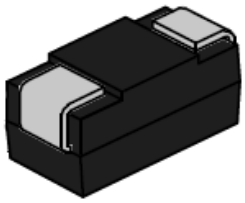
SMBJxx(C)AS Series 600W Transient Voltage Suppressor

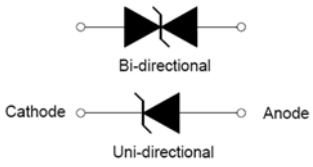
Rev.1.0

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.



SMB



Symbol

FEATURES:

- ✧ Low profile package.
- ✧ Low inductance.
- ✧ Excellent clamping capability.
- ✧ Typical I_R less than 1μA above 10V.
- ✧ 600W peak pulse power capability at 10/1000μs waveform.
- ✧ 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-STD-020, LF maximum peak of 260℃.
- ✧ Terminal: solder plated, solderable per J-STD-002.
- ✧ For surface mounted applications in order to optimize board space.

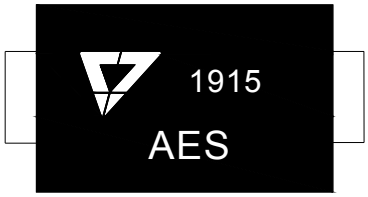
ABSOLUTE MAXIMUM RATINGS(T_A=25℃, RH=45%-75%, unless otherwise noted)

Parameter	Symbol	Value	Unit
Operating junction and storage temperature range	T_J/T_{STG}	-55 to +150	℃
Peak pulse power dissipation on 10/1000μs waveform	P_{PP}	600	W
Steady state power dissipation at T_L=75℃	$P_{M(AV)}$	5.0	W
Maximum instantaneous forward voltage at 50A for unidirectional	V_F	5.0	V
Peak forward surge current, 8.3ms single half sine wave(Note 1)	I_{FSM}	100	A
Typical thermal resistance junction to lead	$R_{\theta JL}$	20	℃/W
Typical thermal resistance junction to ambient	$R_{\theta JA}$	100	℃/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



AES: Device Marking Code
1915: The 15th week, 2019

ELECTRICAL CHARACTERISTICS (T_A=25℃)

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	μA	min(V)	max(V)	mA	max(V)	A
SMBJ5.0AS	SMBJ5.0CAS	KES	AES	5.0	120	6.40	7.00	10	9.2	65.2
SMBJ6.0AS	SMBJ6.0CAS	KGS	AGS	6.0	120	6.67	7.37	10	10.3	58.3
SMBJ6.5AS	SMBJ6.5CAS	KKS	AKS	6.5	120	7.22	7.98	10	11.2	53.6
SMBJ7.0AS	SMBJ7.0CAS	KMS	AMS	7.0	50	7.78	8.60	10	12.0	50.0
SMBJ7.5AS	SMBJ7.5CAS	KPS	APS	7.5	50	8.33	9.21	1	12.9	46.5
SMBJ8.0AS	SMBJ8.0CAS	KRS	ARS	8.0	20	8.89	9.83	1	13.6	44.1
SMBJ8.5AS	SMBJ8.5CAS	KTS	ATS	8.5	10	9.44	10.40	1	14.4	41.7
SMBJ9.0AS	SMBJ9.0CAS	KVS	AVS	9.0	5	10.00	11.10	1	15.4	39.0
SMBJ10AS	SMBJ10CAS	KXS	AXS	10	2	11.10	12.30	1	17.0	35.3
SMBJ11AS	SMBJ11CAS	KZS	AZS	11	1	12.20	13.50	1	18.2	33.0
SMBJ12AS	SMBJ12CAS	LES	BES	12	1	13.30	14.70	1	19.9	30.2
SMBJ13AS	SMBJ13CAS	LGS	BGS	13	1	14.40	15.90	1	21.5	27.9
SMBJ14AS	SMBJ14CAS	LKS	BKS	14	1	15.60	17.20	1	23.2	25.9
SMBJ15AS	SMBJ15CAS	LMS	BMS	15	1	16.70	18.50	1	24.4	24.6
SMBJ16AS	SMBJ16CAS	LPS	BPS	16	1	17.80	19.70	1	26.0	23.1
SMBJ17AS	SMBJ17CAS	LRS	BRS	17	1	18.90	20.90	1	27.6	21.8
SMBJ18AS	SMBJ18CAS	LTS	BTS	18	1	20.00	22.10	1	29.2	20.6
SMBJ20AS	SMBJ20CAS	LVS	BVS	20	1	22.20	24.50	1	32.4	18.6
SMBJ22AS	SMBJ22CAS	LXS	BXS	22	1	24.40	26.90	1	35.5	16.9
SMBJ24AS	SMBJ24CAS	LZS	BZS	24	1	26.70	29.50	1	38.9	15.4
SMBJ26AS	SMBJ26CAS	MES	CES	26	1	28.90	31.90	1	42.1	14.3
SMBJ28AS	SMBJ28CAS	MGS	CGS	28	1	31.10	34.40	1	45.4	13.2
SMBJ30AS	SMBJ30CAS	MKS	CKS	30	1	33.30	36.80	1	48.4	12.4

