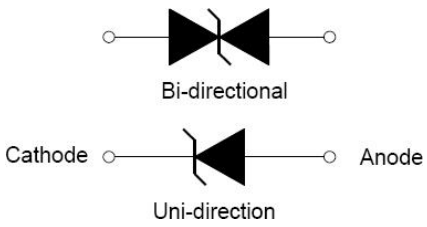
SMCJ Series 1500W Transient Voltage Suppressor

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



Symbol

FEATURES:

- ✧ Glass passivated or planar junction.
- ✧ Excellent clamping capability.
- ✧ Repetition rate (duty cycle): 0.01%.
- ✧ Typical I_R less than 1μA above 10V.
- ✧ Low profile package and low inductance.
- ✧ 1500W Peak Pulse power capability at 10×1000μs waveform.
- ✧ Fast response time: typically less than 1.0ps from 0V to V_{BR} min.
- ✧ High temperature soldering: 260℃/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°C, RH=45%-75%, unless otherwise noted)

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

MARKING

GDE : Device Marking Code
1409: In ninth week, 2014

ELECTRICAL CHARACTERISTICS (T_A=25℃)

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	μA	min(V)	max(V)	mA	max(V)	A
SMCJ5.0A	SMCJ5.0CA	GDE	BDE	5.0	1000	6.40	7.00	10	9.2	163.0
SMCJ6.0A	SMCJ6.0CA	GDG	BDG	6.0	1000	6.67	7.37	10	10.3	145.6
SMCJ6.5A	SMCJ6.5CA	GDK	BDK	6.5	500	7.22	7.98	10	11.2	134.0
SMCJ7.0A	SMCJ7.0CA	GDM	BDM	7.0	200	7.78	8.60	10	12.0	125.0
SMCJ7.5A	SMCJ7.5CA	GDP	BDP	7.5	100	8.33	9.21	1	12.9	116.3
SMCJ8.0A	SMCJ8.0CA	GDR	BDR	8.0	50	8.89	9.83	1	13.6	110.3
SMCJ8.5A	SMCJ8.5CA	GDT	BDT	8.5	20	9.44	10.40	1	14.4	104.2
SMCJ9.0A	SMCJ9.0CA	GDV	BDV	9.0	10	10.00	11.10	1	15.4	97.4
SMCJ10A	SMCJ10CA	GDX	BDX	10	5	11.10	12.30	1	17.0	88.2
SMCJ11A	SMCJ11CA	GDZ	BDZ	11	5	12.20	13.50	1	18.2	82.4
SMCJ12A	SMCJ12CA	GEE	BEE	12	5	13.30	14.70	1	19.9	75.4
SMCJ13A	SMCJ13CA	GEG	BEG	13	1	14.40	15.90	1	21.5	69.8
SMCJ14A	SMCJ14CA	GEK	BEK	14	1	15.60	17.20	1	23.2	64.7
SMCJ15A	SMCJ15CA	GEM	BEM	15	1	16.70	18.50	1	24.4	61.5
SMCJ16A	SMCJ16CA	GEP	BEP	16	1	17.80	19.70	1	26.0	57.7
SMCJ17A	SMCJ17CA	GER	BER	17	1	18.90	20.90	1	27.6	54.4
SMCJ18A	SMCJ18CA	GET	BET	18	1	20.00	22.10	1	29.2	51.4
SMCJ20A	SMCJ20CA	GEV	BEV	20	1	22.20	24.50	1	32.4	46.3
SMCJ22A	SMCJ22CA	GEX	BEX	22	1	24.40	26.90	1	35.5	42.3
SMCJ24A	SMCJ24CA	GEZ	BEZ	24	1	26.70	29.50	1	38.9	38.6
SMCJ26A	SMCJ26CA	GFE	BFE	26	1	28.90	31.90	1	42.1	35.6
SMCJ28A	SMCJ28CA	GFG	BFG	28	1	31.10	34.40	1	45.4	33.1
SMCJ30A	SMCJ30CA	GFK	BFK	30	1	33.30	36.80	1	48.4	31.0
SMCJ33A	SMCJ33CA	GFM	BFM	33	1	36.70	40.60	1	53.3	28.2
SMCJ36A	SMCJ36CA	GFP	BFP	36	1	40.00	44.20	1	58.1	25.8
SMCJ40A	SMCJ40CA	GFR	BFR	40	1	44.40	49.10	1	64.5	23.3
SMCJ43A	SMCJ43CA	GFT	BFT	43	1	47.80	52.80	1	69.4	21.6
SMCJ45A	SMCJ45CA	GFV	BFV	45	1	50.00	55.30	1	72.7	20.6
SMCJ48A	SMCJ48CA	GFX	BFX	48	1	53.30	58.90	1	77.4	19.4
SMCJ51A	SMCJ51CA	GFZ	BFZ	51	1	56.70	62.70	1	82.4	18.2

