

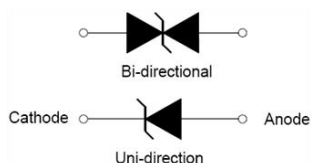
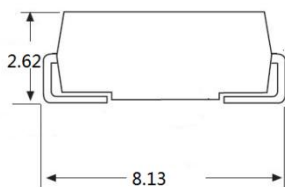
## Description

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%
- Low profile package and low inductance
- 5000W 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°C/10s at terminals.
- Plastic package has Underwriters Laboratory Flammability 94V-0.
- For surface mounted applications in order to optimize board space.

## Dimensions & Symbol (Unit: mm Max)



## Mechanical Characteristics

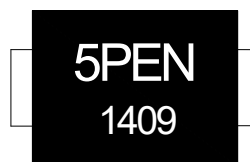
Package: SMC/DO-214AB

- Case Material: “Green” Molding Compound.
- UL Flammability Classification Rating 94V-0
- Polarity: Color band denotes cathode except bi-directional models
- Standard Packaging: 13mm tape (EIA STD RS-481)
- Weight: 0.275g
- Terminal Connections: See Diagram Below
- Marking Information: See Below

## Applications

- I/O Interface.
- AC/DC Power supply
- Low frequency signal transmission line (RS232, RS485, etc.)

## Marking Information



5PEN : Device Marking Code  
1409 : In ninth week, 2014

## Ordering Information

Out line	Reel (pcs)	Per carton (pcs)	Reel diameters (mm)
Taping	3K	30K	330

**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
5.0SMDJ11A	5.0SMDJ11CA	5PEN	5BEN	11	5	12.20	13.50	10	18.2	275.0
5.0SMDJ12A	5.0SMDJ12CA	5PEP	5BEP	12	5	13.30	14.70	10	19.9	252.0
5.0SMDJ13A	5.0SMDJ13CA	5PEQ	5BEQ	13	5	14.40	15.90	10	21.5	233.0
5.0SMDJ14A	5.0SMDJ14CA	5PER	5BER	14	5	15.60	17.20	10	23.2	216.0
5.0SMDJ15A	5.0SMDJ15CA	5PES	5BES	15	5	16.70	18.50	1	24.4	205.0
5.0SMDJ16A	5.0SMDJ16CA	5PET	5BET	16	5	17.80	19.70	1	26.0	193.0
5.0SMDJ17A	5.0SMDJ17CA	5PEU	5BEU	17	5	18.90	20.90	1	27.6	181.0
5.0SMDJ18A	5.0SMDJ18CA	5PEV	5BEV	18	5	20.00	22.10	1	29.2	172.0
5.0SMDJ20A	5.0SMDJ20CA	5PEW	5BEW	20	5	22.20	24.50	1	32.4	155.0
5.0SMDJ22A	5.0SMDJ22CA	5PEX	5BEX	22	1	24.40	26.90	1	35.5	141.0
5.0SMDJ24A	5.0SMDJ24CA	5PEZ	5BEZ	24	1	26.70	29.50	1	38.9	129.0
5.0SMDJ26A	5.0SMDJ26CA	5PFE	5BFE	26	1	28.90	31.90	1	42.1	119.0
5.0SMDJ28A	5.0SMDJ28CA	5PFG	5BFG	28	1	31.10	34.40	1	45.4	110.0
5.0SMDJ30A	5.0SMDJ30CA	5PFK	5BFK	30	1	33.30	36.80	1	48.4	103.0
5.0SMDJ33A	5.0SMDJ33CA	5PFM	5BFM	33	1	36.70	40.60	1	53.3	93.9
5.0SMDJ36A	5.0SMDJ36CA	5PFP	5BFP	36	1	40.00	44.20	1	58.1	86.1
5.0SMDJ40A	5.0SMDJ40CA	5PFR	5BFR	40	1	44.40	49.10	1	64.5	77.6
5.0SMDJ43A	5.0SMDJ43CA	5PFT	5BFT	43	1	47.80	52.80	1	69.4	72.1
5.0SMDJ45A	5.0SMDJ45CA	5PFV	5BFV	45	1	50.00	55.30	1	72.7	68.8
5.0SMDJ48A	5.0SMDJ48CA	5PFX	5BFX	48	1	53.30	58.90	1	77.4	64.7
5.0SMDJ51A	5.0SMDJ51CA	5PFZ	5BFZ	51	1	56.70	62.70	1	82.4	60.7
5.0SMDJ54A	5.0SMDJ54CA	5PGE	5BGE	54	1	60.00	66.30	1	87.1	57.5
5.0SMDJ58A	5.0SMDJ58CA	5PGG	5BGG	58	1	64.40	71.20	1	93.6	53.5
5.0SMDJ60A	5.0SMDJ60CA	5PGK	5BGK	60	1	66.70	73.70	1	96.8	51.7
5.0SMDJ64A	5.0SMDJ64CA	5PGM	5BGM	64	1	71.10	78.60	1	103.0	48.6
5.0SMDJ70A	5.0SMDJ70CA	5PGP	5BGP	70	1	77.80	86.00	1	113.0	44.3
5.0SMDJ75A	5.0SMDJ75CA	5PGR	5BGR	75	1	83.30	92.10	1	121.0	41.4
5.0SMDJ78A	5.0SMDJ78CA	5PGT	5BGT	78	1	86.70	95.80	1	126.0	39.7
5.0SMDJ85A	5.0SMDJ85CA	5PGV	5BGV	85	1	94.40	104.0	1	137.0	36.5

