



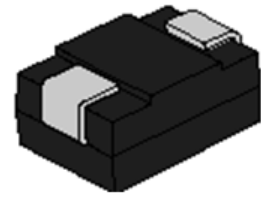
SMCJxx(C)AS Series 1500W Transient Voltage Suppressor

Rev.1.1

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

FEATURES:

- ✧ Low profile package.
- ✧ Low inductance.
- ✧ Excellent clamping capability.
- ✧ 1500W peak pulse power capability at 10/1000 μ s waveform.
- ✧ Typical I_R less than 1 μ A above 11V.
- ✧ Fast response time: typically less than 1.0ps from 0V to V_{BR} min.
- ✧ High temperature to reflow soldering: 260 $^{\circ}$ C/40s at terminals.
- ✧ Plastic package has underwriters laboratory flammability 94V-0.
- ✧ Meets MSL level 1, per J-STD-020, LF maximum peak of 260 $^{\circ}$ C.
- ✧ Terminal: solder plated, solderable per J-STD-002.
- ✧ For surface mounted applications in order to optimize board space.
- ✧ UL 497B item recognized. (File No.:E480698).
- ✧ IEC61000-4-2 (ESD) \pm 30kV (air), \pm 30kV (contact).



Bi-directional



Uni-directional

Symbol

ABSOLUTE MAXIMUM RATINGS ($T_A=25^{\circ}$ C, RH=45%-75%, unless otherwise noted)

Parameter	Symbol	Value	Unit
Operating junction and storage temperature range	T_J/T_{STG}	-55 to +150	$^{\circ}$ C
Peak pulse power dissipation at 10/1000 μ s waveform	P_{PP}	1500	W
Steady state power dissipation at $T_L=75^{\circ}$ C	$P_{M(AV)}$	6.5	W
Maximum instantaneous forward voltage at 100A for unidirectional	V_F	5.0	V
Peak forward surge current, 8.3ms single half sine wave(Note 1)	I_{FSM}	200	A
Typical thermal resistance junction to lead	$R_{\theta JL}$	15	$^{\circ}$ C/W
Typical thermal resistance junction to ambient	$R_{\theta JA}$	75	$^{\circ}$ C/W

Notes:

1. Measured on 8.3ms single half sine wave or equivalent square wave for unidirectional device only, duty cycle=4 per minute maximum

MARKING



BDES: Device Marking Code
1921:the 21th week, 2019

ELECTRICAL CHARACTERISTICS (T_A=25°C)