ELECTRICAL CHARACTERISTICS (T_A=25℃, 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	μA	min(V)	max(V)	mA	max(V)	A
SMCJ54A	SMCJ54CA	GGE	BGE	54	1	60.00	66.30	1	87.1	17.2
SMCJ58A	SMCJ58CA	GGG	BGG	58	1	64.40	71.20	1	93.6	16.1
SMCJ60A	SMCJ60CA	GGK	BGK	60	1	66.70	73.70	1	96.8	15.5
SMCJ64A	SMCJ64CA	GGM	BGM	64	1	71.10	78.60	1	103.0	14.6
SMCJ70A	SMCJ70CA	GGP	BGP	70	1	77.80	86.00	1	113.0	13.3
SMCJ75A	SMCJ75CA	GGR	BGR	75	1	83.30	92.10	1	121.0	12.4
SMCJ78A	SMCJ78CA	GGT	BGT	78	1	86.70	95.80	1	126.0	11.9
SMCJ85A	SMCJ85CA	GGV	BGV	85	1	94.40	104.0	1	137.0	11.0
SMCJ90A	SMCJ90CA	GGX	BGX	90	1	100.0	111.0	1	146.0	10.3
SMCJ100A	SMCJ100CA	GGZ	BGZ	100	1	111.0	123.0	1	162.0	9.3
SMCJ110A	SMCJ110CA	GHE	BHE	110	1	122.0	135.0	1	177.0	8.5
SMCJ120A	SMCJ120CA	GHG	BHG	120	1	133.0	147.0	1	193.0	7.8
SMCJ130A	SMCJ130CA	GHK	BHK	130	1	144.0	159.0	1	209.0	7.2
SMCJ150A	SMCJ150CA	GHM	BHM	150	1	167.0	185.0	1	243.0	6.2
SMCJ160A	SMCJ160CA	GHP	BHP	160	1	178.0	197.0	1	259.0	5.8
SMCJ170A	SMCJ170CA	GHR	BHR	170	1	189.0	209.0	1	275.0	5.5
SMCJ180A	SMCJ180CA	GHT	BHT	180	1	201.0	222.0	1	292.0	5.2
SMCJ190A	SMCJ190CA	GHU	BHU	190	1	211.0	234.0	1	307.0	4.9
SMCJ200A	SMCJ200CA	GHV	BHV	200	1	224.0	247.0	1	324.0	4.7
SMCJ210A	SMCJ210CA	GHW	BHW	210	1	233.0	258.0	1	337.0	4.5
SMCJ220A	SMCJ220CA	GHX	BHX	220	1	246.0	272.0	1	356.0	4.2
SMCJ250A	SMCJ250CA	GJG	BJG	250	1	279.0	309.0	1	405.0	3.7
SMCJ300A	SMCJ300CA	GJK	BJK	300	1	335.0	371.0	1	486.0	3.1
SMCJ350A	SMCJ350CA	GJM	BJM	350	1	391.0	432.0	1	567.0	2.7
SMCJ400A	SMCJ400CA	GJP	BJP	400	1	447.0	494.0	1	648.0	2.3
SMCJ440A	SMCJ440CA	GJR	BJR	440	1	492.0	543.0	1	713.0	2.1

① Surge waveform: 10/1000μs

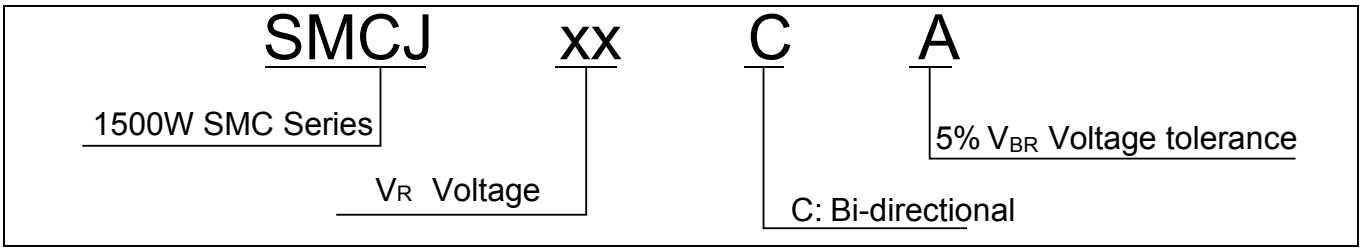
V_R： Stand-off Voltage -- Maximum voltage that can be applied

V_{BR}： Breakdown Voltage

V_C：Clamping Voltage -- Peak voltage measured across the suppressor at a specified Ipp

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)

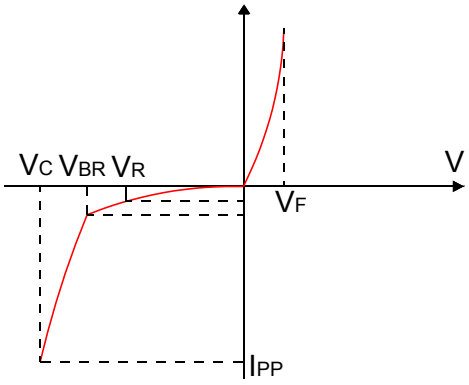


FIG.2:V- I curve characteristics (Bi-directional)

