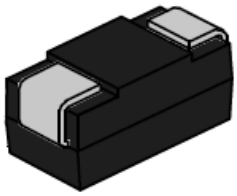
P6SMBxx(C)AS Series 600W Transient Voltage Suppressor

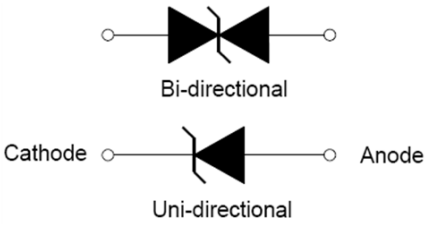
Rev.1.1

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.



SMB



Symbol

FEATURES:

- ✧ Low profile package.
- ✧ Low inductance.
- ✧ Excellent clamping capability.
- ✧ 600W peak pulse power capability at 10/1000μs waveform.
- ✧ Typical I_R less than 1μA above 12V.
- ✧ 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.
- ✧ IEC61000-4-2 (ESD) ±30kV (air), ±30kV (contact).

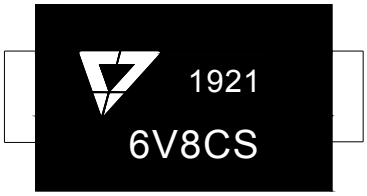
ABSOLUTE MAXIMUM RATINGS(T_A=25℃, RH=45%-75%, unless otherwise noted)

Parameter	Symbol	Value	Unit
Operating junction and storage temperature range	T_J/T_{STG}	-55 to +150	℃
Peak pulse power dissipation at 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



6V8CS: Device Marking Code
1921: the 21th 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	max(μA)	min(V)	max(V)	mA	max(V)	A
P6SMB6.8AS	P6SMB6.8CAS	6V8AS	6V8CS	5.8	150	6.45	7.14	10	10.5	58.1
P6SMB7.5AS	P6SMB7.5CAS	7V5AS	7V5CS	6.4	120	7.13	7.88	10	11.3	54.0
P6SMB8.2AS	P6SMB8.2CAS	8V2AS	8V2CS	7.02	50	7.79	8.61	10	12.1	50.4
P6SMB9.1AS	P6SMB9.1CAS	9V1AS	9V1CS	7.78	20	8.65	9.55	1	13.4	45.5
P6SMB10AS	P6SMB10CAS	10AS	10CS	8.55	10	9.50	10.50	1	14.5	42.1
P6SMB11AS	P6SMB11CAS	11AS	11CS	9.4	5	10.50	11.60	1	15.6	39.1
P6SMB12AS	P6SMB12CAS	12AS	12CS	10.2	2	11.40	12.60	1	16.7	36.5
P6SMB13AS	P6SMB13CAS	13AS	13CS	11.1	1	12.40	13.70	1	18.2	33.5
P6SMB15AS	P6SMB15CAS	15AS	15CS	12.8	1	14.30	15.80	1	21.2	28.8
P6SMB16AS	P6SMB16CAS	16AS	16CS	13.6	1	15.20	16.80	1	22.5	27.1
P6SMB18AS	P6SMB18CAS	18AS	18CS	15.3	1	17.10	18.90	1	25.2	24.2
P6SMB20AS	P6SMB20CAS	20AS	20CS	17.1	1	19.00	21.00	1	27.7	21.7
P6SMB22AS	P6SMB22CAS	22AS	22CS	18.8	1	20.90	23.10	1	30.6	19.7
P6SMB24AS	P6SMB24CAS	24AS	24CS	20.5	1	22.80	25.20	1	33.2	18.4
P6SMB27AS	P6SMB27CAS	27AS	27CS	23.1	1	25.70	28.40	1	37.5	16.3
P6SMB30AS	P6SMB30CAS	30AS	30CS	25.6	1	28.50	31.50	1	41.4	14.7
P6SMB33AS	P6SMB33CAS	33AS	33CS	28.2	1	31.40	34.70	1	45.7	13.3
P6SMB36AS	P6SMB36CAS	36AS	36CS	30.8	1	34.20	37.80	1	49.9	12.2
P6SMB39AS	P6SMB39CAS	39AS	39CS	33.3	1	37.10	41.00	1	53.9	11.3
P6SMB43AS	P6SMB43CAS	43AS	43CS	36.8	1	40.90	45.20	1	59.3	10.3
P6SMB47AS	P6SMB47CAS	47AS	47CS	40.2	1	44.70	49.40	1	64.8	9.4
P6SMB51AS	P6SMB51CAS	51AS	51CS	43.6	1	48.50	53.60	1	70.1	8.7
P6SMB56AS	P6SMB56CAS	56AS	56CS	47.8	1	53.20	58.80	1	77.0	7.9

