



## SMBG Plastic-Encapsulate Diodes

### P6SMB SERIES Transient Voltage Suppressor Diodes

#### Features

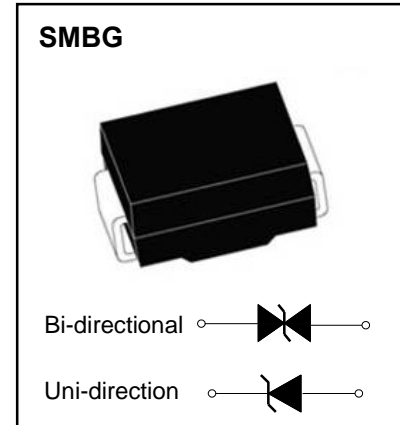
- $P_{PP}$  600W
- $V_{RWM}$  5.8V- 513V
- Glass passivated chip

#### Applications

- Clamping Voltage

#### Marking

- P6SMB XXCA/XXA  
XX : From 6.8 To 600



#### Limiting Values (Absolute Maximum Rating)

Item	Symbol	Unit	Conditions	Max
Peak pulse power dissipation	$P_{PPM}$	W	with a 10/1000us waveform	600
Peak pulse current (1)	$I_{PPM}$	A	with a 10/1000us waveform	See Next Table
Power dissipation	$P_D$	W	On infinite heat sink at $T_L=75^\circ\text{C}$	5.0
Peak forward surge current(2)	$I_{FSM}$	A	8.3 ms single half sine-wave unidirectional only	100
Operating junction and storage temperature range	$T_J, T_{STG}$	$^\circ\text{C}$		-55 to +150

#### Electrical Characteristics ( $T_a=25^\circ\text{C}$ Unless otherwise specified)

Item	Symbol	Unit	Conditions	Max
Maximum instantaneous forward Voltage (3)	$V_F$	V	at 35A for unidirectional only	3.5/5.0
Thermal resistance	$R_{\theta JL}$	$^\circ\text{C}/\text{W}$	junction to lead	20
	$R_{\theta JA}$	$^\circ\text{C}/\text{W}$	junction to ambient, $L_{Lead} = 10 \text{ mm}$	100

#### Notes:

- (1) Non-repetitive current pulse, per Fig. 3 and derated above  $T_A = 25^\circ\text{C}$  per Fig.2.
- (2) Mounted on 0.2 x 0.2" (5.0 x 5.0 mm) copper pads to each terminal
- (3)  $V_F < 3.5\text{V}$  for devices of  $V_{BR} < 200\text{V}$  and  $V_F < 5.0\text{V}$  for devices of  $V_{BR} > 201\text{V}$

