

## Description

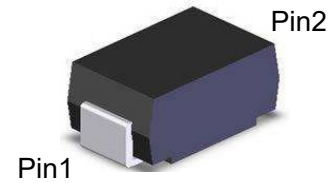
The PP1SMBXXXXB series is designed specifically to protect sensitive electronic equipment from voltage transients induced by lightning and other transient voltage events.

## Feature

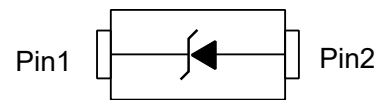
- Total power dissipation: Max. 3W.
- Small plastic package suitable for surface mounted design.
- Wide Zener reverse voltage range 3.3V to 200V

## Mechanical Characteristics

- Case: SMB
- Terminals: Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 0.095g/0.0034oz



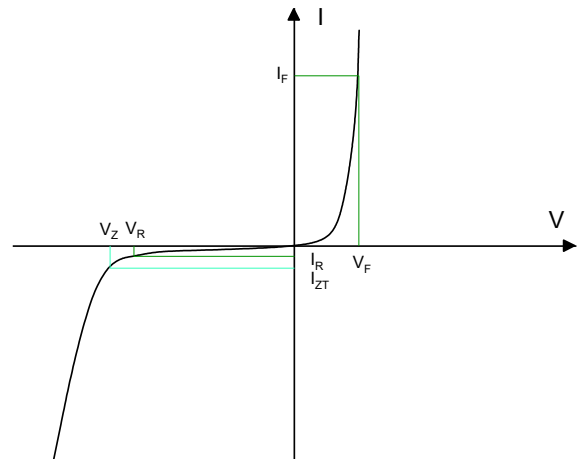
SMB(Top View)



Circuit Diagram

## Electronics Parameter

Symbol	Parameter
$V_Z$	Reverse Zener Voltage @ $I_{ZT}$
$I_{ZT}$	Reverse Current
$Z_{ZT}$	Maximum Zener Impedance @ $I_{ZT}$
$I_{ZK}$	Reverse Current
$Z_{ZK}$	Maximum Zener Impedance @ $I_{ZK}$
$I_R$	Reverse Leakage Current @ $V_R$
$V_R$	Reverse Voltage
$I_F$	Forward Current
$V_F$	Forward Voltage @ $I_F$
$I_{ZM}$	Maximum DC Zener Current



## Absolute maximum rating@25°C

Rating	Symbol	Value	Units
DC power dissipation at $T_L=75^\circ\text{C}$ , measure at zero lead length <sup>1)</sup> Derate Above $75^\circ\text{C}$	$P_D$	3.0	W
		40	mW/ $^\circ\text{C}$
Maximum Steady State Power Dissipation @ $T_A=25^\circ\text{C}$ Derate Above $25^\circ\text{C}$	$P_D$	550	mW
		4.4	mW/ $^\circ\text{C}$
Junction to ambient thermal resistance	$R_{\theta JA}$	226	$^\circ\text{C}/\text{W}$
Junction to lead thermal resistance	$R_{\theta JL}$	25	$^\circ\text{C}/\text{W}$
Junction and Storage Temperature Range	$T_J, T_{STG}$	-55~+150	$^\circ\text{C}$

Note:  
1. Mounted on Cu-Pad size 5mm x 5mm on PCB.

Maximum Ratings and Thermal Characteristics ( $T_A=25^\circ\text{C}$  unless otherwise noted)