ELECTRICAL CHARACTERISTICS (T_A=25℃,contiuned)

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	μA	min(V)	max(V)	mA	max(V)	A
SMBJ33AS	SMBJ33CAS	MMS	CMS	33	1	36.70	40.60	1	53.3	11.3
SMBJ36AS	SMBJ36CAS	MPS	CPS	36	1	40.00	44.20	1	58.1	10.4
SMBJ40AS	SMBJ40CAS	MRS	CRS	40	1	44.40	49.10	1	64.5	9.3
SMBJ43AS	SMBJ43CAS	MTS	CTS	43	1	47.80	52.80	1	69.4	8.7
SMBJ45AS	SMBJ45CAS	MVS	CVS	45	1	50.00	55.30	1	72.7	8.3
SMBJ48AS	SMBJ48CAS	MXS	CXS	48	1	53.30	58.90	1	77.4	7.8
SMBJ51AS	SMBJ51CAS	MZS	CZS	51	1	56.70	62.70	1	82.4	7.3
SMBJ54AS	SMBJ54CAS	NES	DES	54	1	60.00	66.30	1	87.1	6.9
SMBJ58AS	SMBJ58CAS	NGS	DGS	58	1	64.40	71.20	1	93.6	6.4
SMBJ60AS	SMBJ60CAS	NKS	DKS	60	1	66.70	73.70	1	96.8	6.2
SMBJ64AS	SMBJ64CAS	NMS	DMS	64	1	71.10	78.60	1	103.0	5.8
SMBJ70AS	SMBJ70CAS	NPS	DPS	70	1	77.80	86.00	1	113.0	5.3
SMBJ75AS	SMBJ75CAS	NRS	DRS	75	1	83.30	92.10	1	121.0	5.0
SMBJ78AS	SMBJ78CAS	NTS	DTS	78	1	86.70	95.80	1	126.0	4.8
SMBJ85AS	SMBJ85CAS	NVS	DVS	85	1	94.40	104.0	1	137.0	4.4
SMBJ90AS	SMBJ90CAS	NXS	DXS	90	1	100.0	111.0	1	146.0	4.1
SMBJ100AS	SMBJ100CAS	NZS	DZS	100	1	111.0	123.0	1	162.0	3.7

①Surge 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

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

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

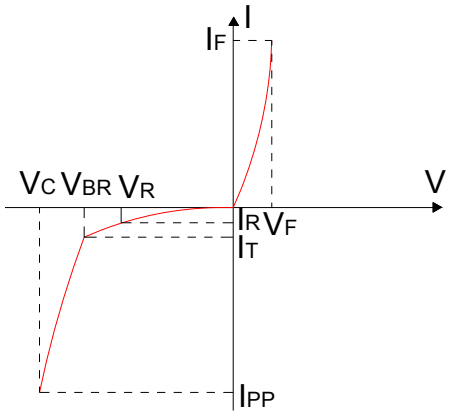


FIG.2:V- I curve characteristics (Bi-directional)