## Electrical Characteristics ( $T_A=25^{\circ}\text{C}$ unless otherwise noted)

Part Number(Uni)	Part Number(Bi)	Breakdown Voltage $V_{BR}@I_T$			Maximum Reverse Leakage $I_{R@}$ $V_{WM}$ ( $\mu\text{A}$ )	Working Peak Reverse Voltage $V_{RWM}$ (V)	Maximum Reverse Surge Current IPP (A)	Maximum Clamping Voltage $V_C$ @ $I_{PP}$ (V)
		Min(V)	Max (V)	IT (mA)				
P6SMB6.8A	P6SMB6.8CA	6.46	7.14	10	1000	5.8	57.1	10.5
P6SMB7.5A	P6SMB7.5CA	7.13	7.88	10	500	6.4	53.1	11.3
P6SMB8.2A	P6SMB8.2CA	7.79	8.61	10	200	7.0	49.6	12.1
P6SMB9.1A	P6SMB9.1CA	8.65	9.56	1	50	7.8	44.7	13.4
P6SMB10A	P6SMB10CA	9.50	10.50	1	10	8.6	41.3	14.5
P6SMB11A	P6SMB11CA	10.45	11.55	1	5	9.4	38.4	15.6
P6SMB12A	P6SMB12CA	11.40	12.60	1	5	10.2	35.9	16.7
P6SMB13A	P6SMB13CA	12.35	13.65	1	5	11.1	32.9	18.2
P6SMB15A	P6SMB15CA	14.25	15.75	1	5	12.8	28.3	21.2
P6SMB16A	P6SMB16CA	15.20	16.80	1	5	13.6	26.6	22.5
P6SMB18A	P6SMB18CA	17.10	18.90	1	5	15.3	23.8	25.2
P6SMB20A	P6SMB20CA	19.00	21.00	1	5	17.1	21.6	27.7
P6SMB22A	P6SMB22CA	20.90	23.10	1	5	18.8	19.6	30.6
P6SMB24A	P6SMB24CA	22.80	25.20	1	5	20.5	18.1	33.2
P6SMB27A	P6SMB27CA	25.65	28.35	1	5	23.1	16.0	37.5
P6SMB30A	P6SMB30CA	28.50	31.50	1	5	25.6	14.5	41.4
P6SMB33A	P6SMB33CA	31.35	34.65	1	5	28.2	13.1	45.7
P6SMB36A	P6SMB36CA	34.20	37.80	1	5	30.8	12.0	49.9
P6SMB39A	P6SMB39CA	37.05	40.95	1	5	33.3	11.1	53.9
P6SMB43A	P6SMB43CA	40.85	45.15	1	5	36.8	10.1	59.3
P6SMB47A	P6SMB47CA	44.65	49.35	1	5	40.2	9.2	64.8
P6SMB51A	P6SMB51CA	48.45	53.55	1	5	43.6	8.5	70.1
P6SMB56A	P6SMB56CA	53.20	58.80	1	5	47.8	7.8	77.0
P6SMB62A	P6SMB62CA	58.90	65.10	1	5	53.0	7.0	85.0
P6SMB68A	P6SMB68CA	64.60	71.40	1	5	58.1	6.5	92.0
P6SMB75A	P6SMB75CA	71.25	78.75	1	5	64.1	5.8	103.0
P6SMB82A	P6SMB82CA	77.90	86.10	1	5	70.1	5.3	113.0
P6SMB91A	P6SMB91CA	86.45	95.35	1	5	77.8	4.8	125.0
P6SMB100A	P6SMB100CA	95.00	105.00	1	5	85.5	4.3	137.0
P6SMB110A	P6SMB110CA	104.50	115.50	1	5	94.0	3.9	152.0
P6SMB120A	P6SMB120CA	114.00	126.00	1	5	102.0	3.6	165.0
P6SMB130A	P6SMB130CA	123.50	136.50	1	5	111.0	3.3	179.0
P6SMB150A	P6SMB150CA	142.50	157.50	1	5	128.0	2.9	207.0
P6SMB160A	P6SMB160CA	152.00	168.00	1	5	136.0	2.7	219.0
P6SMB170A	P6SMB170CA	161.50	178.50	1	5	145.0	2.5	234.0
P6SMB180A	P6SMB180CA	171.00	189.00	1	5	154.0	2.4	246.0
P6SMB200A	P6SMB200CA	190.00	210.00	1	5	171.0	2.2	274.0
P6SMB220A	P6SMB220CA	209.00	231.00	1	5	185.0	1.8	328.0
P6SMB250A	P6SMB250CA	237.50	262.50	1	5	214.0	1.7	344.0
P6SMB300A	P6SMB300CA	285.00	315.00	1	5	256.0	1.4	414.0
P6SMB350A	P6SMB350CA	332.50	367.50	1	5	299.3	1.2	482.0
P6SMB380A	P6SMB380CA	361.00	399.00	1	5	324.9	1.1	524.4
P6SMB400A	P6SMB400CA	380.00	420.00	1	5	342.0	1.1	548.0
P6SMB440A	P6SMB440CA	418.00	462.00	1	5	376.2	1.0	607.2
P6SMB500A	P6SMB500CA	475.00	525.00	1	5	427.5	0.8	690.0
P6SMB520A	P6SMB520CA	494.00	546.00	1	5	444.6	0.8	717.6
P6SMB550A	P6SMB550CA	522.50	577.50	1	5	470.3	0.8	759.0
P6SMB600A	P6SMB600CA	570.00	630.00	1	5	513.0	0.7	828.0

