

INDIVIDUAL SPECIFICATION SHEET

Product Name: Transient Voltage Suppressors

Part Number: P6SMBJ Series

Revision: A



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Rev.	Effective Date	Changed Contents
A	2018-11-29	New Release

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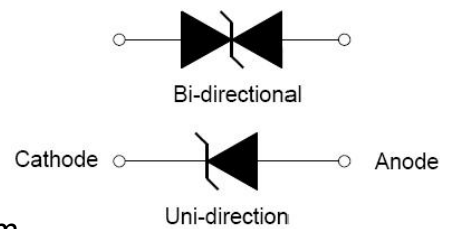

DESCRIPTION:

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.



FEATURES:

- ✧ Glass passivated or planar junction
- ✧ Excellent clamping capability
- ✧ Repetition rate (duty cycle): 0.01%
- ✧ Typical I_R less than $1\mu A$ above 10V.
- ✧ Low profile package and low inductance
- ✧ 600W Peak Pulse power capability at $10 \times 1000\mu s$ waveform.
- ✧ Fast response time: typically less than 1.0ps from 0V to V_{BR} min.
- ✧ High temperature soldering: $260^\circ C/10s$ at terminals.
- ✧ Plastic package has Underwriters Laboratory Flammability 94V-0.
- ✧ For surface mounted applications in order to optimize board space



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

Parameter	Symbol	Value	Unit
Storage temperature range	T_{stg}	-55 to +150	$^\circ C$
Operating junction temperature range	T_j	-55 to +150	$^\circ C$
Steady state power dissipation at $T_L=75^\circ C$	$P_{M(AV)}$	5.0	W
Peak pulse power dissipation on 10/1000 μs waveform	P_{PP}	600	W
Maximum Instantaneous Forward Voltage at 50A for Unidirectional	V_F	5.0	V

ELECTRICAL CHARACTERISTICS (T_A=25°C)

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	V	A
P6SMB6.8A	P6SMB6.8CA	5.8	150	6.45	7.14	10	10.5	58.1
P6SMB7.5A	P6SMB7.5CA	6.4	100	7.13	7.88	10	11.3	54.0
P6SMB8.2A	P6SMB8.2CA	7.02	50	7.79	8.61	10	12.1	50.4
P6SMB9.1A	P6SMB9.1CA	7.78	20	8.65	9.55	1	13.4	45.5
P6SMB10A	P6SMB10CA	8.55	10	9.50	10.50	1	14.5	42.1
P6SMB11A	P6SMB11CA	9.4	5	10.50	11.60	1	15.6	39.1
P6SMB12A	P6SMB12CA	10.2	2	11.40	12.60	1	16.7	36.5
P6SMB13A	P6SMB13CA	11.1	1	12.40	13.70	1	18.2	33.5
P6SMB15A	P6SMB15CA	12.8	1	14.30	15.80	1	21.2	28.8
P6SMB16A	P6SMB16CA	13.6	1	15.20	16.80	1	22.5	27.1
P6SMB18A	P6SMB18CA	15.3	1	17.10	18.90	1	25.2	24.2
P6SMB20A	P6SMB20CA	17.1	1	19.00	21.00	1	27.7	21.7
P6SMB22A	P6SMB22CA	18.8	1	20.90	23.10	1	30.6	19.7
P6SMB24A	P6SMB24CA	20.5	1	22.80	25.20	1	33.2	18.4
P6SMB27A	P6SMB27CA	23.1	1	25.70	28.40	1	37.5	16.3
P6SMB30A	P6SMB30CA	25.6	1	28.50	31.50	1	41.4	14.7
P6SMB33A	P6SMB33CA	28.2	1	31.40	34.70	1	45.7	13.3
P6SMB36A	P6SMB36CA	30.8	1	34.20	37.80	1	49.9	12.2
P6SMB39A	P6SMB39CA	33.3	1	37.10	41.00	1	53.9	11.3
P6SMB43A	P6SMB43CA	36.8	1	40.90	45.20	1	59.3	10.3
P6SMB47A	P6SMB47CA	40.2	1	44.70	49.40	1	64.8	9.3
P6SMB51A	P6SMB51CA	43.6	1	48.50	53.60	1	70.1	8.6
P6SMB56A	P6SMB56CA	47.8	1	53.20	58.80	1	77.0	7.8
P6SMB62A	P6SMB62CA	53.0	1	58.90	65.10	1	85.0	7.1
P6SMB68A	P6SMB68CA	58.1	1	64.60	71.40	1	92.0	6.6
P6SMB75A	P6SMB75CA	64.1	1	71.30	78.80	1	103.0	5.9
P6SMB82A	P6SMB82CA	70.1	1	77.90	86.10	1	113.0	5.4
P6SMB91A	P6SMB91CA	77.8	1	86.50	95.50	1	125.0	4.8
P6SMB100A	P6SMB100CA	85.5	1	95.00	105.0	1	137.0	4.4

