3.0W SURFACE MOUNT POWER ZENER DIODE

NEW PRODUCT

Features

- 3.0W Power Dissipation
- Ideally Suited for Automated Assembly
- 6.2V - 39V Nominal Zener Voltage Range
- Standard V_Z Tolerance is ± 5%
- ESD Rating of Class 3 (>16kV) per Human Body Model
- **Lead Free Finish/RoHS Compliant (Note 1)**
- **Green Molding Compound (No Halogen and Antimony)**

Mechanical Data

- Case: SMB
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Lead Free Plating (Matte Tin Finish). Solderable per MIL-STD-202, Method 208
- Polarity: Cathode Band
- Weight: 0.096 grams (approximate)

Top View Bottom View

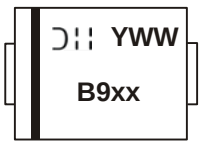
Ordering Information (Note 2)

Device*	Packaging	Shipping
1SMB59xxB-13	SMB	3000/Tape & Reel

*x = Device Voltage, e.g., 1SMB5920B-13.

Notes: 1. EU Directive 2002/95/EC (RoHS). All applicable RoHS exemptions applied, see EU Directive 2002/95/EC Annex Notes.
2. For packaging details, go to our website at http://www.diodes.com.

Marking Information



B9xx = Product type marking code
(See Electric Characteristics Table)
= Manufacturers' code marking
YWW = Date code marking
Y = Last digit of year (ex: 1 for 2011)
WW = Week code (01 - 53)

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Maximum Ratings @T_A = 25℃ unless otherwise specified

Characteristic	Symbol	Value	Unit
Forward Voltage @I_F = 200mA	V_F	1.5	V
Zener Current (see Table page 2)	I_{ZM}	P_D / V_Z	mA

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation @T_L = 75℃ Derate Above 75℃ (Note 2)	P_D	3.0 40	W mW/℃
Thermal Resistance - Junction to Terminal (Note 2)	$R_{\theta JT}$	25	℃/W
Power Dissipation @T_A = 25℃ Derate Above 25℃ (Note 2)	P_D	550 4.4	mW mW/℃
Thermal Resistance - Junction to Ambient (Note 2)	$R_{\theta JA}$	228	℃/W
Operating and Storage Temperature Range	T_J, T_{STG}	-65 to +150	℃

Electrical Characteristics @T_A = 25℃ unless otherwise specified

Type Number	Marking Code	Zener Voltage Range (Note 4)			Test Current	Maximum Zener Impedance (Note 5)			Maximum Reverse Current (Note 4)		$I_{ZM\ Max}$
		$V_{Z\ @}\ I_{ZT}$			I_{ZT}	$Z_{ZT\ @}\ I_{ZT}$	$Z_{ZK\ @}\ I_{ZK}$		$I_{R\ @}\ V_R$		
		Min (V)	Typ (V)	Max (V)	mA	Ω	Ω	mA	μA	V	mA
1SMB5920B	B920	5.89	6.2	6.51	60.5	2	200	1	5	4	241
1SMB5921B	B921	6.46	6.8	7.14	55.1	2.5	200	1	5	5.2	220
1SMB5922B	B922	7.12	7.5	7.88	50	3	400	0.5	5	6	200
1SMB5923B	B923	7.79	8.2	8.61	45.7	3.5	400	0.5	5	6.5	182
1SMB5924B	B924	8.64	9.1	9.56	41.2	4	500	0.5	5	7	164
1SMB5925B	B925	9.5	10	10.5	37.5	4.5	500	0.25	5	8	150
1SMB5926B	B926	10.45	11	11.55	34.1	5.5	550	0.25	1	8.4	136
1SMB5927B	B927	11.4	12	12.6	31.2	6.5	550	0.25	1	9.1	125
1SMB5928B	B928	12.35	13	13.65	28.8	7	550	0.25	1	9.9	115
1SMB5929B	B929	14.25	15	15.75	25	9	600	0.25	1	11.4	100
1SMB5930B	B930	15.2	16	16.8	23.4	10	600	0.25	1	12.2	93
1SMB5931B	B931	17.1	18	18.9	20.8	12	650	0.25	1	13.7	83
1SMB5932B	B932	19	20	21	18.7	14	650	0.25	1	15.2	75
1SMB5933B	B933	20.9	22	23.1	17	17.5	650	0.25	1	16.7	68
1SMB5934B	B934	22.8	24	25.2	15.6	19	700	0.25	1	18.2	62
1SMB5935B	B935	25.65	27	28.35	13.9	23	700	0.25	1	20.6	55
1SMB5936B	B936	28.5	30	31.5	12.5	28	750	0.25	1	22.8	50
1SMB5937B	B937	31.35	33	34.65	11.4	33	800	0.25	1	25.1	45
1SMB5938B	B938	34.2	36	37.8	10.4	38	850	0.25	1	27.4	41
1SMB5939B	B939	37.05	39	40.95	9.6	45	900	0.25	1	29.7	38

