

# P6SMB6.8A - P6SMB400A

# SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSOR

**V<sub>BR</sub> : 6.8 - 440 Volts**

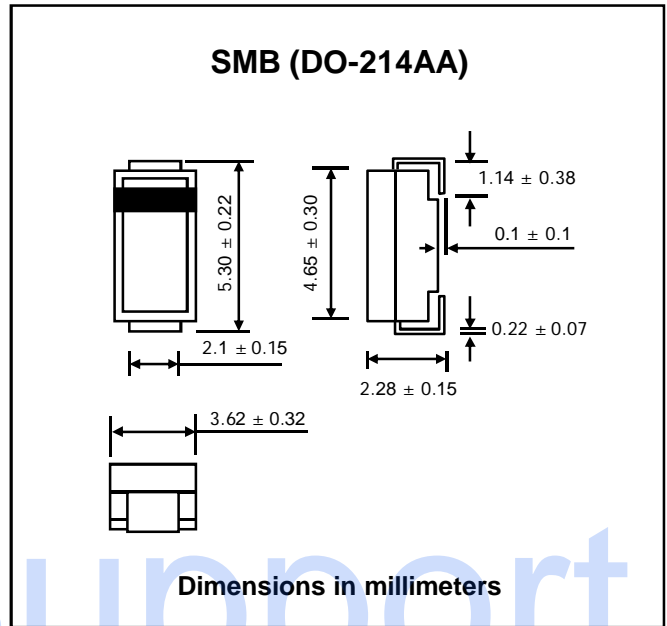
**P<sub>PK</sub> : 600 Watts**

### FEATURES :

- \* 600W surge capability at 1ms
- \* Excellent clamping capability
- \* Low zener impedance
- \* Fast response time : typically less than 1.0 ps from 0 volt to V<sub>BR(min.)</sub>
- \* Typical I<sub>R</sub> less than 1μA above 10V
- \* **Pb / RoHS Free**

### MECHANICAL DATA

- \* Case : SMB Molded plastic
- \* Epoxy : UL94V-0 rate flame retardant
- \* Lead : Lead Formed for Surface Mount
- \* Polarity : Color band denotes cathode end
- \* Mounting position : Any
- \* Weight : 0.108 gram



### DEVICES FOR BIPOLAR APPLICATIONS

- For Bi-directional use CA Suffix
- Electrical characteristics apply in both directions

### MAXIMUM RATINGS

Rating at 25 °C ambient temperature unless otherwise specified.

Rating	Symbol	Value	Unit
Peak Power Dissipation at Ta = 25°C, Tp=1ms (Note1)	P <sub>PK</sub>	Minimum 600	Watts
Steady State Power Dissipation at TL = 75 °C	P <sub>D</sub>	5.0	Watts
Peak Forward Surge Current, 8.3ms Single Half Sine-Wave Superimposed on Rated Load (JEDEC Method) (Note 3)	I <sub>FSM</sub>	100	Amps.
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	- 55 to + 150	°C

#### Notes:

- (1) Non-repetitive Current pulse, per Fig. 5 and derated above Ta = 25 °C per Fig. 1
- (2) Mounted on copper Lead area at 5.0 mm<sup>2</sup> ( 0.013 mm thick ).
- (3) 8.3 ms single half sine-wave, duty cycle = 4 pulses per Minutes maximum.