**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
5.0SMDJ90A	5.0SMDJ90CA	5PGX	5BGX	90	1	100.0	111.0	1	146.0	34.3
5.0SMDJ100A	5.0SMDJ100CA	5PGZ	5BGZ	100	1	111.0	123.0	1	162.0	30.9
5.0SMDJ110A	5.0SMDJ110CA	5PHE	5BHE	110	1	122.0	135.0	1	177.0	28.3
5.0SMDJ120A	5.0SMDJ120CA	5PHG	5BHG	120	1	133.0	147.0	1	193.0	26.0
5.0SMDJ130A	5.0SMDJ130CA	5PHK	5BHK	130	1	144.0	159.0	1	209.0	24.0
5.0SMDJ150A	5.0SMDJ150CA	5PHM	5BHM	150	1	167.0	185.0	1	243.0	20.6
5.0SMDJ160A	5.0SMDJ160CA	5PHP	5BHP	160	1	178.0	197.0	1	259.0	19.3
5.0SMDJ170A	5.0SMDJ170CA	5PHR	5BHR	170	1	189.0	209.0	1	275.0	18.2

① Surge waveform: 10/1000μs

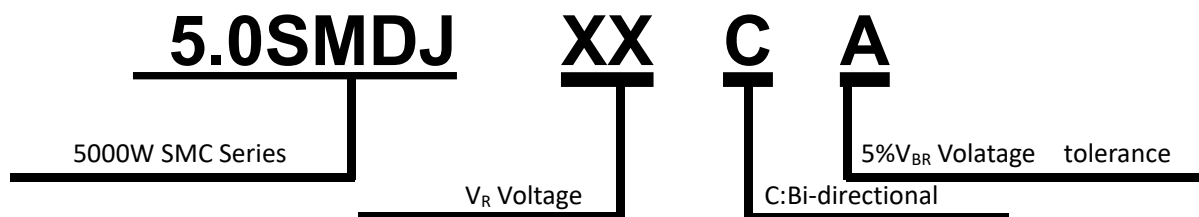
V<sub>R</sub>: Stand-off Voltage -- Maximum voltage that can be applied

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

**Part Number Code**

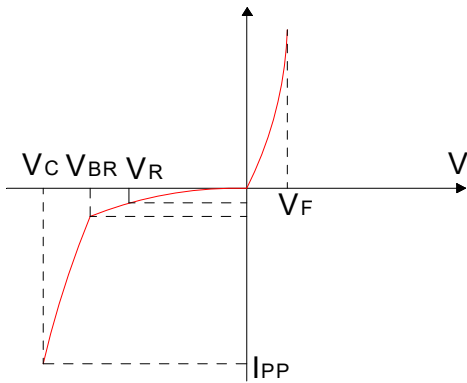


**Absolute Maximum Ratings** (T<sub>A</sub>=25°C, RH=45%-75%, unless otherwise noted)

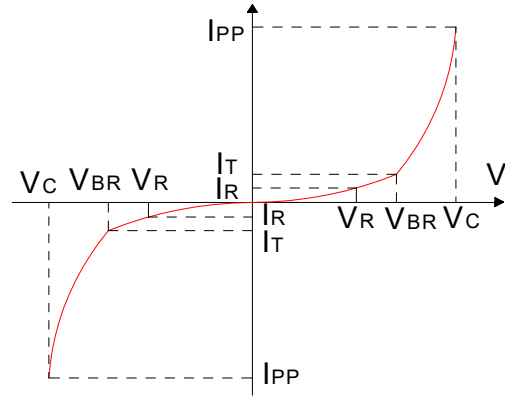
Parameter	Symbol	Value	Unit
Storage temperature range	T <sub>stg</sub>	-55 to +150	°C
Operating junction temperature range	T <sub>j</sub>	-55 to +150	°C
Steady state power dissipation at T <sub>L</sub> =75°C	P <sub>M(AV)</sub>	10	W
Peak pulse power dissipation on 10/1000μs waveform	P <sub>PP</sub>	5000	W
Maximum Instantaneous Forward Voltage at 100A for Unidirectional	V <sub>F</sub>	5.0	V

