
SMCJ22A	SMCJ22CA	22	1	24.40	26.90	1	35.5	42.3
SMCJ24A	SMCJ24CA	24	1	26.70	29.50	1	38.9	38.6
SMCJ26A	SMCJ26CA	26	1	28.90	31.90	1	42.1	35.6
SMCJ28A	SMCJ28CA	28	1	31.10	34.40	1	45.4	33.1
SMCJ30A	SMCJ30CA	30	1	33.30	36.80	1	48.4	31.0
SMCJ33A	SMCJ33CA	33	1	36.70	40.60	1	53.3	28.2
SMCJ36A	SMCJ36CA	36	1	40.00	44.20	1	58.1	25.8
SMCJ40A	SMCJ40CA	40	1	44.40	49.10	1	64.5	23.3
SMCJ43A	SMCJ43CA	43	1	47.80	52.80	1	69.4	21.6
SMCJ45A	SMCJ45CA	45	1	50.00	55.30	1	72.7	20.6
SMCJ48A	SMCJ48CA	48	1	53.30	58.90	1	77.4	19.4
SMCJ51A	SMCJ51CA	51	1	56.70	62.70	1	82.4	18.2

ELECTRICAL CHARACTERISTICS (T_A=25°C, continued)

Part Number		V _R	I _R @V _R	V _{BR} @I _T		I _T	V _C @I _{PP}	I _{PP} ^①
Uni-Polar	Bi-Polar	V	μA	min(V)	max(V)	mA	max(V)	A
SMCJ54A	SMCJ54CA	54	1	60.00	66.30	1	87.1	17.2
SMCJ58A	SMCJ58CA	58	1	64.40	71.20	1	93.6	16.1
SMCJ60A	SMCJ60CA	60	1	66.70	73.70	1	96.8	15.5
SMCJ64A	SMCJ64CA	64	1	71.10	78.60	1	103.0	14.6
SMCJ70A	SMCJ70CA	70	1	77.80	86.00	1	113.0	13.3
SMCJ75A	SMCJ75CA	75	1	83.30	92.10	1	121.0	12.4
SMCJ78A	SMCJ78CA	78	1	86.70	95.80	1	126.0	11.9
SMCJ85A	SMCJ85CA	85	1	94.40	104.0	1	137.0	11.0
SMCJ90A	SMCJ90CA	90	1	100.0	111.0	1	146.0	10.3
SMCJ100A	SMCJ100CA	100	1	111.0	123.0	1	162.0	9.3
SMCJ110A	SMCJ110CA	110	1	122.0	135.0	1	177.0	8.5
SMCJ120A	SMCJ120CA	120	1	133.0	147.0	1	193.0	7.8
SMCJ130A	SMCJ130CA	130	1	144.0	159.0	1	209.0	7.2
SMCJ150A	SMCJ150CA	150	1	167.0	185.0	1	243.0	6.2
SMCJ160A	SMCJ160CA	160	1	178.0	197.0	1	259.0	5.8
SMCJ170A	SMCJ170CA	170	1	189.0	209.0	1	275.0	5.5
SMCJ180A	SMCJ180CA	180	1	201.0	222.0	1	292.0	5.2
SMCJ190A	SMCJ190CA	190	1	211.0	234.0	1	307.0	4.9
SMCJ200A	SMCJ200CA	200	1	224.0	247.0	1	324.0	4.7
SMCJ210A	SMCJ210CA	210	1	233.0	258.0	1	337.0	4.5
SMCJ220A	SMCJ220CA	220	1	246.0	272.0	1	356.0	4.2
SMCJ250A	SMCJ250CA	250	1	279.0	309.0	1	405.0	3.7
SMCJ300A	SMCJ300CA	300	1	335.0	371.0	1	486.0	3.1
SMCJ350A	SMCJ350CA	350	1	391.0	432.0	1	567.0	2.7
SMCJ400A	SMCJ400CA	400	1	447.0	494.0	1	648.0	2.3
SMCJ440A	SMCJ440CA	440	1	492.0	543.0	1	713.0	2.1

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

SMCJ	xx	C	A
1500W SMC Series	V_R Voltage	C: Bi-directional	5% V_{BR} Voltage tolerance

RATINGS AND V-I CHARACTERISTICS CURVES ($T_A=25^\circ\text{C}$, unless otherwise noted)

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

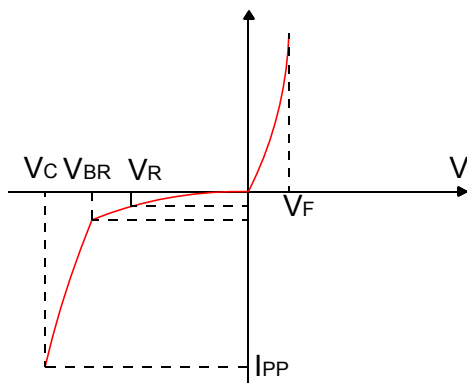


FIG.2:V- I curve characteristics (Bi-directional)