## ELECTRICAL CHARACTERISTICS (Rating at 25°C ambient temperature unless otherwise specified)

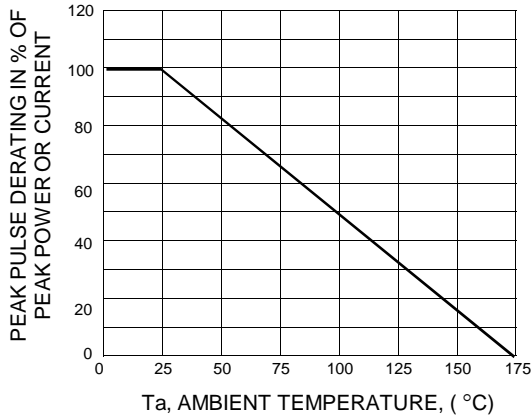
Type No.	Breakdown Voltage @ It ( Note 1 )			Working Peak Reverse Voltage V <sub>RWM</sub> (V)	Maximum Reverse Leakage @ V <sub>RWM</sub> I <sub>R</sub> (μA)	Maximum Reverse Current I <sub>RSM</sub> (A)	Maximum Clamping Voltage @ I <sub>RSM</sub> V <sub>RSM</sub> (V)	Maximum Temperature Co-efficient of V <sub>BR</sub> (% / °C)
	V <sub>BR</sub> (V)		It (mA)					
	Min.	Max.						
P6SMB6.8A	6.45	7.14	10	5.80	1000	57.0	10.5	0.057
P6SMB7.5A	7.13	7.88	10	6.40	500	53.0	11.3	0.061
P6SMB8.2A	7.79	8.61	10	7.02	200	50.0	12.1	0.065
P6SMB9.1A	8.65	9.55	1.0	7.78	50	45.0	13.4	0.068
P6SMB10A	9.50	10.5	1.0	8.55	10	41.0	14.5	0.073
P6SMB11A	10.5	11.6	1.0	9.40	5.0	38.0	15.6	0.075
P6SMB12A	11.4	12.6	1.0	10.2	5.0	36.0	16.7	0.078
P6SMB13A	12.4	13.7	1.0	11.1	5.0	33.0	18.2	0.081
P6SMB15A	14.3	15.8	1.0	12.8	5.0	28.0	21.2	0.084
P6SMB16A	15.2	16.8	1.0	13.6	5.0	27.0	22.5	0.086
P6SMB18A	17.1	18.9	1.0	15.3	5.0	24.0	25.2	0.088
P6SMB20A	19.0	21.0	1.0	17.1	5.0	22.0	27.7	0.090
P6SMB22A	20.9	23.1	1.0	18.8	5.0	20.0	30.6	0.092
P6SMB24A	22.8	25.2	1.0	20.5	5.0	18.0	33.2	0.094
P6SMB27A	25.7	28.4	1.0	23.1	5.0	16.0	37.5	0.096
P6SMB30A	28.5	31.5	1.0	25.6	5.0	14.4	41.4	0.097
P6SMB33A	31.4	34.7	1.0	28.2	5.0	13.2	45.7	0.098
P6SMB36A	34.2	37.8	1.0	30.8	5.0	12.0	49.9	0.099
P6SMB39A	37.1	41.0	1.0	33.3	5.0	11.2	53.9	0.100
P6SMB43A	40.9	45.2	1.0	36.8	5.0	10.1	59.3	0.101
P6SMB47A	44.7	49.4	1.0	40.2	5.0	9.3	64.8	0.101
P6SMB51A	48.5	53.6	1.0	43.6	5.0	8.6	70.1	0.102
P6SMB56A	53.2	58.8	1.0	47.8	5.0	7.8	77.0	0.103
P6SMB62A	58.9	65.1	1.0	53.0	5.0	7.1	85.0	0.104
P6SMB68A	64.6	71.4	1.0	58.1	5.0	6.5	92.0	0.104
P6SMB75A	71.3	78.8	1.0	64.1	5.0	5.8	103	0.105
P6SMB82A	77.9	86.1	1.0	70.1	5.0	5.3	113	0.105
P6SMB91A	86.5	95.5	1.0	77.8	5.0	4.8	125	0.106
P6SMB100A	95.0	105	1.0	85.5	5.0	4.4	137	0.106
P6SMB110A	105	116	1.0	94.0	5.0	4.0	152	0.107
P6SMB120A	114	126	1.0	102	5.0	3.6	165	0.107
P6SMB130A	124	137	1.0	111	5.0	3.3	179	0.107
P6SMB150A	143	158	1.0	128	5.0	2.9	207	0.108
P6SMB160A	152	168	1.0	136	5.0	2.7	219	0.108
P6SMB170A	162	179	1.0	145	5.0	2.6	234	0.108
P6SMB180A	171	189	1.0	154	5.0	2.4	246	0.108
P6SMB200A	190	210	1.0	171	5.0	2.2	274	0.108
P6SMB220A	209	231	1.0	185	5.0	1.83	328	0.108
P6SMB250A	237	263	1.0	214	5.0	1.75	344	0.110
P6SMB300A	285	315	1.0	256	5.0	1.45	414	0.110
P6SMB350A	332	368	1.0	300	5.0	1.25	482	0.110
P6SMB400A	380	420	1.0	342	5.0	1.10	548	0.110
P6SMB440A	418	462	1.0	376	5.0	1.00	602	0.110