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	max(μA)	min(V)	max(V)	mA	max(V)	A
SMCJ5.0AS	SMCJ5.0CAS	GDES	BDES	5.0	300	6.40	7.00	10	9.2	163.0
SMCJ6.0AS	SMCJ6.0CAS	GDGS	BDGS	6.0	250	6.67	7.37	10	10.3	145.6
SMCJ6.5AS	SMCJ6.5CAS	GDKS	BDKS	6.5	150	7.22	7.98	10	11.2	134.0
SMCJ7.0AS	SMCJ7.0CAS	GDMS	BDMS	7.0	100	7.78	8.60	10	12.0	125.0
SMCJ7.5AS	SMCJ7.5CAS	GDPS	BDPS	7.5	50	8.33	9.21	1	12.9	116.3
SMCJ8.0AS	SMCJ8.0CAS	GDRS	BDRS	8.0	30	8.89	9.83	1	13.6	110.3
SMCJ8.5AS	SMCJ8.5CAS	GDTs	BDTS	8.5	20	9.44	10.40	1	14.4	104.2
SMCJ9.0AS	SMCJ9.0CAS	GDVS	BDVS	9.0	10	10.00	11.10	1	15.4	97.4
SMCJ10AS	SMCJ10CAS	GDXS	BDXS	10	5	11.10	12.30	1	17.0	88.2
SMCJ11AS	SMCJ11CAS	GDZS	BDZS	11	2	12.20	13.50	1	18.2	82.4
SMCJ12AS	SMCJ12CAS	GEES	BEES	12	1	13.30	14.70	1	19.9	75.4
SMCJ13AS	SMCJ13CAS	GEGS	BEGS	13	1	14.40	15.90	1	21.5	69.8
SMCJ14AS	SMCJ14CAS	GEKS	BEKS	14	1	15.60	17.20	1	23.2	64.7
SMCJ15AS	SMCJ15CAS	GEMS	BEMS	15	1	16.70	18.50	1	24.4	61.5
SMCJ16AS	SMCJ16CAS	GEPS	BEPS	16	1	17.80	19.70	1	26.0	57.7
SMCJ17AS	SMCJ17CAS	GERS	BERS	17	1	18.90	20.90	1	27.6	54.4
SMCJ18AS	SMCJ18CAS	GETS	BETS	18	1	20.00	22.10	1	29.2	51.4
SMCJ20AS	SMCJ20CAS	GEVS	BEVS	20	1	22.20	24.50	1	32.4	46.3
SMCJ22AS	SMCJ22CAS	GEXS	BEXS	22	1	24.40	26.90	1	35.5	42.3
SMCJ24AS	SMCJ24CAS	GEZS	BEZS	24	1	26.70	29.50	1	38.9	38.6
SMCJ26AS	SMCJ26CAS	GFES	BFES	26	1	28.90	31.90	1	42.1	35.6
SMCJ28AS	SMCJ28CAS	GFGS	BFGS	28	1	31.10	34.40	1	45.4	33.1
SMCJ30AS	SMCJ30CAS	GFKS	BFKS	30	1	33.30	36.80	1	48.4	31.0
SMCJ33AS	SMCJ33CAS	GFMS	BFMS	33	1	36.70	40.60	1	53.3	28.2

ELECTRICAL CHARACTERISTICS ($T_A=25^{\circ}\text{C}$, 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	max(μA)	min(V)	max(V)	mA	max(V)	A
SMCJ36AS	SMCJ36CAS	GFPS	BFPS	36	1	40.00	44.20	1	58.1	25.8
SMCJ40AS	SMCJ40CAS	GFRS	BFRS	40	1	44.40	49.10	1	64.5	23.3
SMCJ43AS	SMCJ43CAS	GFTS	BFTS	43	1	47.80	52.80	1	69.4	21.6
SMCJ45AS	SMCJ45CAS	GFVS	BFVS	45	1	50.00	55.30	1	72.7	20.6
SMCJ48AS	SMCJ48CAS	GFXS	BFXS	48	1	53.30	58.90	1	77.4	19.4
SMCJ51AS	SMCJ51CAS	GFZS	BFZS	51	1	56.70	62.70	1	82.4	18.2
SMCJ54AS	SMCJ54CAS	GGES	BGES	54	1	60.00	66.30	1	87.1	17.2
SMCJ58AS	SMCJ58CAS	GGGS	BGGS	58	1	64.40	71.20	1	93.6	16.1
SMCJ60AS	SMCJ60CAS	GGKS	BGKS	60	1	66.70	73.70	1	96.8	15.5
SMCJ64AS	SMCJ64CAS	GGMS	BGMS	64	1	71.10	78.60	1	103.0	14.6
SMCJ70AS	SMCJ70CAS	GGPS	BGPS	70	1	77.80	86.00	1	113.0	13.3
SMCJ75AS	SMCJ75CAS	GGRS	BGRS	75	1	83.30	92.10	1	121.0	12.4
SMCJ78AS	SMCJ78CAS	GGTS	BGTS	78	1	86.70	95.80	1	126.0	11.9
SMCJ85AS	SMCJ85CAS	GGVS	BGVS	85	1	94.40	104.0	1	137.0	11.0
SMCJ90AS	SMCJ90CAS	GGXS	BGXS	90	1	100.0	111.0	1	146.0	10.3
SMCJ100AS	SMCJ100CAS	GGZS	BGZS	100	1	111.0	123.0	1	162.0	9.3

① Surge waveform: 10/1000 μs 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

