



**SMBG Plastic-Encapsulate Diodes**

**Feature**

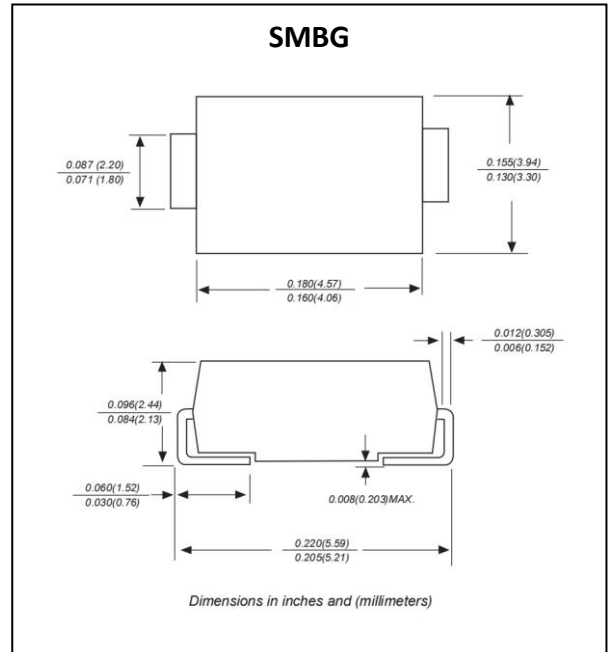
- Pd 3.0W
- Vz 3.3V-200V

**Application**

- Stabilizing Voltage

**Marking**

- **1SMB59XXB or 9XXB \*\*\*\***  
**XX: From 13 To 56**  
**\*\*\*\*:Date Code**



**Limiting Values (Absolute Maximum Rating)**

Item	Symbol	Conditions	Max	Unit
Power dissipation	P <sub>d</sub>	T <sub>L</sub> =75°C	3.0	W
Zener current	I <sub>z</sub>		P <sub>v</sub> / V <sub>z</sub>	mA
Maximum junction temperature	T <sub>j</sub>		-55 ~ +150	°C
Storage temperature range	T <sub>stg</sub>		-55 ~ +150	°C
Forward voltage	V <sub>F</sub>	I <sub>F</sub> =200mA	1.5	V
Thermal resistance	R <sub>θJA</sub>	Between junction to ambient	226	°C/W
	R <sub>θJL</sub>	Between junction to lead	25	

## Electrical Characteristics (TA=25°C unless otherwise noted)

Part Number <sup>(1)</sup>	Zener Voltage <sup>(2)</sup>			Zener Impedance <sup>(3)</sup>			Leakage Current		I <sub>ZM</sub> (mA)	
	V <sub>Z</sub> (V)			@I <sub>ZT</sub>	Z <sub>ZT</sub> @ I <sub>ZT</sub>	Z <sub>ZK</sub> @ I <sub>ZK</sub>	I <sub>ZK</sub>	I <sub>R</sub> @ V <sub>R</sub>		
	Min	Nom	Max	(mA)	(Ω)	(Ω)	(mA)	(μA)		(V)
1SMB5913B	3.13	3.3	3.47	113.6	10	500	1	100	1	454
1SMB5914B	3.42	3.6	3.78	104.2	9	500	1	75	1	416
1SMB5915B	3.70	3.9	4.10	96.1	7.5	500	1	25	1	384
1SMB5916B	4.08	4.3	4.52	87.2	6	500	1	5	1	348
1SMB5917B	4.46	4.7	4.94	79.8	5	500	1	5	1.5	319
1SMB5918B	4.84	5.1	5.36	73.5	4	350	1	5	2	294
1SMB5919B	5.32	5.6	5.88	66.9	2	250	1	5	3	267
1SMB5920B	5.89	6.2	6.51	60.5	2	200	1	5	4	241
1SMB5921B	6.46	6.8	7.14	55.1	2.5	200	1	5	5.2	220
1SMB5922B	7.12	7.5	7.88	50	3	400	0.5	5	6	200
1SMB5923B	7.79	8.2	8.61	45.7	3.5	400	0.5	5	6.5	182
1SMB5924B	8.64	9.1	9.56	41.2	4	500	0.5	5	7	164
1SMB5925B	9.5	10	10.5	37.5	4.5	500	0.25	5	8	150
1SMB5926B	10.45	11	11.55	34.1	5.5	550	0.25	1	8.4	136
1SMB5927B	11.4	12	12.6	31.2	6.5	550	0.25	1	9.1	125
1SMB5928B	12.35	13	13.65	28.8	7	550	0.25	1	9.9	115
1SMB5929B	14.25	15	15.75	25	9	600	0.25	1	11.4	100
1SMB5930B	15.2	16	16.8	23.4	10	600	0.25	1	12.2	93
1SMB5931B	17.1	18	18.9	20.8	12	650	0.25	1	13.7	83
1SMB5932B	19	20	21	18.7	14	650	0.25	1	15.2	75
1SMB5933B	20.9	22	23.1	17	17.5	650	0.25	1	16.7	68
1SMB5934B	22.8	24	25.2	15.6	19	700	0.25	1	18.2	62
1SMB5935B	25.65	27	28.35	13.9	23	700	0.25	1	20.6	55
1SMB5936B	28.5	30	31.5	12.5	28	750	0.25	1	22.8	50
1SMB5937B	31.35	33	34.65	11.4	33	800	0.25	1	25.1	45
1SMB5938B	34.2	36	37.8	10.4	38	850	0.25	1	27.4	41
1SMB5939B	37.05	39	40.95	9.6	45	900	0.25	1	29.7	38
1SMB5940B	40.85	43	45.15	8.7	53	950	0.25	1	32.7	34
1SMB5941B	44.65	47	49.35	8	67	1000	0.25	1	35.8	31
1SMB5942B	48.45	51	53.55	7.3	70	1100	0.25	1	38.8	29
1SMB5943B	53.2	56	58.8	6.7	86	1300	0.25	1	42.6	26
1SMB5944B	58.9	62	65.1	6	100	1500	0.25	1	47.1	24
1SMB5945B	64.6	68	71.4	5.5	120	1700	0.25	1	51.7	22
1SMB5946B	71.25	75	78.75	5	140	2000	0.25	1	56	20
1SMB5947B	77.9	82	86.1	4.6	160	2500	0.25	1	62.2	18