**Notes:**

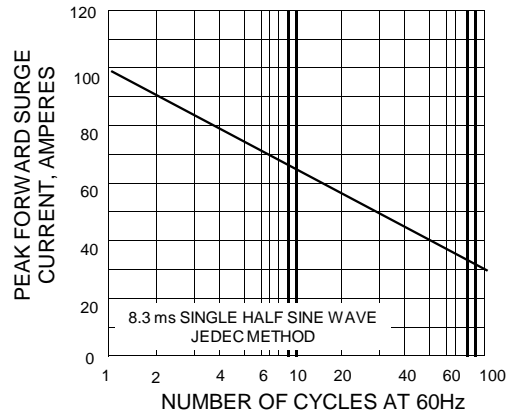
- ( 1 ) V<sub>BR</sub> measured after I<sub>t</sub> applied for 300 μs., I<sub>t</sub> = square wave pulse or equivalent.
- ( 2 ) V<sub>F</sub> = 3.5 V<sub>max.</sub>, I<sub>F</sub> = 50 Amps. ( 6.8 Volts thru 91 Volts )  
V<sub>F</sub> = 5.0 V<sub>max.</sub>, I<sub>F</sub> = 50 Amps. ( 100 Volts thru 440 Volts ) per 1/2 square or equivalent sine wave.  
PW = 8.3 ms, duty cycle = 4 pulses per minute maximum.
- ( 3 ) For Bipolar types moving V<sub>R</sub> of 10 Volts and under, the I<sub>R</sub> limit is doubled.
- ( 4 ) "P6SMB" will be omitted in marking on the diode.

**RATING AND CHARACTERISTIC CURVES ( P6SMB SERIES )**

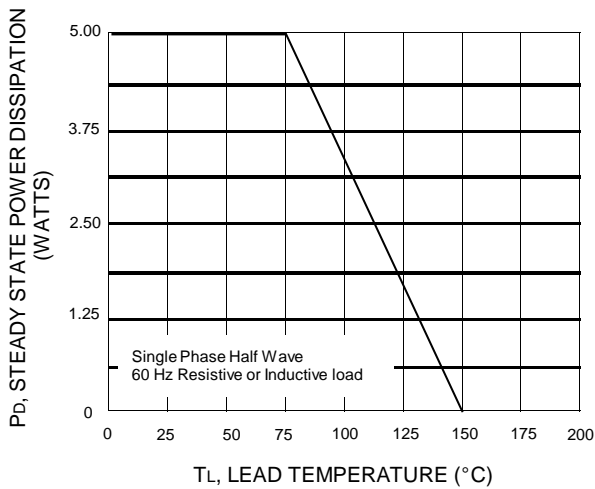
**FIG.1 - PULSE DERATING CURVE**



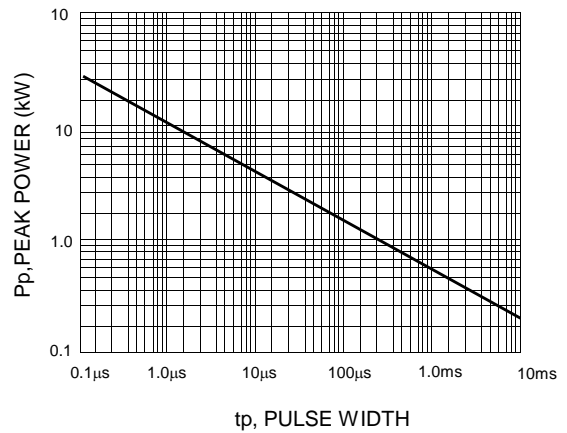
**FIG.2 - MAXIMUM NON-REPETITIVE SURGE CURRENT**



**FIG.3 - STEADY STATE POWER DERATING**



**FIG.4 - PULSE RATING CURVE**



**FIG.5 - PULSE WAVEFORM**