Notes:
3. Device mounted on FR-4 PCB; pad layout as shown on Diodes Inc. suggested pad layout document AP02001, which can be found on our website at http://www.diodes.com.
4. Short duration pulse test used to minimize self-heating effect.
5. ZENER IMPEDANCE (Z_Z) DERIVATION Z_{ZT} and Z_{ZK} are measured 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 = 60 Hz.

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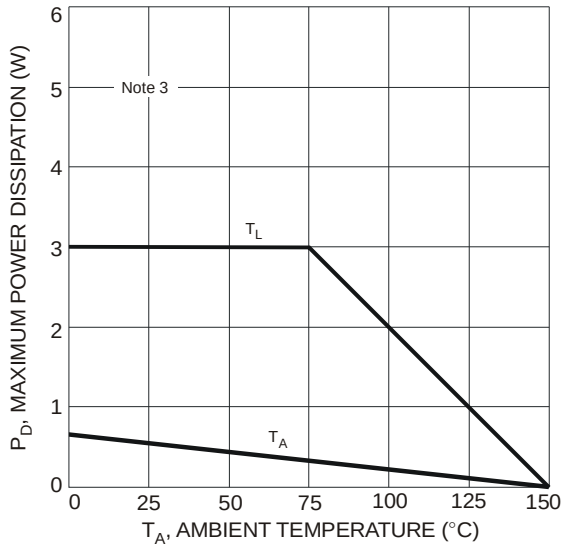