## Electrical Characteristics (TA=25°C unless otherwise noted)

Part Number <sup>(1)</sup>	Zener Voltage <sup>(2)</sup>			Zener Impedance <sup>(3)</sup>				Leakage Current		I <sub>ZM</sub> (mA)
	V <sub>Z</sub> (V)			@I <sub>ZT</sub>	Z <sub>ZT</sub> @ I <sub>ZT</sub>	Z <sub>ZK</sub> @ I <sub>ZK</sub>	I <sub>ZK</sub>	I <sub>R</sub> @ V <sub>R</sub>		
	Min	Nom	Max	(mA)	(Ω)	(Ω)	(mA)	(uA)	(V)	
1SMB5948B	86.45	91	95.55	4.1	200	3000	0.25	1	69.2	16
1SMB5949B	95	100	105	3.7	250	3100	0.25	1	76	15
1SMB5950B	104.5	110	115.5	3.4	300	4000	0.25	1	83.6	13
1SMB5951B	114	120	126	3.1	380	4500	0.25	1	91.2	12
1SMB5952B	123.5	130	136.5	2.9	450	5000	0.25	1	98.8	11
1SMB5953B	142.5	150	157.5	2.5	600	6000	0.25	1	114	10
1SMB5954B	152	160	168	2.3	700	6500	0.25	1	121.6	9
1SMB5955B	171	180	189	2.1	900	7000	0.25	1	136.8	8
1SMB5956B	190	200	210	1.9	1200	8000	0.25	1	152	7

### Notes :

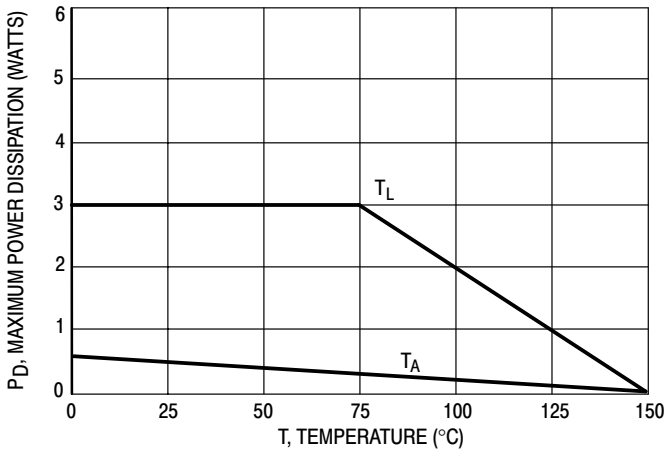
(1) Tolerance and type number designation the type numbers listed indicate a tolerance of ±5%.

(2) Zener voltage (V<sub>Z</sub>) measurement:

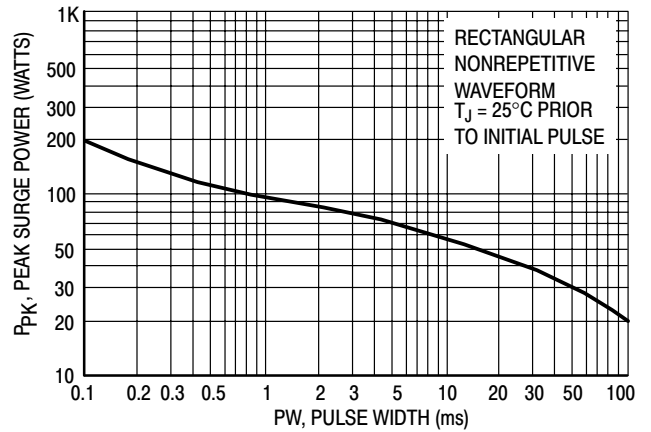
Nominal zener voltage is measured with the device junction in thermal equilibrium with ambient temperature at 25°C.