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

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

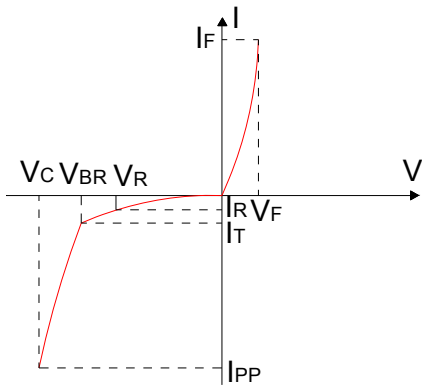


FIG.2:V- I curve characteristics (Bi-directional)

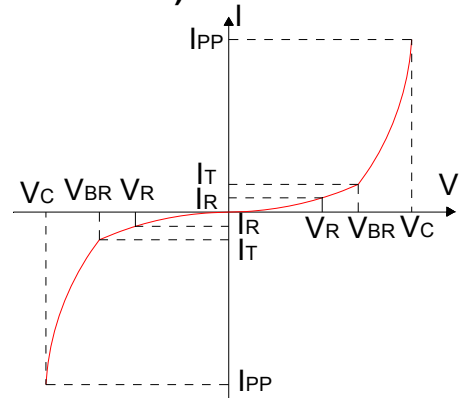


FIG.3: Pulse waveform

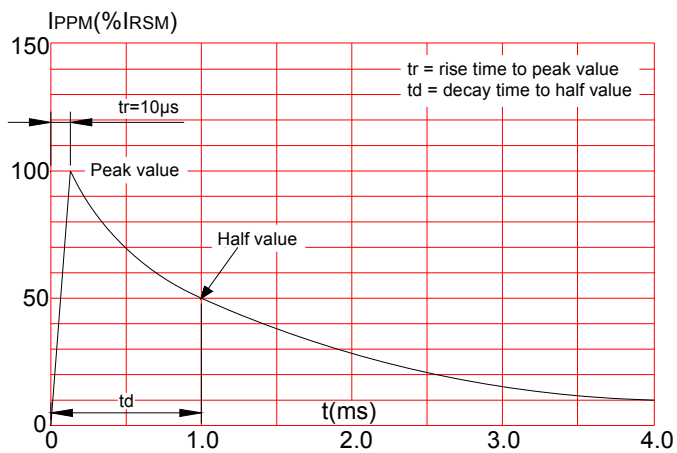
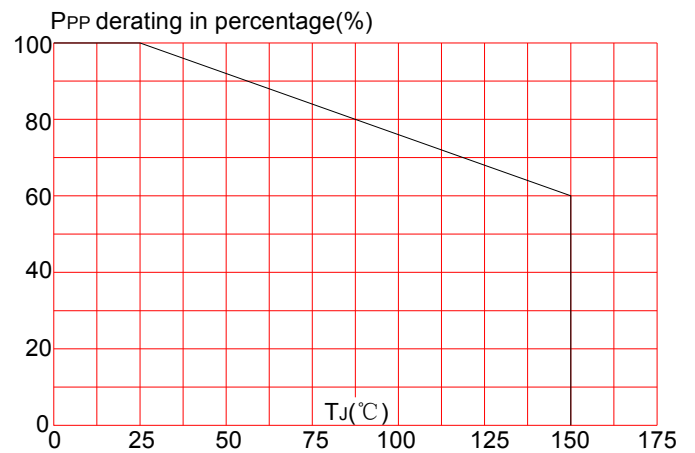
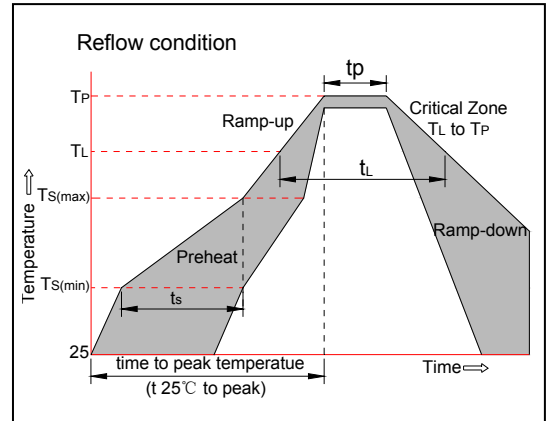