Fig. 1 Power Dissipation vs. Ambient Temperature

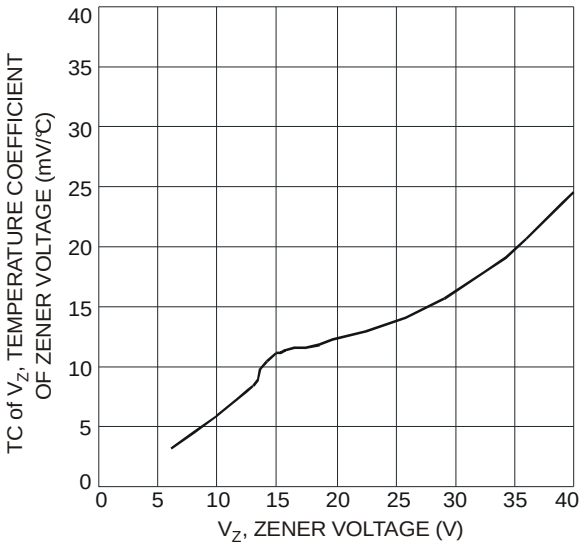

Fig. 2 Typical Temperature Coefficient of Zener Voltage vs. Zener Voltage

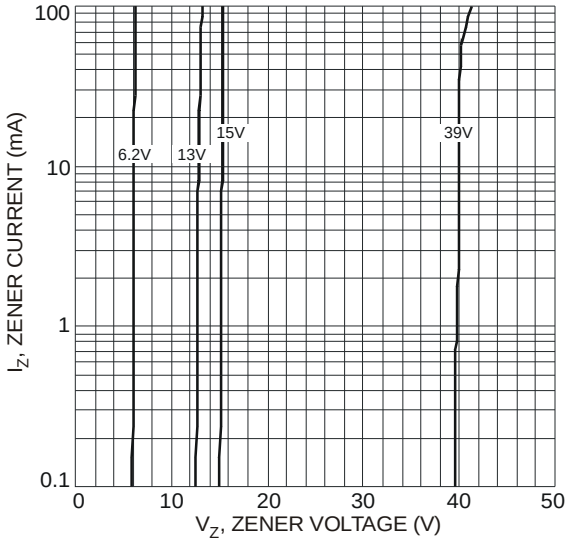

Fig. 3 Typical Zener Breakdown Characteristics

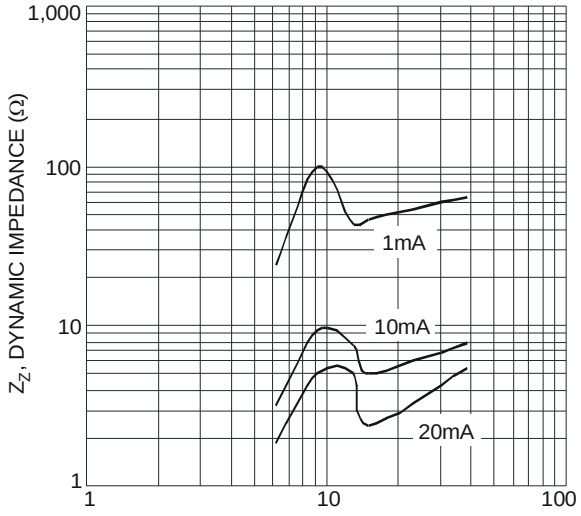

Fig. 4 Effect of Zener Voltage

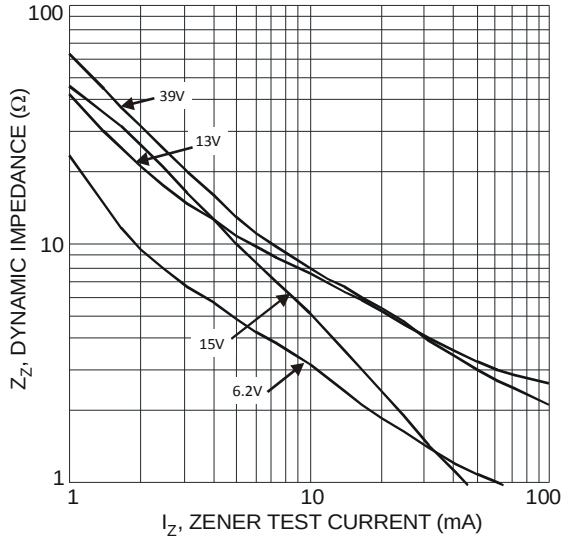

Fig. 5 Effect of Zener Current

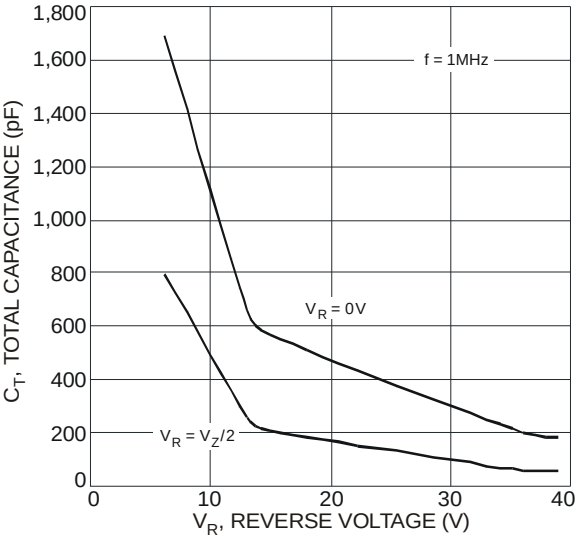

Fig. 6 Typical Total Capacitance vs. Reverse Voltage

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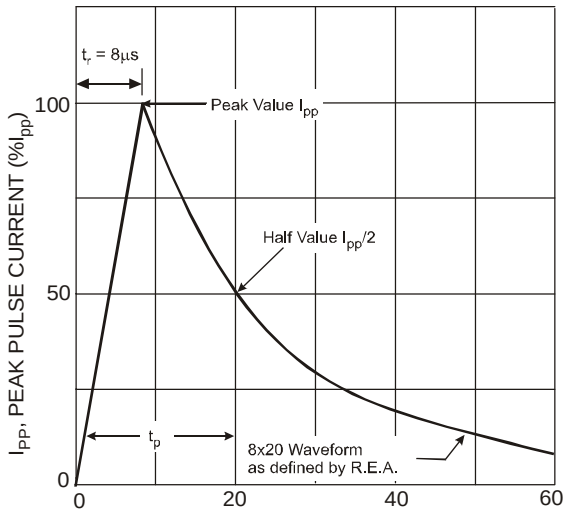