**Ratings And V-I Characteristics Curves** ( $T_A=25^\circ\text{C}$ , unless otherwise noted)

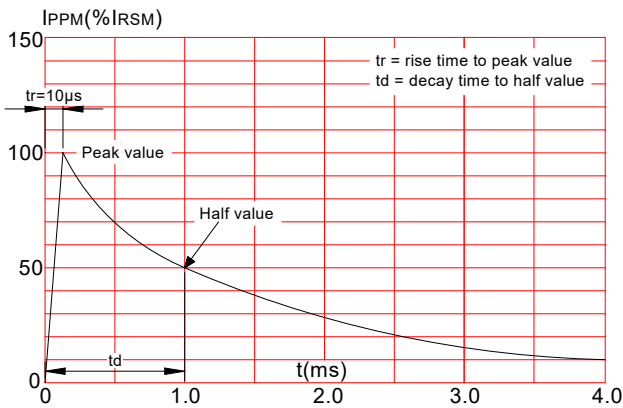
**FIG.1:V- I curve characteristics (Uni-directional)**



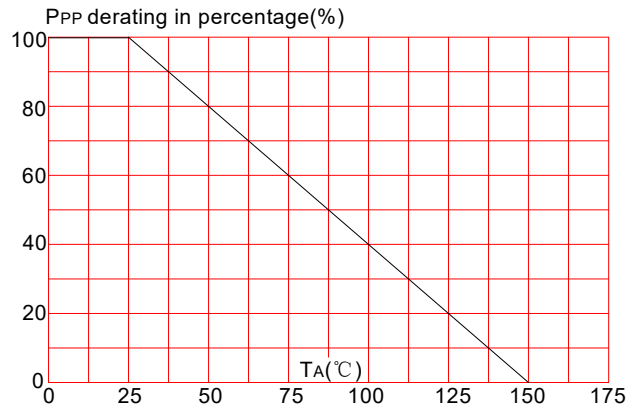
**FIG.2:V- I curve characteristics (Bi-directional)**



**FIG.3: Pulse waveform**

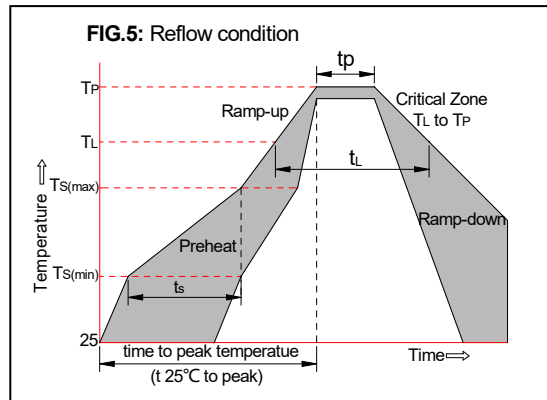


**FIG.4: Pulse derating curve**

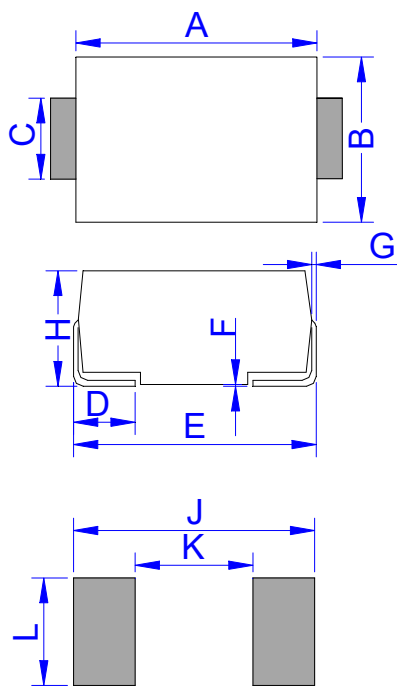


**Soldering Parameters**

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



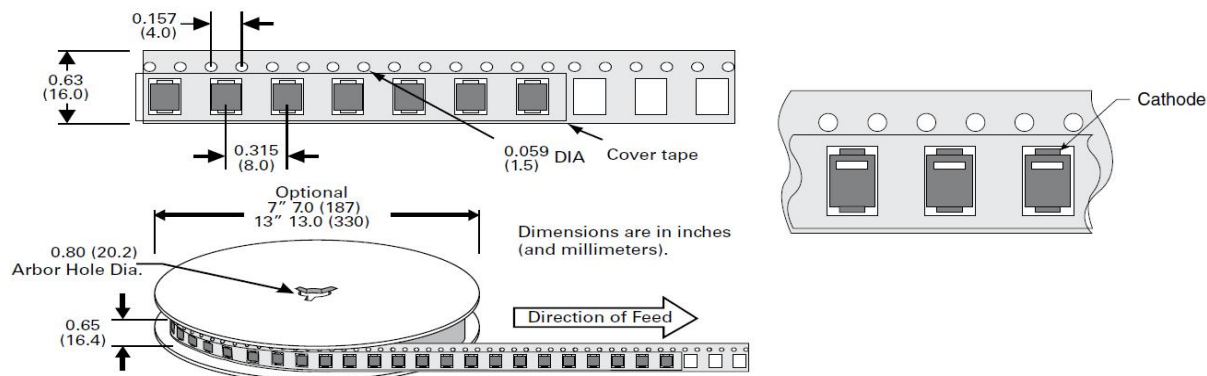
**Package Mechanical Data**



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 & Reel Specification – SMC/DO-214AB



## Contact Information

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