# Typical Characteristics

FIG1: Peak Pulse Power Rating Curve

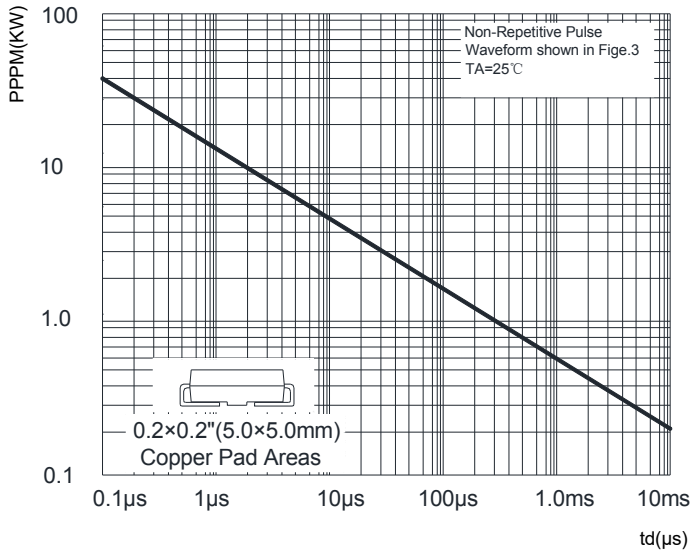


FIG2: Pulse Power or Current vs. Initial Junction Temperature

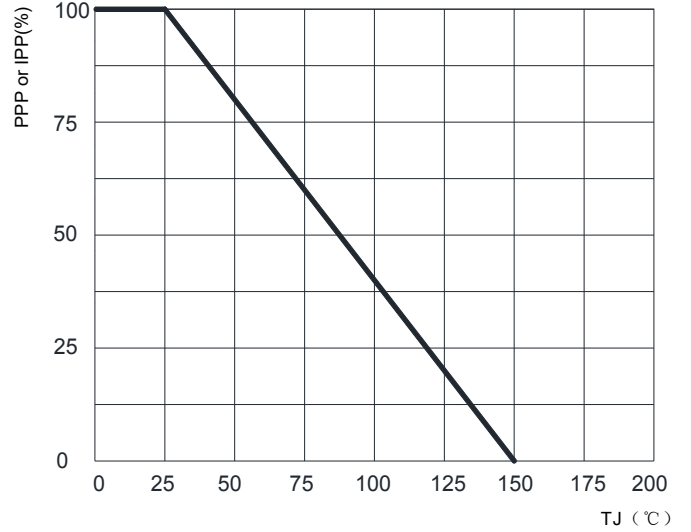


FIG3: Pulse Waveform

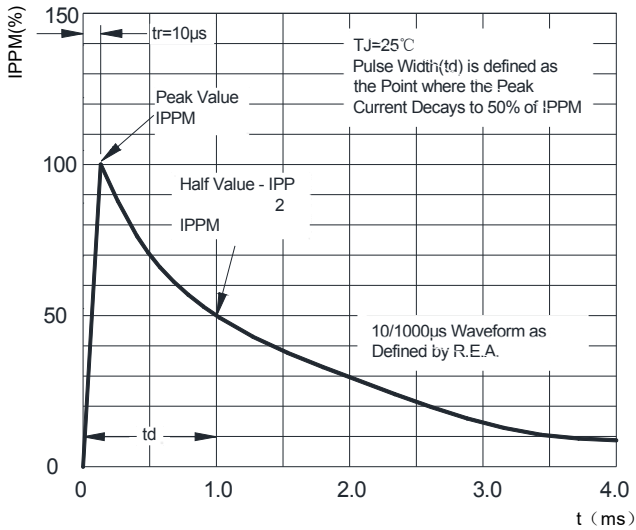


FIG4: Typical Transient Thermal Impedance