ELECTRICAL CHARACTERISTICS ($T_A=25^{\circ}\text{C}$, 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	V	A
P6SMB110A	P6SMB110CA	94.0	1	105.0	116.0	1	152.0	4.0
P6SMB120A	P6SMB120CA	102	1	114.0	126.0	1	165.0	3.7
P6SMB130A	P6SMB130CA	111	1	124.0	137.0	1	179.0	3.4
P6SMB150A	P6SMB150CA	128	1	143.0	158.0	1	207.0	2.9
P6SMB160A	P6SMB160CA	136	1	152.0	168.0	1	219.0	2.8
P6SMB170A	P6SMB170CA	145	1	162.0	179.0	1	234.0	2.6
P6SMB180A	P6SMB180CA	154	1	171.0	189.0	1	246.0	2.5
P6SMB200A	P6SMB200CA	171	1	190.0	210.0	1	274.0	2.2
P6SMB220A	P6SMB220CA	185	1	209.0	231.0	1	328.0	1.9
P6SMB250A	P6SMB250CA	214	1	237.0	263.0	1	344.0	1.8
P6SMB300A	P6SMB300CA	256	1	285.0	315.0	1	414.0	1.5
P6SMB350A	P6SMB350CA	300	1	332.0	368.0	1	482.0	1.3
P6SMB400A	P6SMB400CA	342	1	380.0	420.0	1	548.0	1.1
P6SMB440A	P6SMB440CA	376	1	418.0	462.0	1	602.0	1.0

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

ORDERING INFORMATION

<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>P6SMB</p> <p>600W SMB Series</p> </div> <div style="text-align: center;"> <p>XX</p> <p>V_{BR} Voltage</p> </div> </div>	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>C</p> <p>C: Bi-directional</p> </div> <div style="text-align: center;"> <p>A</p> <p>5% V_{BR} Voltage tolerance</p> </div> </div>
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RATINGS AND V-I CHARACTERISTICS CURVES ($T_A=25^\circ\text{C}$, unless otherwise noted)

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

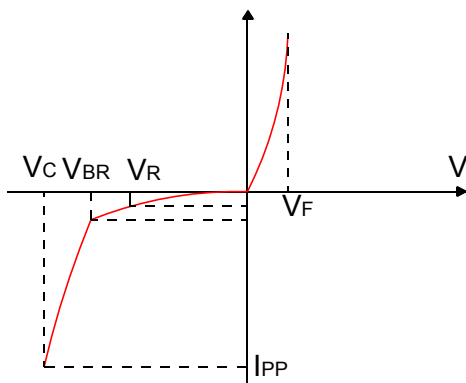


FIG.2: V- I curve characteristics (Bi-directional)