ELECTRICAL CHARACTERISTICS(T_A=25℃, 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
P6SMB62AS	P6SMB62CAS	62AS	62CS	53.0	1	58.90	65.10	1	85.0	7.2
P6SMB68AS	P6SMB68CAS	68AS	68CS	58.1	1	64.60	71.40	1	92.0	6.6
P6SMB75AS	P6SMB75CAS	75AS	75CS	64.1	1	71.30	78.80	1	103.0	5.9
P6SMB82AS	P6SMB82CAS	82AS	82CS	70.1	1	77.90	86.10	1	113.0	5.4
P6SMB91AS	P6SMB91CAS	91AS	91CS	77.8	1	86.50	95.50	1	125.0	4.9
P6SMB100AS	P6SMB100CAS	100AS	100CS	85.5	1	95.00	105.0	1	137.0	4.5
P6SMB110AS	P6SMB110CAS	110AS	110CS	94.0	1	105.0	116.0	1	152.0	4.0
P6SMB120AS	P6SMB120CAS	120AS	120CS	102	1	114.0	126.0	1	165.0	3.7

① Surge waveform: 10/1000μs

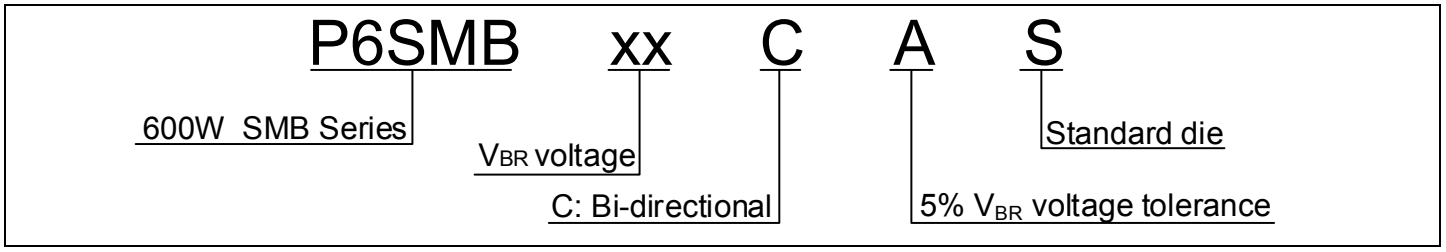
V_R: Stand-off voltage -- Maximum voltage that can be applied

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



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

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

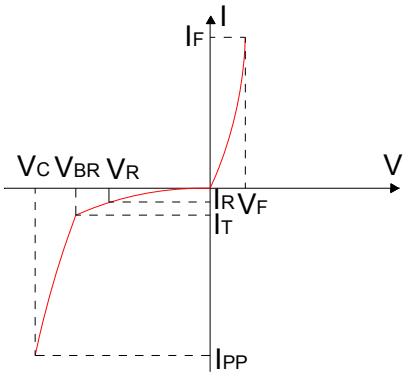


FIG.2:V- I curve characteristics (Bi-directional)