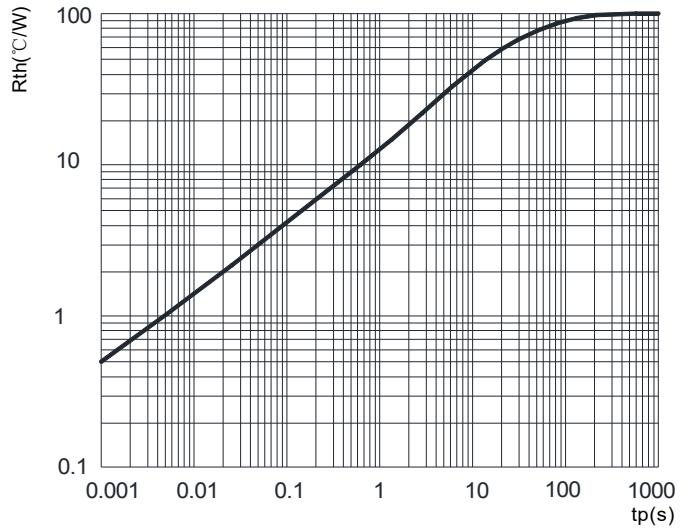
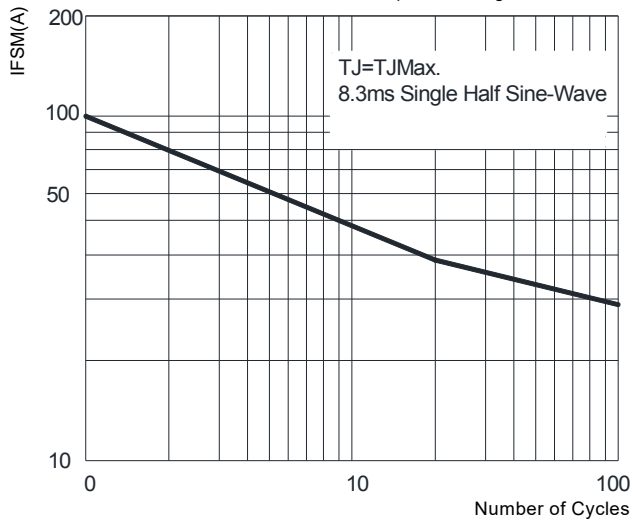
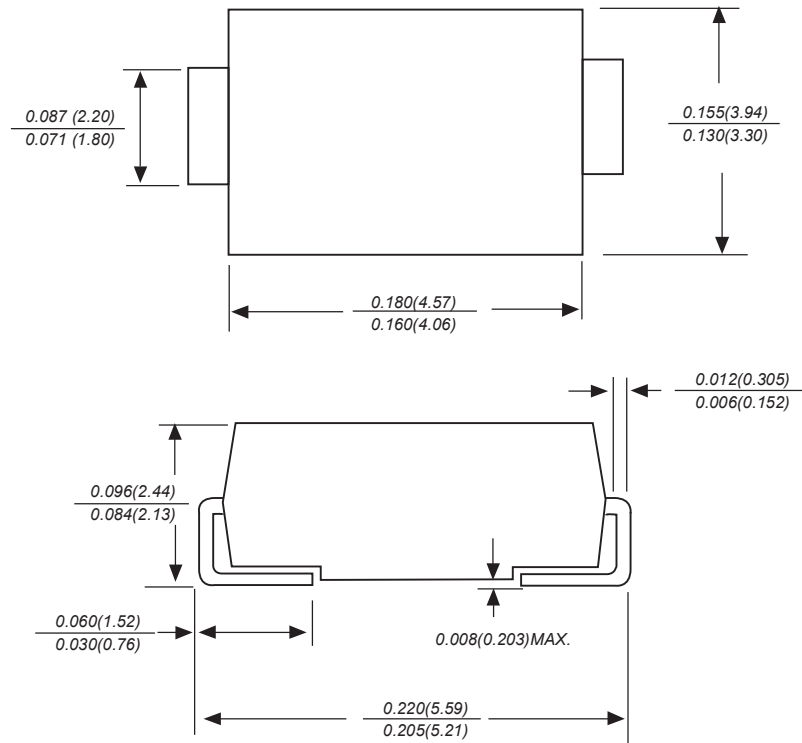


FIG5: Maximum Non-Repetitive Surge Current

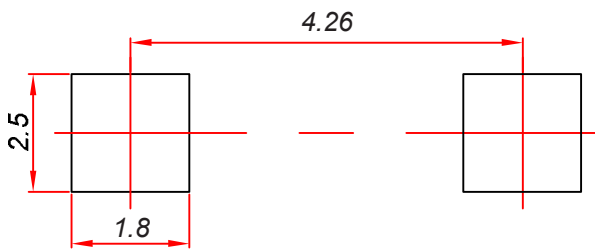


## SMBG Package Outline Dimensions



Dimensions in inches and (millimeters)