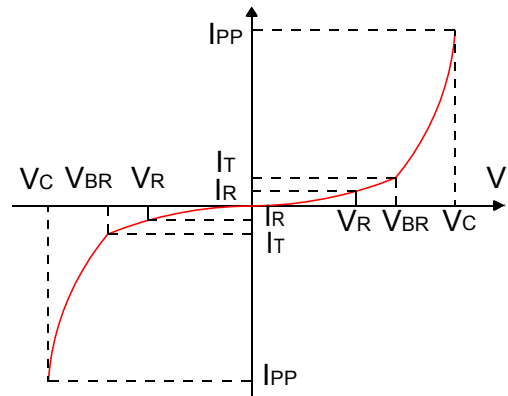


FIG.3: Pulse waveform

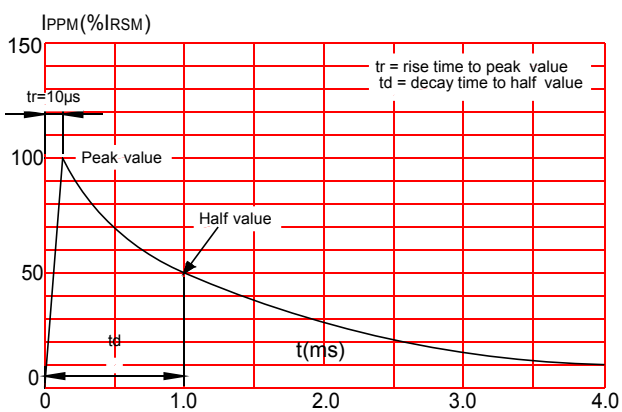
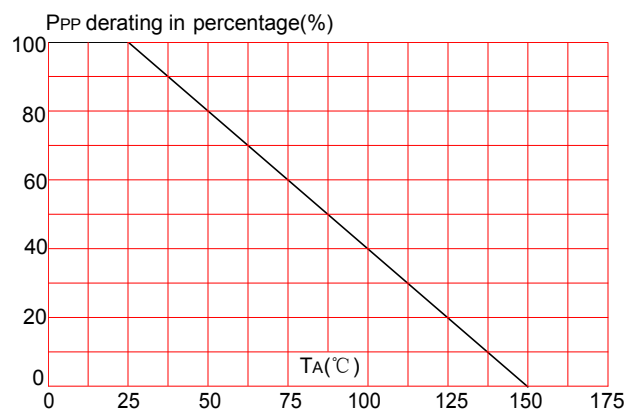
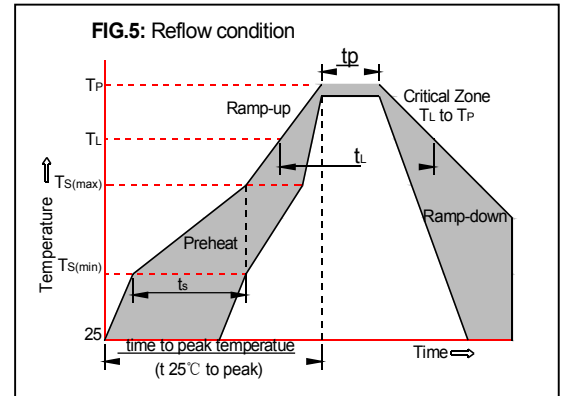


FIG.4: Pulse derating curve

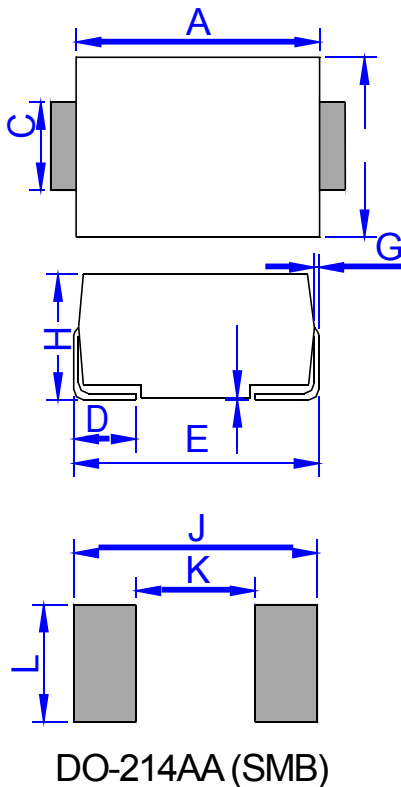


SOLDERING PARAMETERS

Reflow Condition		Pb-Free assembly (see FIG.5)
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 (Liquid us 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)(Liquid us)	+217°C
	-Temperature(t_t)	60-150 secs.
Peak Temp (T_p)		+260(+0/-5)°C
Time within 5°C of actual Peak Temp(t_p)		30 secs. Max
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	4.25	4.75	0.167	0.187
B	3.30	3.94	0.130	0.155
C	1.85	2.21	0.073	0.087
D	0.76	1.52	0.030	0.060
E	5.08	5.59	0.200	0.220
F	0.051	0.203	0.002	0.008
G	0.15	0.31	0.006	0.012
H	2.11	2.44	0.083	0.096
J	6.80		0.270	
K		2.60		0.100
L	2.40		0.090	