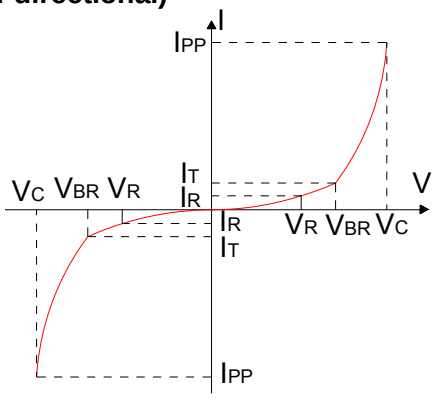


FIG.3: Pulse waveform

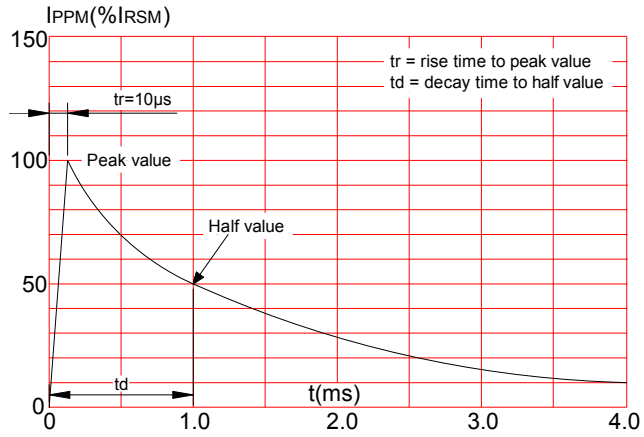
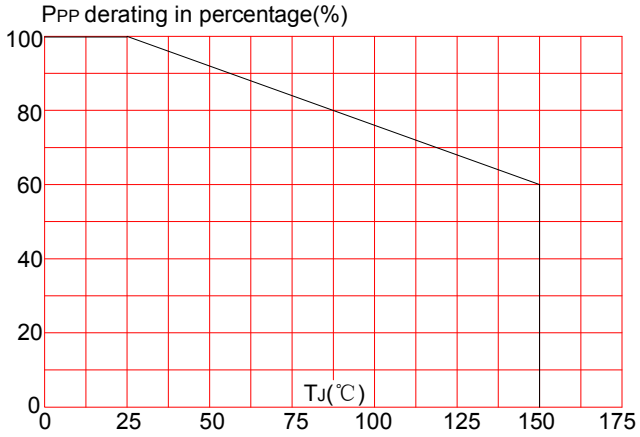
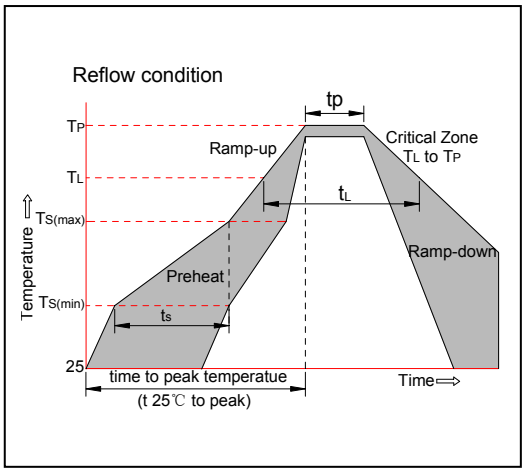


FIG.4: Pulse derating curve

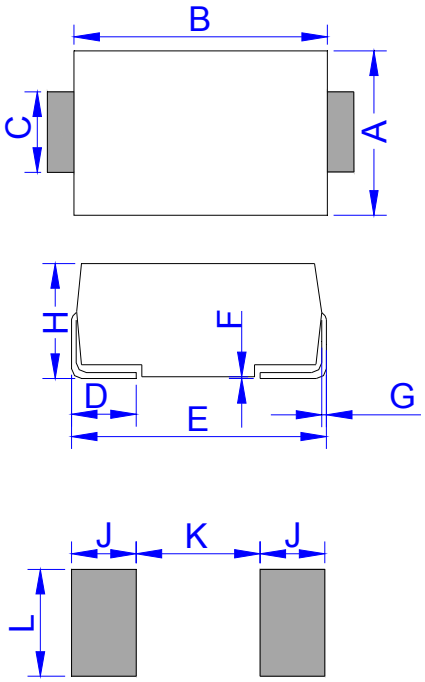


SOLDERING PARAMETERS

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℃



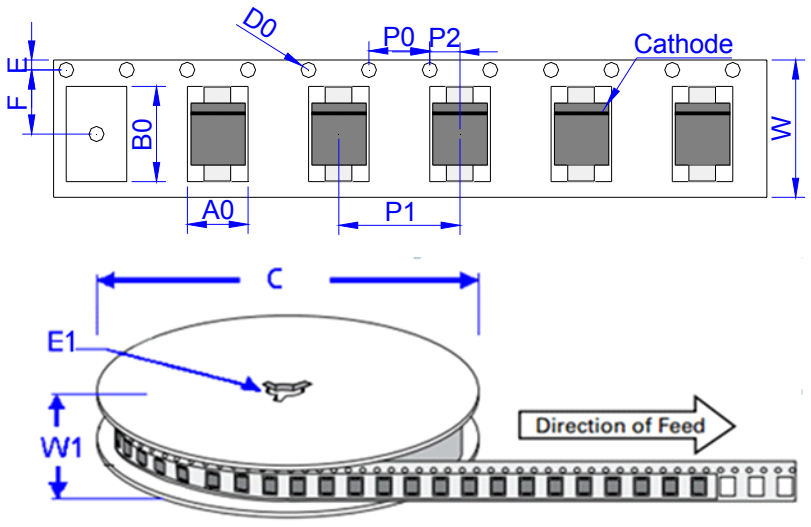
PACKAGE MECHANICAL DATA



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
P6SMBxxAS/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 1.1st version which is made in 2-Aug.-2021. This document supersedes and replaces all information previously supplied.