Device	Nominal Zener Voltage <sup>3)</sup>			Zener Impedance <sup>4)</sup>			Leakage Current		Maximum DC Zener Current	
	$V_Z$			$I_{ZT}$	$Z_{ZT}@I_{ZT}$	$Z_{ZK}@I_{ZK}$		$I_R@V_R$		
	Min(V)	Nom(V) <sup>2)</sup>	Max(V)	(mA)	( $\Omega$ )	( $\Omega$ )	(mA)	$\mu\text{A}$	V	$I_{ZM}(\text{mA})(\text{DC})$
P1SMB5914B	3.42	3.6	3.78	104.2	9	500	1	75	1	416
P1SMB5915B	3.70	3.9	4.10	96.1	7.5	500	1	25	1	384
P1SMB5916B	4.08	4.3	4.52	87.2	6	500	1	5	1	348
P1SMB5917B	4.46	4.7	4.94	79.8	5	500	1	5	1.5	319
P1SMB5918B	4.84	5.1	5.36	73.5	4	400	1	5	2	294
P1SMB5919B	5.32	5.6	5.88	66.9	2	250	1	5	3	267
P1SMB5920B	5.89	6.2	6.51	60.5	2	200	1	5	4	241
P1SMB5921B	6.46	6.8	7.14	55.1	2.5	200	1	5	5.2	220
P1SMB5922B	7.12	7.5	7.88	50	3	400	0.5	5	6	200
P1SMB5923B	7.79	8.2	8.61	45.7	3.5	400	0.5	5	6.5	182
P1SMB5924B	8.64	9.1	9.56	41.2	4	500	0.5	5	7	164
P1SMB5925B	9.5	10	10.5	37.5	4.5	500	0.25	5	8	150
P1SMB5926B	10.45	11	11.55	34.1	5.5	550	0.25	1	8.4	136
P1SMB5927B	11.4	12	12.6	31.2	6.5	550	0.25	1	9.1	125
P1SMB5928B	12.35	13	13.65	28.8	7	550	0.25	1	9.9	115
P1SMB5929B	14.25	15	15.75	25	9	600	0.25	1	11.4	100
P1SMB5930B	15.2	16	16.8	23.4	10	600	0.25	1	12.2	93
P1SMB5931B	17.1	18	18.9	20.8	12	650	0.25	1	13.7	83
P1SMB5932B	19	20	21	18.7	14	650	0.25	1	15.2	75
P1SMB5933B	20.9	22	23.1	17	17.5	650	0.25	1	16.7	68
P1SMB5934B	22.8	24	25.2	15.6	19	700	0.25	1	18.2	62
P1SMB5935B	25.65	27	28.35	13.9	23	700	0.25	1	20.6	55
P1SMB5936B	28.5	30	31.5	12.5	28	750	0.25	1	22.8	50
P1SMB5937B	31.35	33	34.65	11.4	33	800	0.25	1	25.1	45
P1SMB5938B	34.2	36	37.8	10.4	38	850	0.25	1	27.4	41
P1SMB5939B	37.05	39	40.95	9.6	45	900	0.25	1	29.7	38
P1SMB5940B	40.85	43	45.15	8.7	53	950	0.25	1	32.7	34
P1SMB5941B	44.65	47	49.35	8	67	1000	0.25	1	35.8	31
P1SMB5942B	48.45	51	53.55	7.3	70	1100	0.25	1	38.8	29
P1SMB5943B	53.2	56	58.8	6.7	86	1300	0.25	1	42.6	26
P1SMB5944B	58.9	62	65.1	6	100	1500	0.25	1	47.1	24
P1SMB5945B	64.6	68	71.4	5.5	120	1700	0.25	1	51.7	22
P1SMB5946B	71.25	75	78.75	5	140	2000	0.25	1	56	20
P1SMB5947B	77.9	82	86.1	4.6	160	2500	0.25	1	62.2	18
P1SMB5948B	86.45	91	95.55	4.1	200	3000	0.25	1	69.2	16

Device	Nominal Zener Voltage <sup>3)</sup>			Zener Impedance <sup>4)</sup>			Leakage Current		Maximum DC Zener Current	
	$V_Z$			$I_{ZT}$	$Z_{ZT}@I_{ZT}$	$Z_{ZK}@I_{ZK}$		$I_R@V_R$		$I_{ZM}(\text{mA})(\text{DC})$
	Min(V)	Nom(V) <sup>2)</sup>	Max(V)	(mA)	( $\Omega$ )	( $\Omega$ )	(mA)	$\mu\text{A}$	V	
P1SMB5949B	95	100	105	3.7	250	3100	0.25	1	76	15
P1SMB5950B	104.5	110	115.5	3.4	300	4000	0.25	1	83.6	13
P1SMB5951B	114	120	126	3.1	380	4500	0.25	1	91.2	12
P1SMB5952B	123.5	130	136.5	2.9	450	5000	0.25	1	98.8	11
P1SMB5953B	142.5	150	157.5	2.5	600	6000	0.25	1	114	10
P1SMB5954B	152	160	168	2.3	700	6500	0.25	1	121.6	9
P1SMB5955B	171	180	189	2.1	900	7000	0.25	1	136.8	8
P1SMB5956B	190	200	210	1.9	1200	8000	0.25	1	152	7

Notes:

2. Tolerance and type number designation the type numbers listed indicate a tolerance of 5%.

3. Zener voltage ( $V_Z$ ) measurement.

Nominal Zener voltage is measured with the device junction in thermal equilibrium with ambient temperature 25°C.

