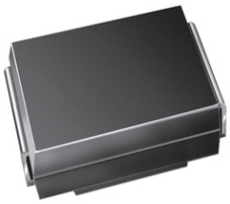
Surface-Mount Power Voltage-Regulating Diodes



SMB (DO-214AA)

FEATURES

- Low profile package
- Ideal for automated placement
- Low Zener impedance
- Low regulation factor
- Meets MSL level 1, per J-STD-020, if maximum peak of 260 °C
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

RoHS COMPLIANT
HALOGEN FREE

LINKS TO ADDITIONAL RESOURCES

3D Models

TYPICAL APPLICATIONS

For general purpose regulation and protection applications

MECHANICAL DATA

Case: SMB (DO-214AA)

Molding compound meets UL 94 V-0 flammability rating
Base P/N-E3 - RoHS-compliant, and commercial grade
Base P/N-M3 - halogen-free, RoHS-compliant, and commercial grade

Terminals: matte tin plated leads, solderable per J-STD-002 and JESD22-B102
E3 and M3 suffix meet JESD 201 class 2 whisker test

Polarity: color band denotes cathode end

PRIMARY CHARACTERISTICS	
V_Z	5.6 V to 68 V
P_{tot} at T_L = 75 °C	3000 mW
P_{tot} at T_A = 25 °C	550 mW
T_J max.	150 °C
V_Z specification	Pulse current
Circuit configuration	Single

MAXIMUM RATINGS (T_A = 25 °C, unless otherwise noted)

PARAMETER	SYMBOL	VALUE	UNIT
Maximum steady state power dissipation at T_L = 75 °C (fig. 1)	P_{tot}	3000	mW
Maximum steady state power dissipation at T_A = 25 °C (fig. 1)	P_{tot} (1)	550	
Maximum instantaneous forward voltage at 200 mA for all types	V_F (2)	1.5	V
Operating junction and storage temperature range	T_J, T_{STG}	-55 to +150	°C

Notes

(1) Mounted on minimum recommended pad layout
(2) Pulse test: 300 µs pulse width, 1 % duty cycle

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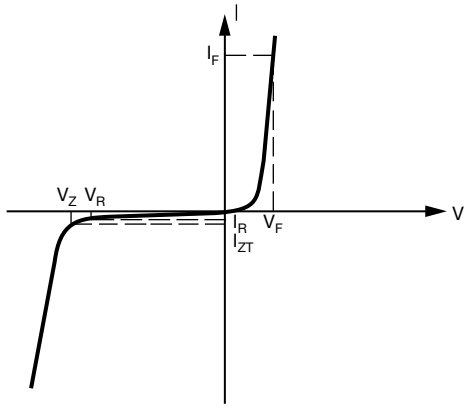
ELECTRICAL CHARACTERISTICS	
SYMBOL	**PARAMETER**
V_Z	Reverse Zener voltage at I_{ZT}
I_{ZT}	Reverse current
Z_{ZT}	Maximum Zener impedance at I_{ZT}
I_{ZK}	Reverse current
Z_{ZK}	Maximum Zener impedance at I_{ZK}
I_R	Reverse leakage current at V_R
V_R	Reverse voltage
I_F	Forward current
V_F	Forward voltage at I_F
I_{ZM}	Maximum DC Zener current



Zener Voltage Regulator

ELECTRICAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)

PART NUMBER	DEVICE MARKING CODE	ZENER VOLTAGE RANGE			TEST CURRENT		MAXIMUM ZENER IMPEDANCE		REVERSE LEAKAGE CURRENT		MAXIMUM ZENER CURRENT
		V_Z AT I_{ZT}			I_{ZT}	I_{ZK}	Z_{ZT} AT I_{ZT}	Z_{ZK} AT I_{ZK}	I_R AT V_R		I_{ZM}
		V			mA		Ω		μA	V	mA
		MIN.	NOM.	MAX.			MAX.	MAX.	MAX.		MAX.
SMBZ5919B	19B	5.32	5.6	5.88	66.9	1	5	700	200	3	267
SMBZ5920B	20B	5.89	6.2	6.51	60.5	1	2	700	200	4	241
SMBZ5921B	21B	6.46	6.8	7.14	55.1	1	2.5	400	200	5.2	220
SMBZ5924B	24B	8.64	9.1	9.56	41.2	0.5	4.0	1000	25	7.0	164
SMBZ5925B	25B	9.5	10	10.5	37.5	0.25	4.5	1000	25	8.0	150
SMBZ5926B	26B	10.5	11	11.6	34.1	0.25	5.5	550	5	8.4	136
SMBZ5927B	27B	11.4	12	12.6	31.2	0.25	6.5	550	1	9.1	125
SMBZ5928B	28B	12.4	13	13.7	28.8	0.25	7.0	550	1	9.9	115
SMBZ5929B	29B	14.3	15	15.8	25.0	0.25	9.0	600	1	11.4	100
SMBZ5930B	30B	15.2	16	16.8	23.4	0.25	10.0	600	1	12.2	93
SMBZ5931B	31B	17.1	18	18.9	20.8	0.25	12.0	650	1	13.7	83
SMBZ5932B	32B	19.0	20	21.0	18.7	0.25	14.0	650	1	15.2	75
SMBZ5933B	33B	20.9	22	23.1	17.0	0.25	17.5	650	1	16.7	68
SMBZ5934B	34B	22.8	24	25.2	15.6	0.25	19.0	700	1	18.2	62
SMBZ5935B	35B	25.7	27	28.4	13.9	0.25	23.0	700	1	20.6	55
SMBZ5936B	36B	28.5	30	31.5	12.5	0.25	28.0	750	1	22.8	50
SMBZ5937B	37B	31.4	33	34.7	11.4	0.25	33.0	800	1	25.1	45
SMBZ5938B	38B	34.2	36	37.8	10.4	0.25	38.0	850	1	27.4	41
SMBZ5939B	39B	37.1	39	41.0	9.6	0.25	45.0	900	1	29.7	38
SMBZ5940B	40B	40.9	43	45.2	8.7	0.25	53.0	950	1	32.7	34
SMBZ5941B	41B	44.6	47	49.4	8.0	0.25	67	1000	1	35.8	31
SMBZ5942B	42B	48.4	51	53.6	7.3	0.25	70	1100	1	38.8	29
SMBZ5943B	43B	53.2	56	58.8	6.7	0.25	86	1300	1	42.6	26
SMBZ5944B	44B	58.9	62	65.1	6.0	0.25	100	1500	1	47.1	24
SMBZ5945B	45B	64.6	68	71.4	5.5	0.25	120	1700	1	51.7	22