FIG.4: Pulse derating curve

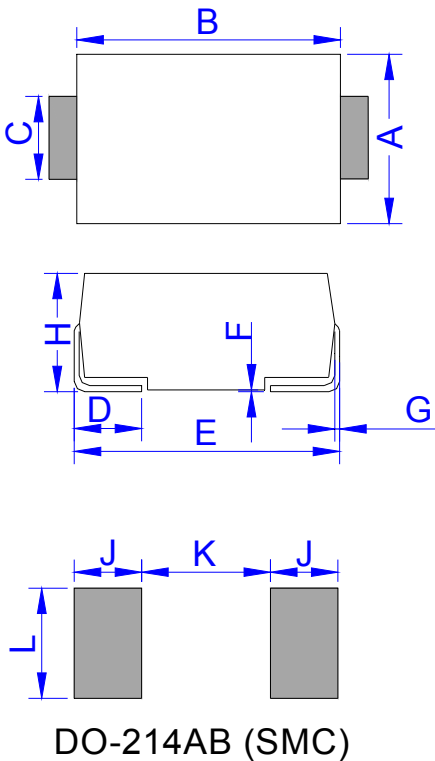


SOLDERING PARAMETERS

Reflow Condition		Pb-Free assembly (see figure at right)
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 (Liquidus 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) (Liquidus)	+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)		20-40secs.
Ramp-down Rate		6°C/sec. Max
Time 25°C to Peak Temp (T_P)		8 min. Max
Do not exceed		+260°C

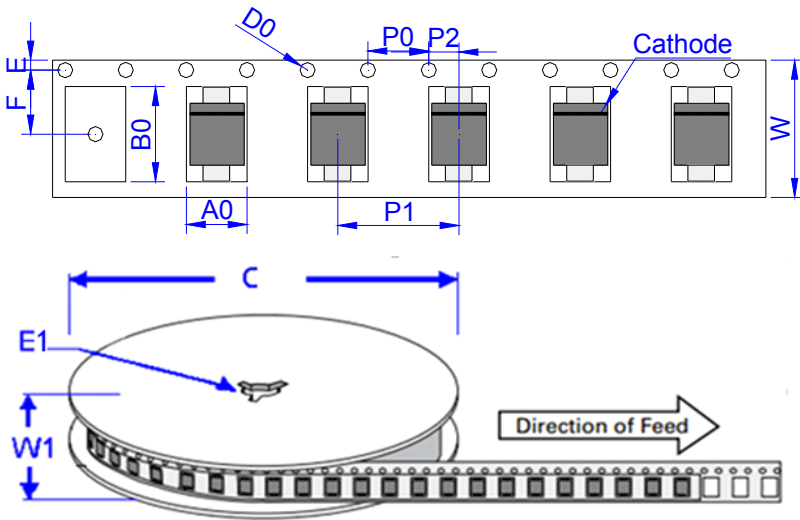


PACKAGE MECHANICAL DATA



Ref.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	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
A0	6.05 ± 0.3	0.238 ± 0.012
B0	8.31 ± 0.3	0.327 ± 0.012
C	330.0	13.0
D0	1.55 ± 0.1	0.061 ± 0.004
E	1.75 ± 0.2	0.069 ± 0.008
E1	13.3 ± 0.3	0.524 ± 0.012
F	7.50 ± 0.2	0.295 ± 0.008
P0	4.00 ± 0.2	0.157 ± 0.008
P1	8.00 ± 0.2	0.3145 ± 0.008
P2	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.	UNIT WEIGHT (g/PCS) typ.	REEL (PCS)	PER CARTON (PCS)	DESCRIPTION
SMCJxxAS/CAS	0.262	3,000	48,000	13 inch reel pack

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