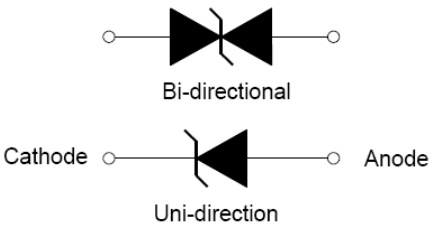
DESCRIPTION

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

- ✧ Low profile package.
- ✧ Low inductance.
- ✧ Excellent clamping capability.
- ✧ 1500W peak pulse power capability at 10×1000μs waveform
- ✧ Typical I_R less than 1μA above 10V.
- ✧ Fast response time: typically less than 1.0ps from 0V to V_{BR} min.
- ✧ High temperature to reflow soldering: 260℃/40s at terminals.
- ✧ Plastic package has underwriters laboratory flammability 94V-0.
- ✧ Meets MSL level 1, per J-STD020, LF maximum peak of 260℃.
- ✧ For surface mounted applications in order to optimize board space.
- ✧ AEC-Q101 qualified.

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

Parameter	Symbol	Value	Unit
Storage temperature range	T_{stg}	-60 to +150	℃
Operating junction temperature range	T_j	-40 to +150	℃
Steady state power dissipation at T_L=50℃	$P_{M(AV)}$	6.5	W
Peak pulse power dissipation on 10/1000μs waveform	P_{PP}	1500	W
Maximum instantaneous forward voltage at 100A for unidirectional	V_F	5.0	V

ELECTRICAL CHARACTERISTICS (T_A=25℃)

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

ELECTRICAL CHARACTERISTICS (T_A=25℃,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
S-SMCJ54A	S-SMCJ54CA	54	1	60.00	66.30	1	87.1	17.2
S-SMCJ58A	S-SMCJ58CA	58	1	64.40	71.20	1	93.6	16.1
S-SMCJ60A	S-SMCJ60CA	60	1	66.70	73.70	1	96.8	15.5
S-SMCJ64A	S-SMCJ64CA	64	1	71.10	78.60	1	103.0	14.6
S-SMCJ70A	S-SMCJ70CA	70	1	77.80	86.00	1	113.0	13.3
S-SMCJ75A	S-SMCJ75CA	75	1	83.30	92.10	1	121.0	12.4
S-SMCJ78A	S-SMCJ78CA	78	1	86.70	95.80	1	126.0	11.9
S-SMCJ85A	S-SMCJ85CA	85	1	94.40	104.0	1	137.0	11.0
S-SMCJ90A	S-SMCJ90CA	90	1	100.0	111.0	1	146.0	10.3
S-SMCJ100A	S-SMCJ100CA	100	1	111.0	123.0	1	162.0	9.3
S-SMCJ110A	S-SMCJ110CA	110	1	122.0	135.0	1	177.0	8.5
S-SMCJ120A	S-SMCJ120CA	120	1	133.0	147.0	1	193.0	7.8
S-SMCJ130A	S-SMCJ130CA	130	1	144.0	159.0	1	209.0	7.2
S-SMCJ150A	S-SMCJ150CA	150	1	167.0	185.0	1	243.0	6.2
S-SMCJ160A	S-SMCJ160CA	160	1	178.0	197.0	1	259.0	5.8
S-SMCJ170A	S-SMCJ170CA	170	1	189.0	209.0	1	275.0	5.5
S-SMCJ180A	S-SMCJ180CA	180	1	201.0	222.0	1	292.0	5.2
S-SMCJ190A	S-SMCJ190CA	190	1	211.0	234.0	1	307.0	4.9
S-SMCJ200A	S-SMCJ200CA	200	1	224.0	247.0	1	324.0	4.7
S-SMCJ210A	S-SMCJ210CA	210	1	233.0	258.0	1	337.0	4.5
S-SMCJ220A	S-SMCJ220CA	220	1	246.0	272.0	1	356.0	4.2
S-SMCJ250A	S-SMCJ250CA	250	1	279.0	309.0	1	405.0	3.7
S-SMCJ300A	S-SMCJ300CA	300	1	335.0	371.0	1	486.0	3.1
S-SMCJ350A	S-SMCJ350CA	350	1	391.0	432.0	1	567.0	2.7
S-SMCJ400A	S-SMCJ400CA	400	1	447.0	494.0	1	648.0	2.3
S-SMCJ440A	S-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