4. Zener impedance ( $Z_Z$ ) derivation:  $Z_{ZT}$  and  $Z_{ZK}$  are measures by dividing the AC voltage drop across the device by the AC current applied. The specified limits are for  $I_{Z(AC)}=0.1 I_{Z(DC)}$  with the AC frequency =60HZ

## Typical Characteristics

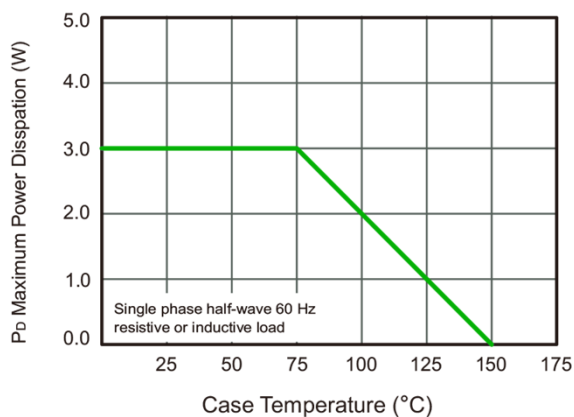


Fig.1 Forward Current Derating Curve

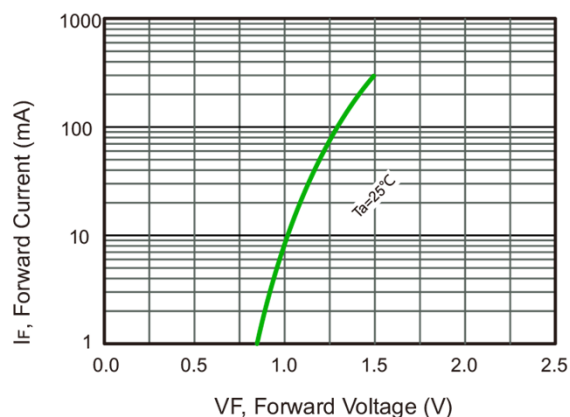


Fig.2 Typical Forward Voltage

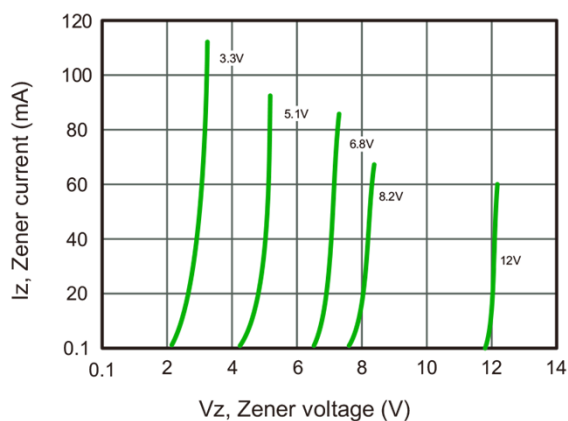


Fig.3  $V_Z = 3.3$  THRU 12 VOLTS

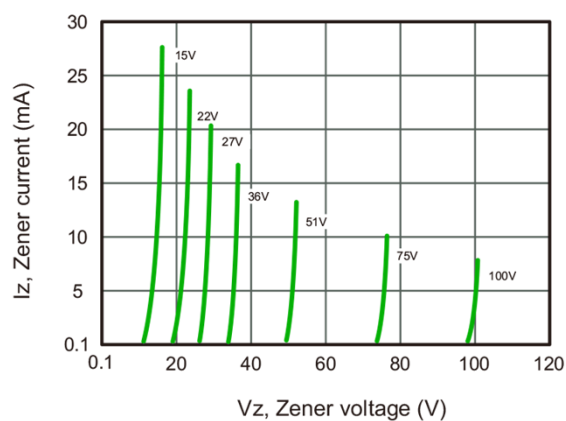
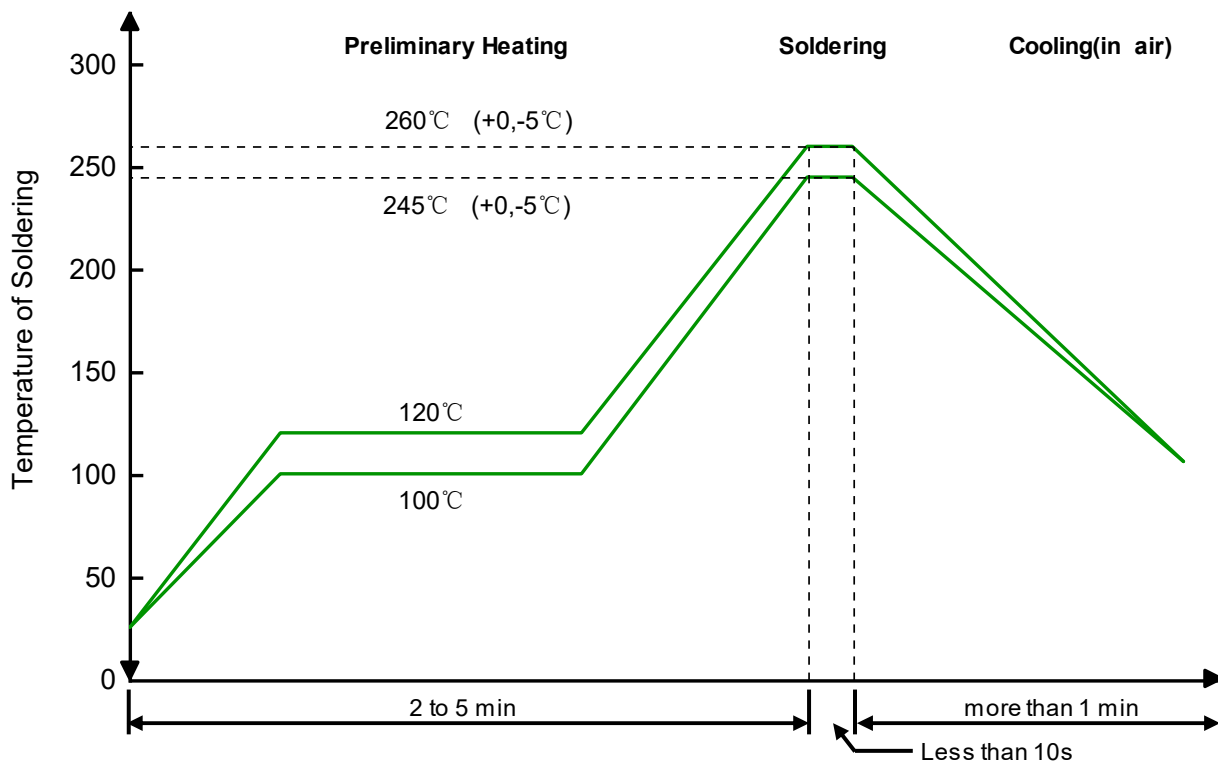


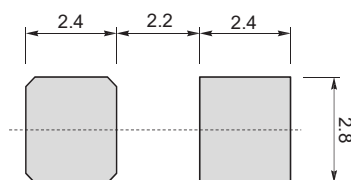