## SMBG Suggested Pad Layout



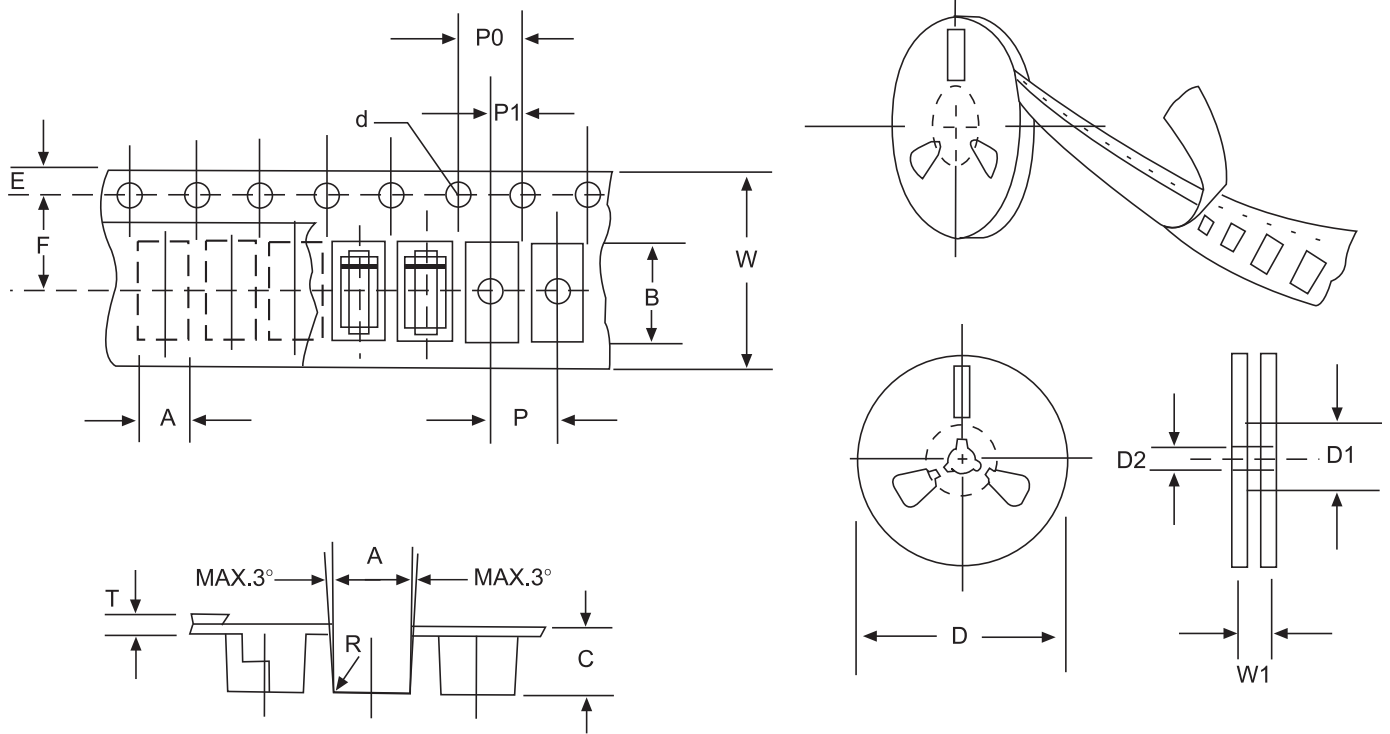
### Note:

1. Controlling dimension: in millimeters.
2. General tolerance:  $\pm 0.05 \text{ mm}$ .
3. The pad layout is for reference purposes only.

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## Reel Taping Specifications For Surface Mount Devices- SMBG



**FIG: CONFIGURATION OF SURFACE MOUNTED DEVICES TAPING**

ITEM	SYMBOL	SMBG mm(inch)
Carrier width	A	4.09±0.1(0.161±0.004)
Carrier length	B	5.82±0.1(0.229±0.004)
Carrier depth	C	2.50±0.1(0.100±0.004)
Sprocket hole	d	1.55±0.05(0.061±0.002)
Reel outside diameter	D	330±2.0(13±0.079)
Reel inner diameter	D1	75 ±1.0 ( 2.95 ±0.039)
Feed hole diameter	D2	13±0.5(0.512±0.020)
Sprocket hole position	E	1.75±0.1(0.069±0.004)
Punch hole position	F	5.65±0.05(0.222±0.002)
Punch hole pitch	P	8.0±0.1(0.315±0.004)
Sprocket hole pitch	P0	4.0±0.1(0.157±0.004)
Embossment center	P1	2.0±0.1(0.079±0.004)
Total tape thickness	T	0.32±0.1(0.013±0.004)
Tape width	W	12.0±0.2(0.472±0.008)
Reel width	W1	16.8±2.0(0.661±0.079)

NOTE: Devices are packed in accordance with EIA standard RS-481-A and specification given above.

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