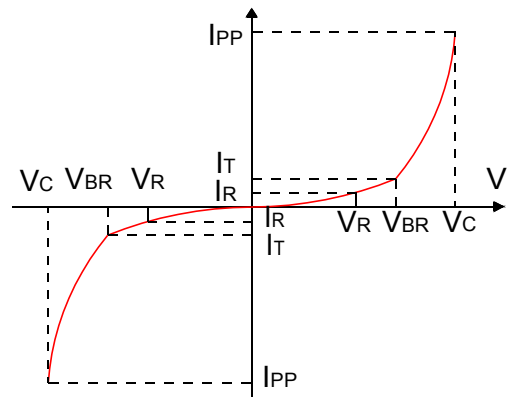


FIG.3: Pulse waveform

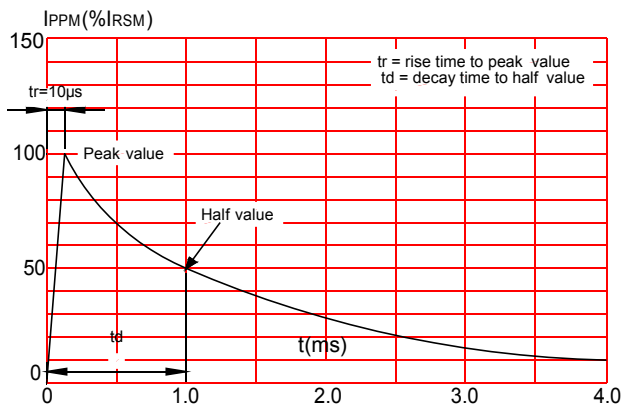
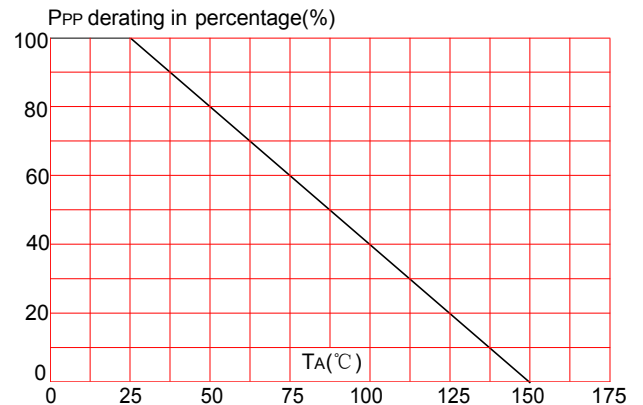
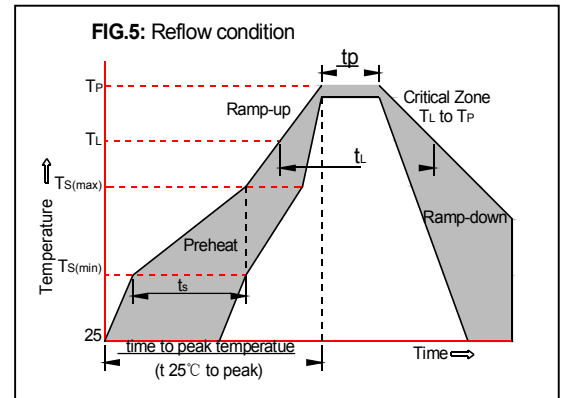


FIG.4: Pulse derating curve

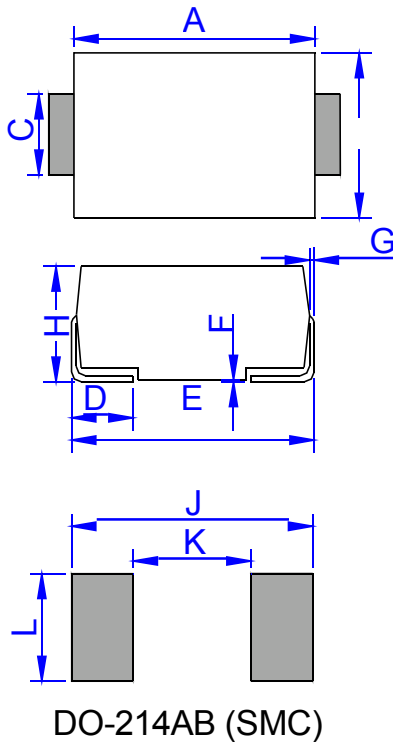


SOLDERING PARAMETERS

Reflow Condition		Pb-Free assembly (see FIG.5)
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 (Liquid us 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)(Liquid us)	+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)		30 secs. Max
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	6.60	7.11	0.260	0.280
B	5.59	6.20	0.220	0.244
C	2.75	3.20	0.108	0.126
D	0.76	1.52	0.030	0.060
E	7.74	8.13	0.305	0.320
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	8.12		0.320	
K		4.69		0.185
L	3.07		0.121	