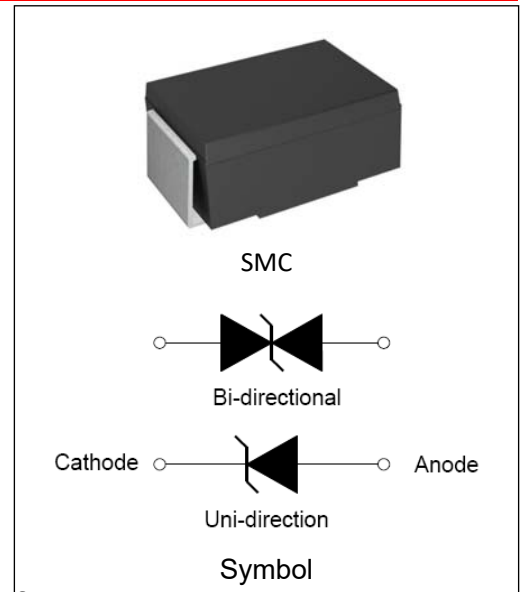


### DESCRIPTION:

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 $\mu s$ 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<sub>A</sub>=25°C)

Part Number		Marking		V <sub>R</sub>	I <sub>R</sub> @V <sub>R</sub>	V <sub>BR</sub> @I <sub>T</sub>		I <sub>T</sub>	V <sub>C</sub> @I <sub>PP</sub>	I <sub>PP</sub> <sup>①</sup>
Uni-Polar	Bi-Polar	Uni	Bi	V	μA	min(V)	max(V)	mA	max(V)	A
SMCJ5.0A	SMCJ5.0CA	GDE	BDE	5.0	300	6.40	7.00	10	9.2	163.0
SMCJ6.0A	SMCJ6.0CA	GDG	BDG	6.0	250	6.67	7.37	10	10.3	145.6
SMCJ6.5A	SMCJ6.5CA	GDK	BDK	6.5	150	7.22	7.98	10	11.2	134.0
SMCJ7.0A	SMCJ7.0CA	GDM	BDM	7.0	100	7.78	8.60	10	12.0	125.0
SMCJ7.5A	SMCJ7.5CA	GDP	BDP	7.5	50	8.33	9.21	1	12.9	116.3
SMCJ8.0A	SMCJ8.0CA	GDR	BDR	8.0	30	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	2	12.20	13.50	1	18.2	82.4
SMCJ12A	SMCJ12CA	GEE	BEE	12	1	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<sub>A</sub>=25°C, continued)

Part Number		Marking		V <sub>R</sub>	I <sub>R</sub> @V <sub>R</sub>	V <sub>BR</sub> @I <sub>T</sub>		I <sub>T</sub>	V <sub>C</sub> @I <sub>PP</sub>	I <sub>PP</sub> <sup>①</sup>
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	G GK	B GK	60	1	66.70	73.70	1	96.8	15.5
SMCJ64A	SMCJ64CA	G GM	B GM	64	1	71.10	78.60	1	103.0	14.6
SMCJ70A	SMCJ70CA	G GP	B GP	70	1	77.80	86.00	1	113.0	13.3
SMCJ75A	SMCJ75CA	G GR	B GR	75	1	83.30	92.10	1	121.0	12.4
SMCJ78A	SMCJ78CA	G GT	B GT	78	1	86.70	95.80	1	126.0	11.9
SMCJ85A	SMCJ85CA	G GV	B GV	85	1	94.40	104.0	1	137.0	11.0
SMCJ90A	SMCJ90CA	G GX	B GX	90	1	100.0	111.0	1	146.0	10.3
SMCJ100A	SMCJ100CA	G GZ	B GZ	100	1	111.0	123.0	1	162.0	9.3
SMCJ110A	SMCJ110CA	G HE	B HE	110	1	122.0	135.0	1	177.0	8.5
SMCJ120A	SMCJ120CA	G HG	B HG	120	1	133.0	147.0	1	193.0	7.8
SMCJ130A	SMCJ130CA	G HK	B HK	130	1	144.0	159.0	1	209.0	7.2
SMCJ150A	SMCJ150CA	G HM	B HM	150	1	167.0	185.0	1	243.0	6.2
SMCJ160A	SMCJ160CA	G HP	B HP	160	1	178.0	197.0	1	259.0	5.8
SMCJ170A	SMCJ170CA	G HR	B HR	170	1	189.0	209.0	1	275.0	5.5
SMCJ180A	SMCJ180CA	G HT	B HT	180	1	201.0	222.0	1	292.0	5.2
SMCJ190A	SMCJ190CA	G HU	B HU	190	1	211.0	234.0	1	307.0	4.9
SMCJ200A	SMCJ200CA	G HV	B HV	200	1	224.0	247.0	1	324.0	4.7
SMCJ210A	SMCJ210CA	G HW	B HW	210	1	233.0	258.0	1	337.0	4.5
SMCJ220A	SMCJ220CA	G HX	B HX	220	1	246.0	272.0	1	356.0	4.2
SMCJ250A	SMCJ250CA	G JG	B JG	250	1	279.0	309.0	1	405.0	3.7
SMCJ300A	SMCJ300CA	G JK	B JK	300	1	335.0	371.0	1	486.0	3.1
SMCJ350A	SMCJ350CA	G JM	B JM	350	1	391.0	432.0	1	567.0	2.7
SMCJ400A	SMCJ400CA	G JP	B JP	400	1	447.0	494.0	1	648.0	2.3
SMCJ440A	SMCJ440CA	G JR	B JR	440	1	492.0	543.0	1	713.0	2.1