(3) Zener impedance (Z<sub>Z</sub>) derivation Z<sub>ZT</sub> and Z<sub>ZK</sub> are measured by dividing the ac voltage drop across the device by the ac current applied. The specified limits are for I<sub>Z(ac)</sub> = 0.1 I<sub>Z(dc)</sub> with the ac frequency = 60 Hz.

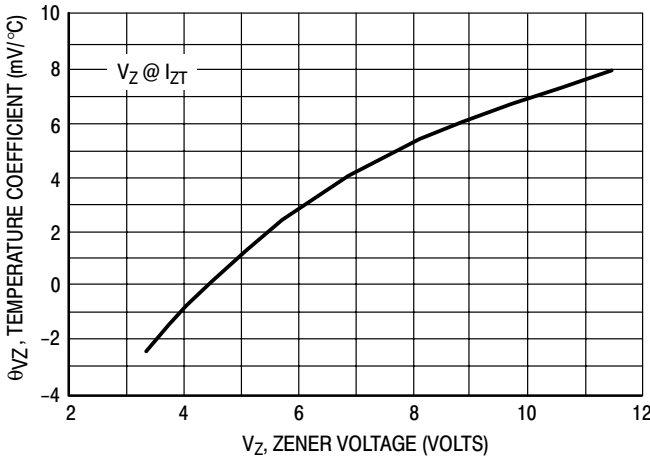
**Typical Characteristics**



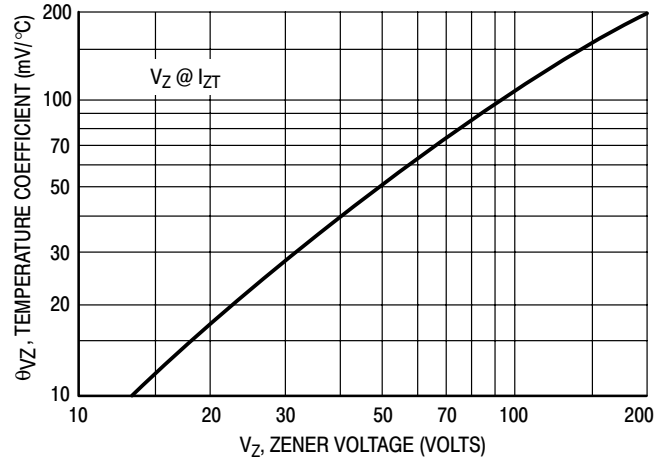
**Figure 1. Steady State Power Derating**



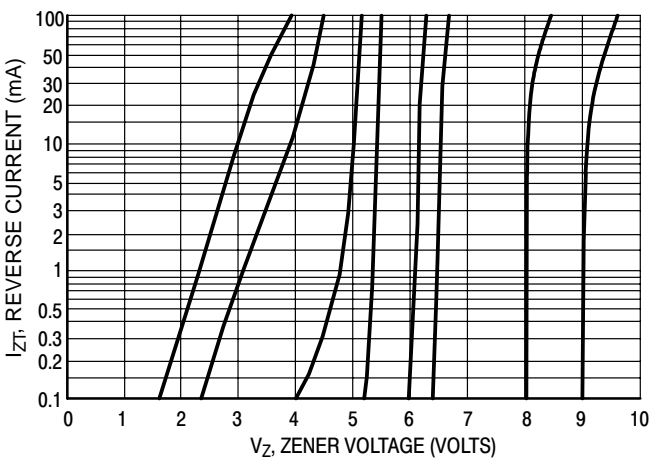
**Figure 2. Maximum Surge Power**



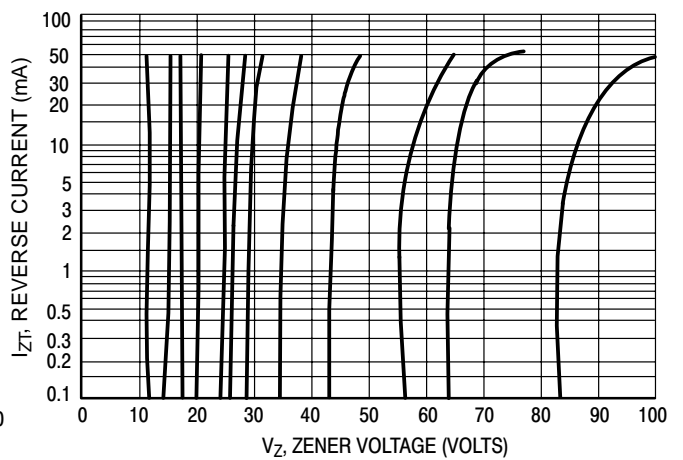
**Figure 3. Zener Voltage - To 12 Volts**



**Figure 4. Zener Voltage - 14 To 200 Volts**



**Figure 5.  $V_Z = 3.3$  thru 10 Volts**



**Figure 6.  $V_Z = 12$  thru 82 Volts**