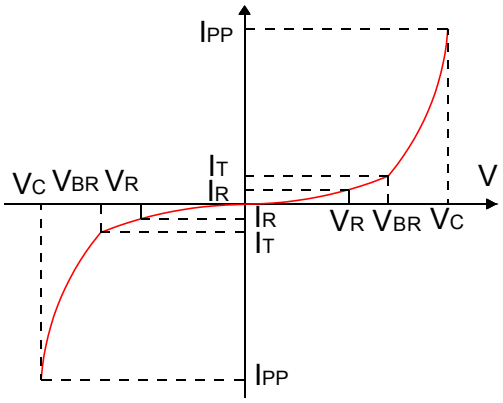


FIG.3: Pulse waveform

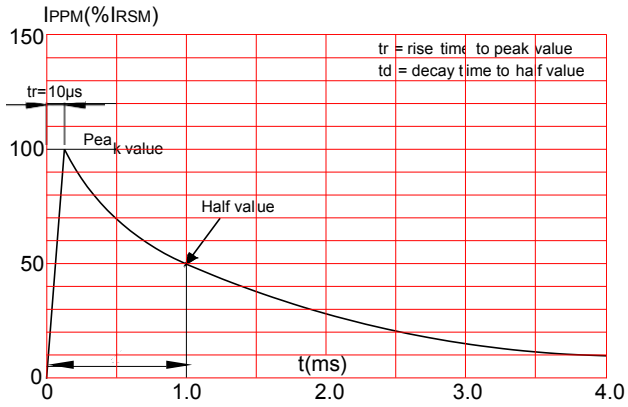
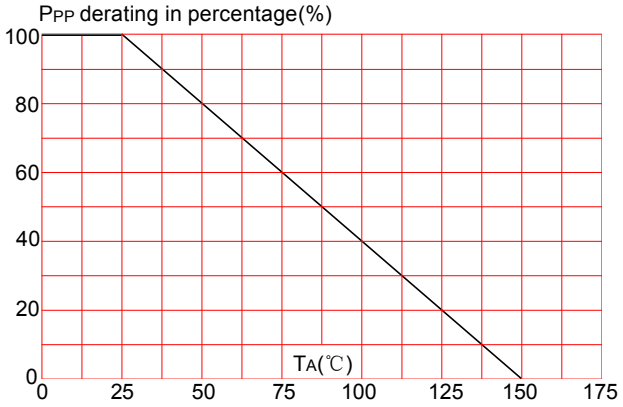


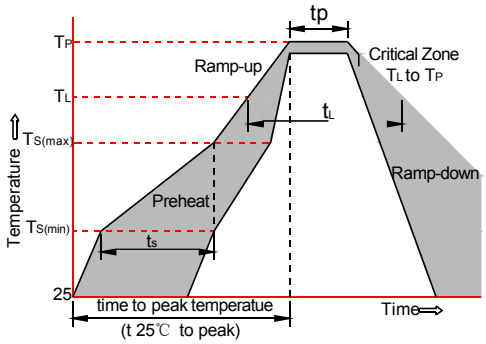
FIG.4: Pulse derating curve



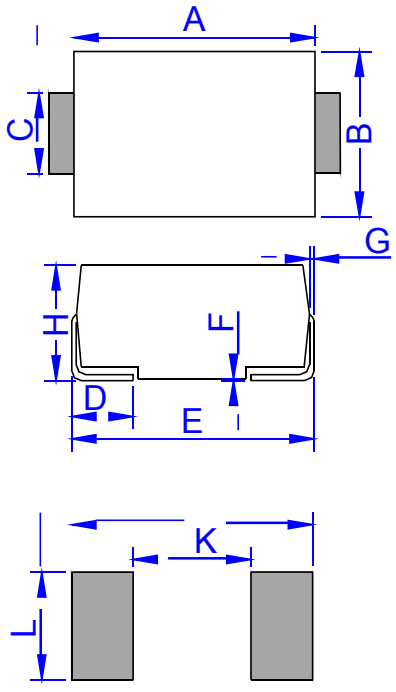
SOLDERING PARAMETERS

Reflow Condition		Pb-Free assembly (see FIG.5)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150℃
	-Temperature Max($T_{s(max)}$)	+200℃
	-Time (Min to Max) (ts)	60-180 secs.
Average ramp up rate (Liquid us Temp (T_L) to peak)		3℃/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3℃/sec. Max
Reflow	-Temperature(T_L)(Liquid us)	+217℃
	-Temperature(t_L)	60-150 secs.
Peak Temp (T_p)		+260(+0/-5)℃
Time within 5℃ of actual Peak Temp (t_p)		30 secs. Max
Ramp-down Rate		6℃/sec. Max
Time 25℃ to Peak Temp (T_P)		8 min. Max
Do not exceed		+260℃

FIG.5: Reflow condition



PACKAGE MECHANICAL DATA



DO-214AB (SMC)

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	

TAPE AND REEL SPECIFICATION-SMC

PART No.	PACKAGE	QUANTITY	TAPE & REEL
SMCJxxCA/A	SMC(DO214AB)	3,000	13inch

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