① Surge waveform: 10/1000μs

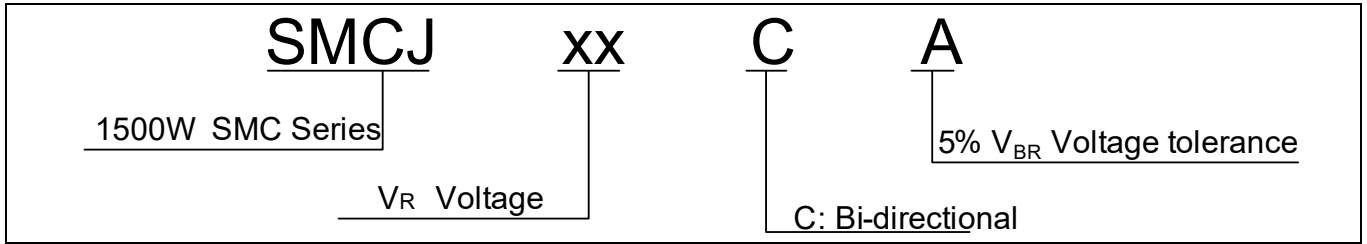
V<sub>R</sub> : Stand-off Voltage -- Maximum voltage that can be applied

V<sub>BR</sub>: Breakdown Voltage

V<sub>C</sub>: Clamping Voltage -- Peak voltage measured across the suppressor at a specified I<sub>pp</sub>