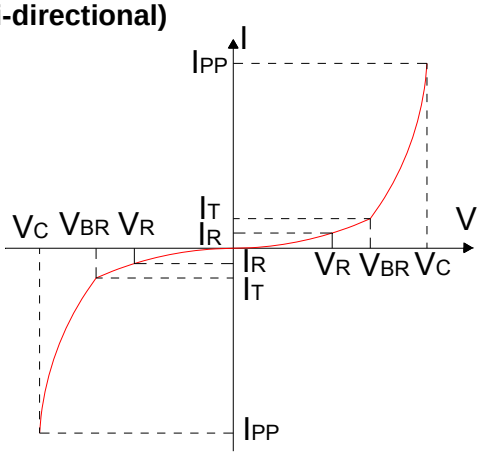


FIG.3: Pulse waveform

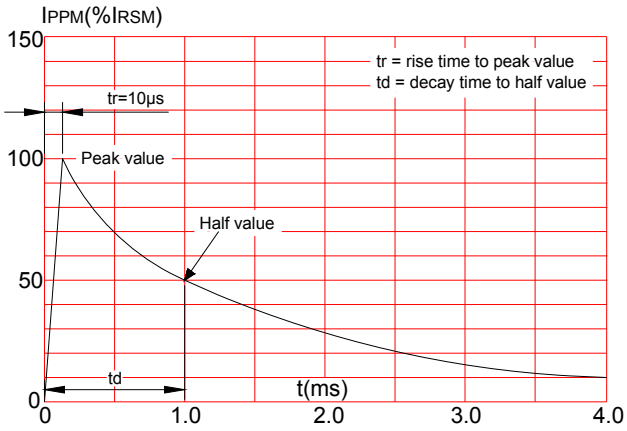
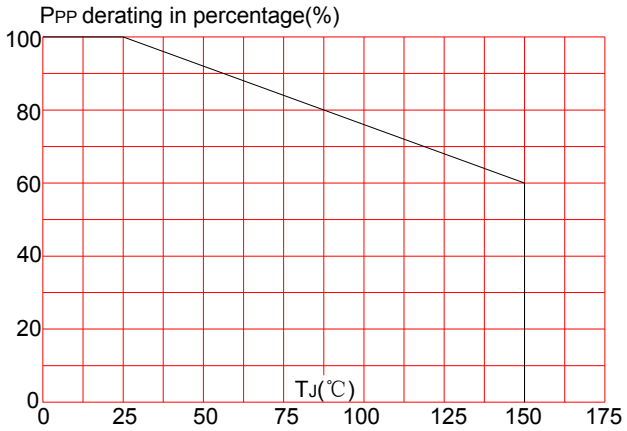
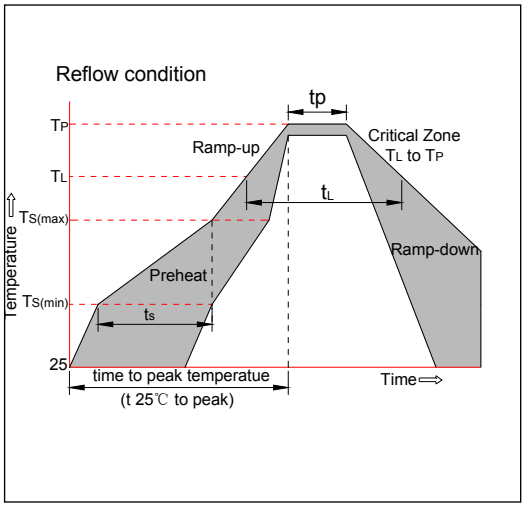