Fig. 7 Pulse Waveform

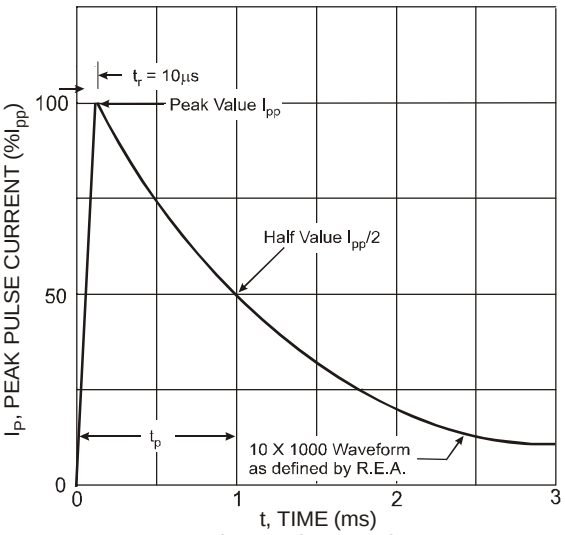


Fig. 8 Pulse Waveform

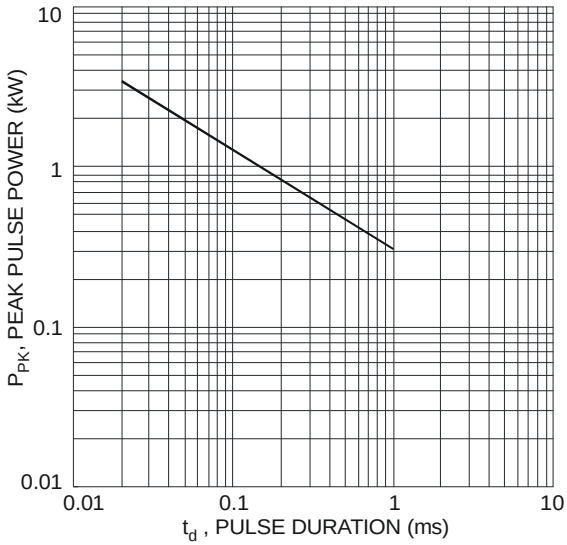
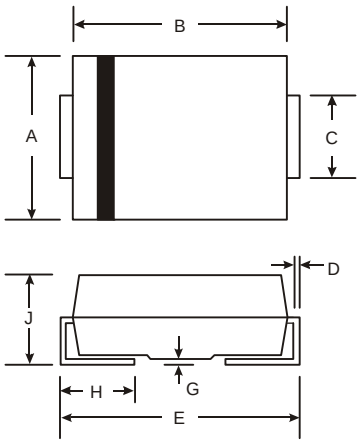


Fig. 9 Max. Peak Pulse Power vs. Pulse Duration

Package Outline Dimensions



SMB		
Dim	**Min**	**Max**
A	3.30	3.94
B	4.06	4.57
C	1.96	2.21
D	0.15	0.31
E	5.00	5.59
G	0.05	0.20
H	0.76	1.52
J	2.00	2.50
All Dimensions in mm		

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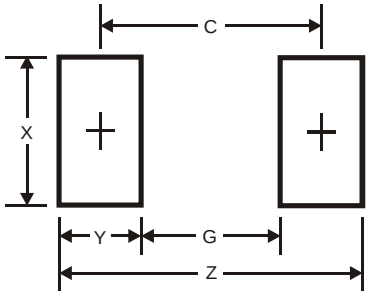
Suggested Pad Layout



Dimensions	Value (in mm)
Z	6.8
G	1.8
X	2.3
Y	2.5
C	4.3