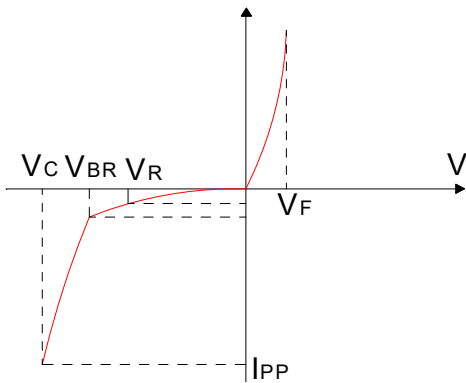
I<sub>R</sub>: Reverse Leakage Current

**ORDERING INFORMATION**

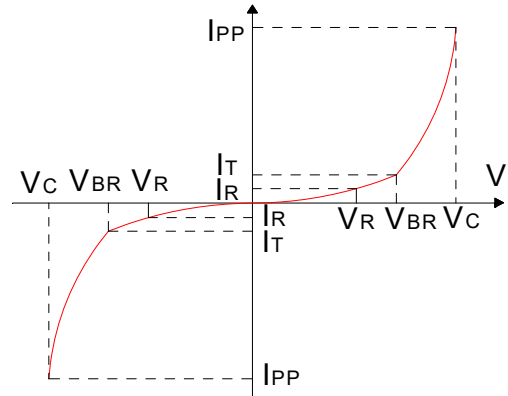


**RATINGS AND V-I CHARACTERISTICS CURVES ( $T_A=25^\circ\text{C}$ , unless otherwise noted)**

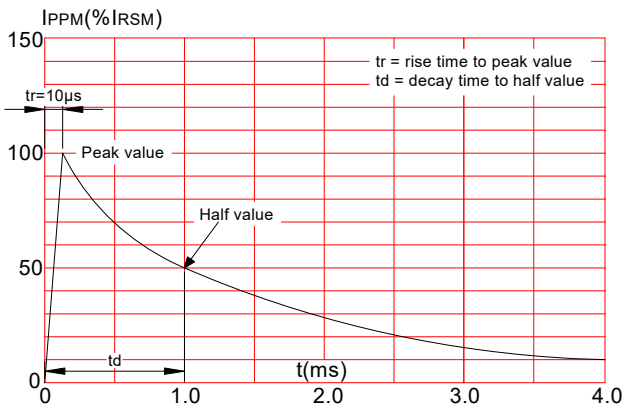
**FIG.1: V- I curve characteristics (Uni-directional)**



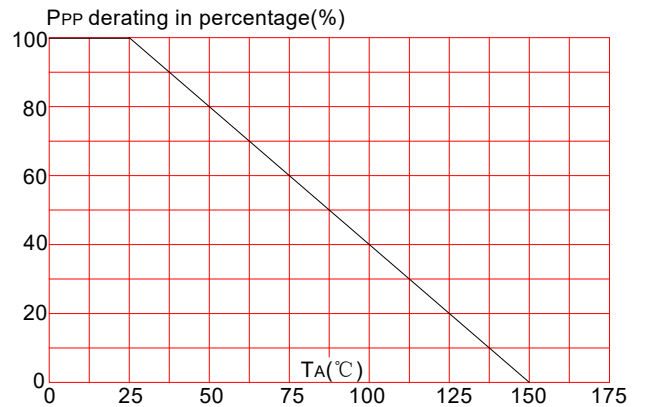
**FIG.2: V- I curve characteristics (Bi-directional)**



**FIG.3: Pulse waveform**

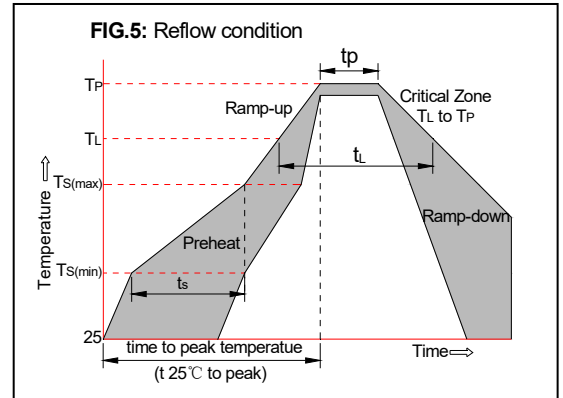


**FIG.4: Pulse derating curve**

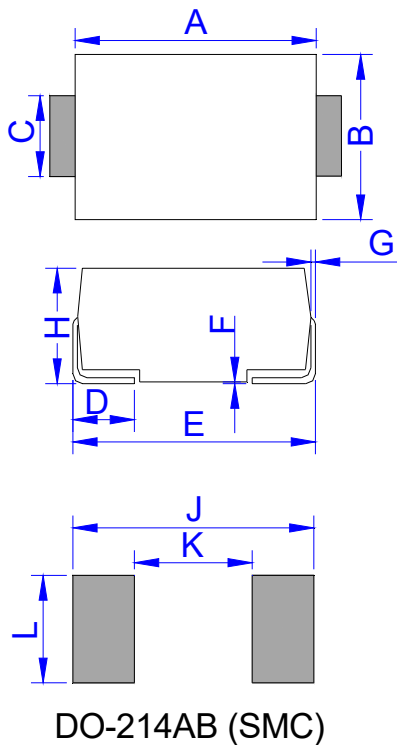


### SOLDERING PARAMETERS

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	

**TAPE AND REEL SPECIFICATION-SMC**

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

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