S-SMCJ xx C A

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

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

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

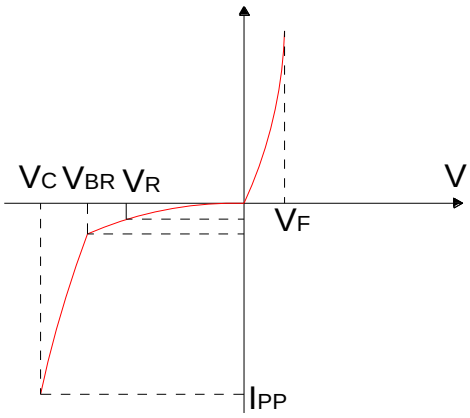


FIG.2:V- I curve characteristics (Bi-directional)

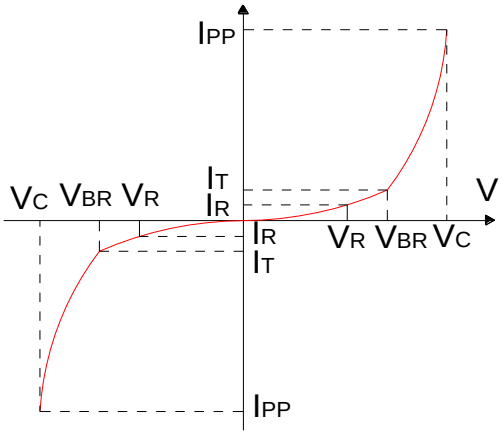


FIG.3: Pulse waveform

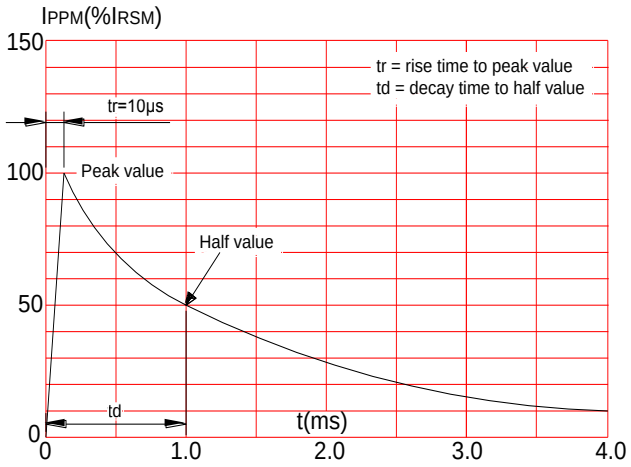
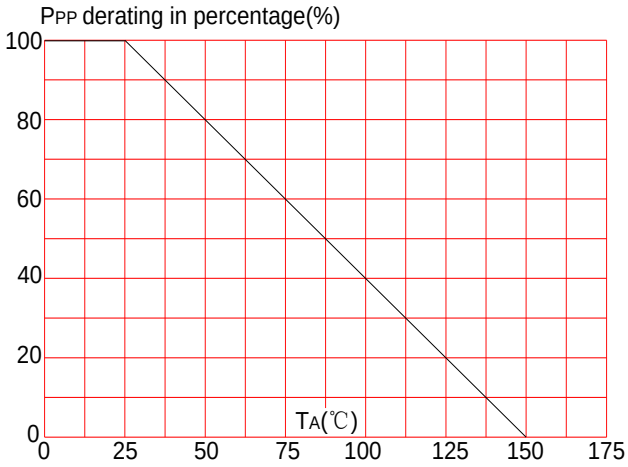
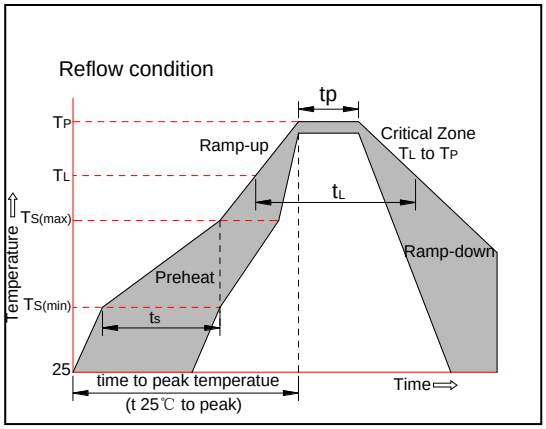


