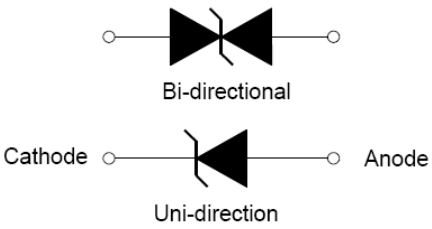
DESCRIPTION

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
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℃,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

- 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)

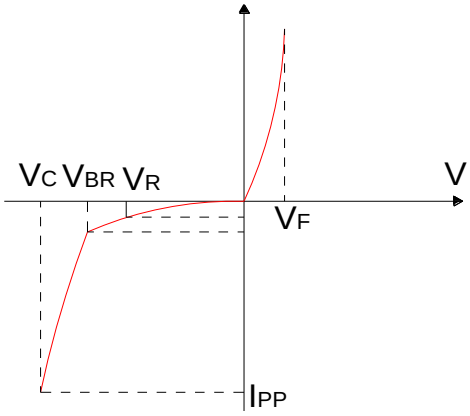


FIG.2:V- I curve characteristics (Bi-directional)

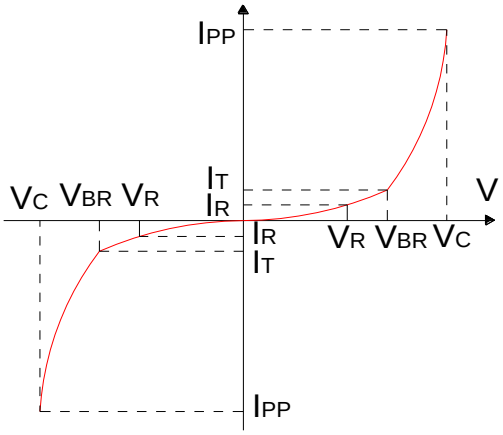


FIG.3: Pulse waveform

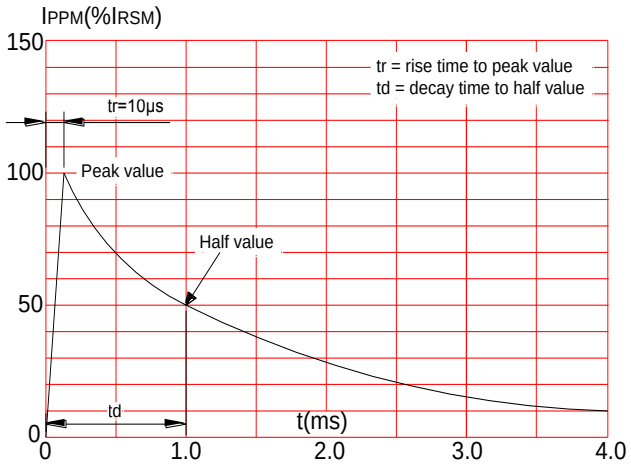
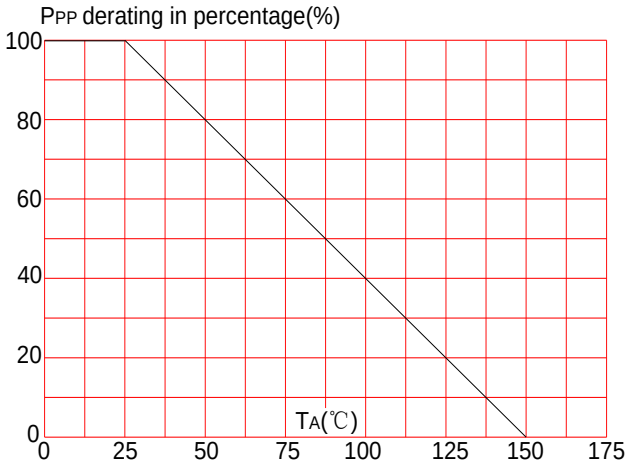
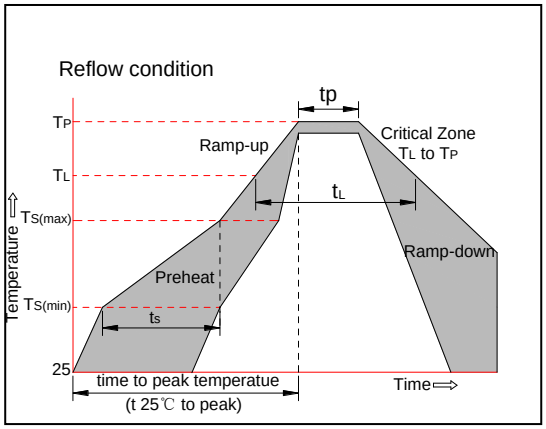