FIG.4: Pulse derating curve

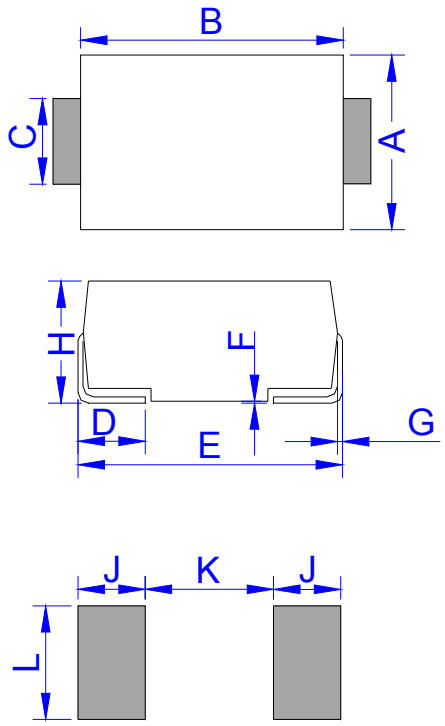


SOLDERING PARAMETERS

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℃



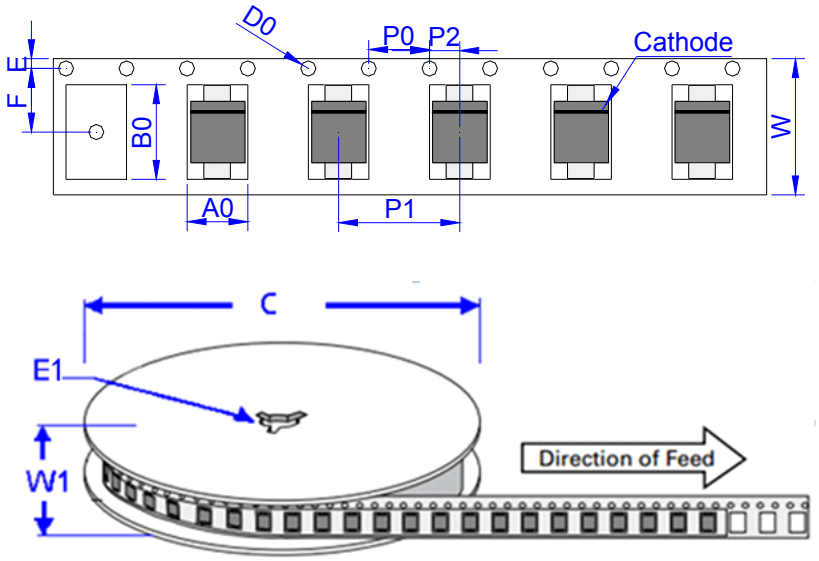
PACKAGE MECHANICAL DATA



DO-214AA (SMB)

Ref.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	3.30	3.94	0.130	0.155
B	4.30	4.80	0.169	0.189
C	1.90	2.20	0.075	0.087
D	0.95	1.52	0.037	0.060
E	5.20	5.60	0.205	0.220
F	0.051	0.203	0.002	0.008
G	0.15	0.31	0.006	0.012
H	2.10	2.40	0.083	0.094
J	2.20		0.087	
K		2.60		0.102
L	2.30		0.091	

TAPE AND REEL SPECIFICATION-SMB



Ref.	Dimensions	
	Millimeters	Inches
A0	3.76 ± 0.3	0.148 ± 0.012
B0	5.69± 0.3	0.224 ± 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	5.5 ± 0.2	0.217 ± 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	12.0± 0.2	0.472 ± 0.008
W1	15.7 ± 2.0	0.618 ± 0.079

PART No.	UNIT WEIGHT (g/PCS) typ.	REEL (PCS)	PER CARTON (PCS)	DESCRIPTION
SMBJxxAS/CAS	0.098	3,000	48,000	13 inch reel pack

Information furnished in this document is believed to be accurate and reliable. However, Jiangsu JieJie Microelectronics Co.,Ltd assumes no responsibility for the consequences of use without consideration for such information nor use beyond it.
Information mentioned in this document is subject to change without notice, apart from that when an agreement is signed, Jiangsu JieJie complies with the agreement.
Products and information provided in this document have no infringement of patents. Jiangsu JieJie assumes no responsibility for any infringement of other rights of third parties which may result from the use of such products and information.
This document is the first version which is made in 27-Apr.-2019. This document supersedes and replaces all information previously supplied.
is a registered trademark of Jiangsu JieJie Microelectronics Co.,Ltd.
Copyright©2019Jiangsu JieJie Microelectronics Co.,Ltd. Printed All rights reserved.