FIG.4: Pulse derating curve

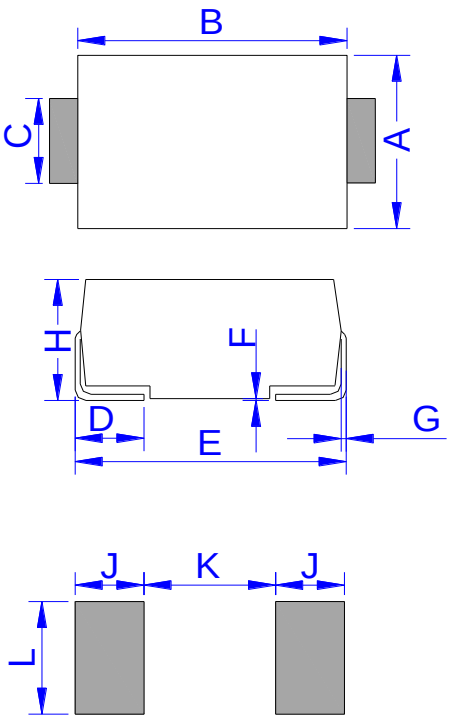


SOLDERING PARAMETERS

Reflow Condition		Pb-Free assembly (see figure at right)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150℃
	-Temperature Max($T_{s(max)}$)	+200℃
	-Time (Min to Max) (ts)	60-180 secs.
Average ramp up rate (Liquidus Temp (T_L)to peak)		3℃/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3℃/sec. Max
Reflow	-Temperature(T_L)(Liquidus)	+217℃
	-Temperature(t_L)	60-150 secs.
Peak Temp (T_p)		+260(+0/-5)℃
Time within 5℃of actual Peak Temp (t_p)		20-40secs.
Ramp-down Rate		6℃/sec. Max
Time 25℃ to Peak Temp (T_P)		8 min. Max
Do not exceed		+260℃



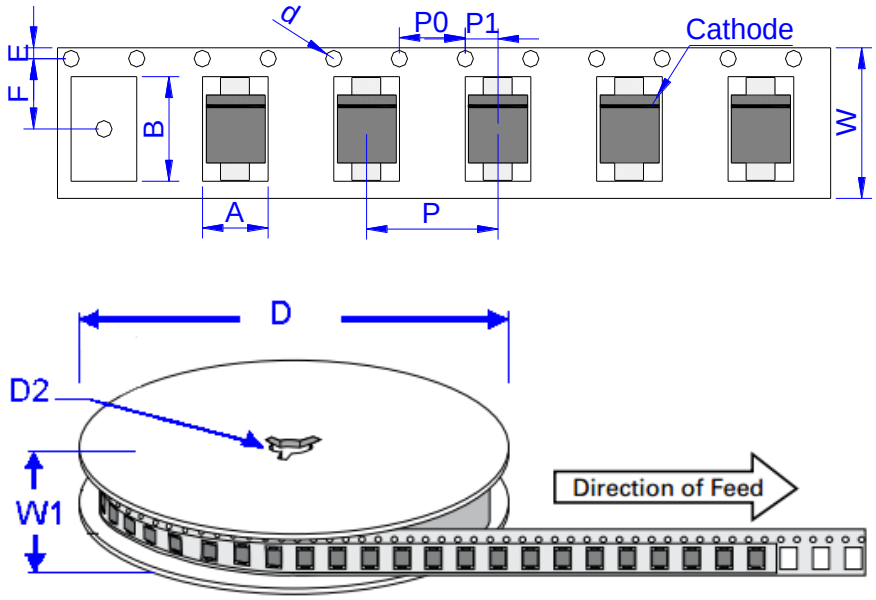
PACKAGE MECHANICAL DATA



DO-214AB (SMC)

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
A	6.05 ± 0.3	0.238 ± 0.012
B	8.31 ± 0.3	0.327 ± 0.012
d	1.55 ± 0.1	0.061 ± 0.004
D	330.0	13.0
D2	13.3 ± 0.3	0.524 ± 0.012
E	1.75 ± 0.2	0.069 ± 0.008
F	7.50 ± 0.2	0.295 ± 0.008
P	8.00 ± 0.2	0.3145 ± 0.008
P0	4.00 ± 0.2	0.157 ± 0.008
P1	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.	PACKAGE	QUANTITY	TAPE & REEL
S-SMCJxxCA/A	SMC(DO-214AB)	3,000	13inch

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