FIG.4: Pulse derating curve

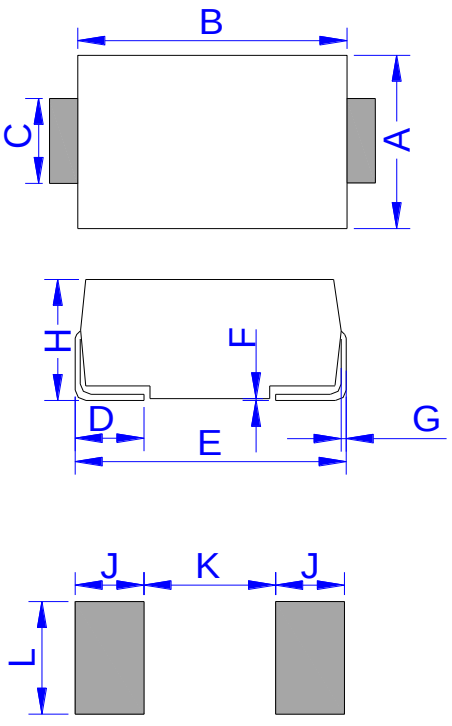


SOLDERING PARAMETERS

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℃



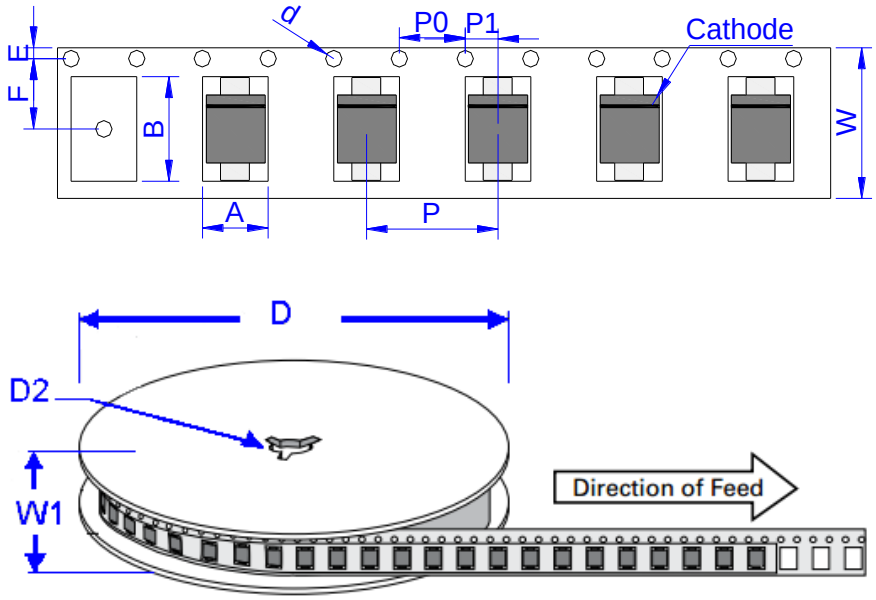
PACKAGE MECHANICAL DATA



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
SMCJxxCA/A	SMC(DO-214AB)	3,000	13inch

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