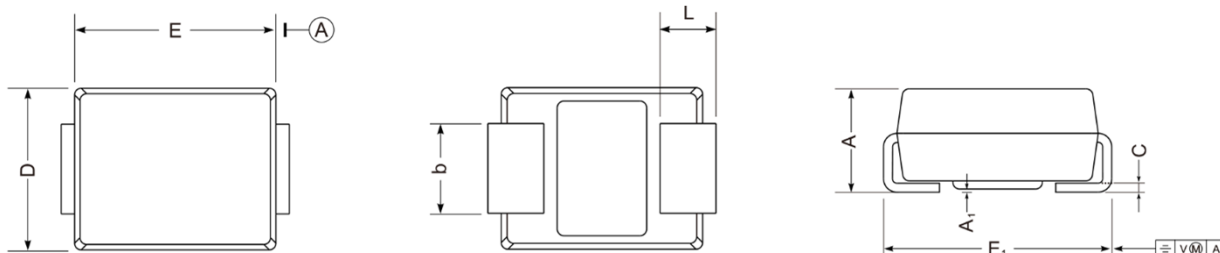
Fig.4  $V_Z = 15$  THRU 100 VOLTS

## Solder Reflow Recommendation



Remark: Pb free for 260°C; Pb for 245°C.

## Product dimension (SMB)



Suggested PCB Layout


Unit:mm

Dim	Millimeters		Inches	
	Min	Max	Min	Max
A	2.13	2.44	0.084	0.096
E	4.06	4.70	0.160	0.185
D	3.30	3.94	0.130	0.155
E <sub>1</sub>	5.08	5.59	0.200	0.220
A <sub>1</sub>	0.05	0.20	0.002	0.008
L	0.80	1.50	0.031	0.059
C	0.152	0.305	0.006	0.012
b	1.90	2.20	0.075	0.087

**Ordering information**

<b>Device</b>	<b>Package</b>	<b>Shipping</b>
P1SMBXXXXB Series	SMB (Pb-Free)	3000 / Tape & Reel


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