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THERMAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)			
PARAMETER	**SYMBOL**	**VALUE**	**UNIT**
Typical thermal resistance, junction to lead	$R_{\theta JL}$	25	°C/W
Typical thermal resistance, junction to ambient	$R_{\theta JA}$ (1)	226	°C/W

Note

(1) Mounted on minimum recommended pad layout

ORDERING INFORMATION (Example)				
PREFERRED P/N	**UNIT WEIGHT (g)**	**PREFERRED PACKAGE CODE**	**BASE QUANTITY**	**DELIVERY MODE**
SMBZ5935B-E3/52	0.106	52	750	7" diameter plastic tape and reel
SMBZ5935B-E3/5B	0.106	5B	3200	13" diameter plastic tape and reel
SMBZ5935B-M3/52	0.106	52	750	7" diameter plastic tape and reel
SMBZ5935B-M3/5B	0.106	5B	3200	13" diameter plastic tape and reel

RATINGS AND CHARACTERISTICS CURVES (T_A = 25 °C unless otherwise noted)

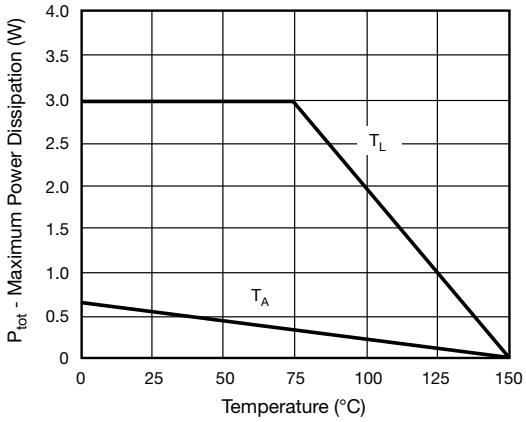

Fig. 1 - Steady State Power Durating

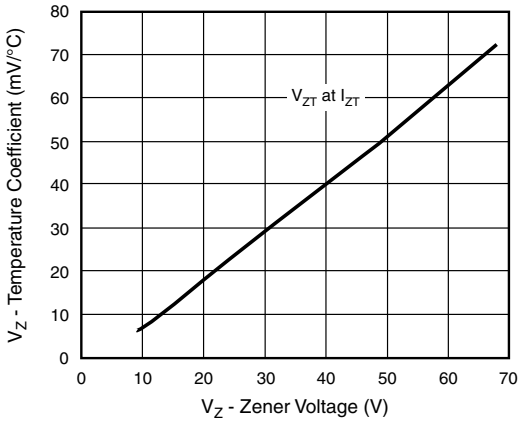

Fig. 3 - Typical Temperature Coefficients

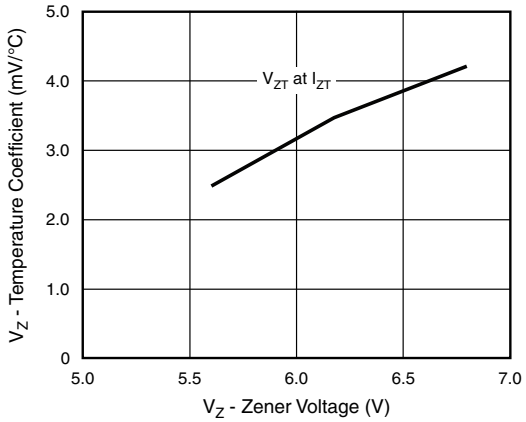

Fig. 2 - Typical Temperature Coefficients

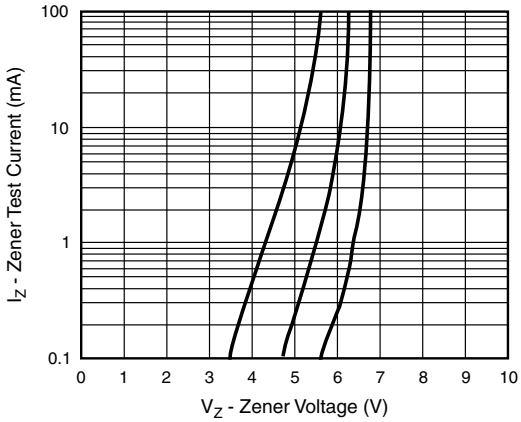

Fig. 4 - Typical Zener Voltage

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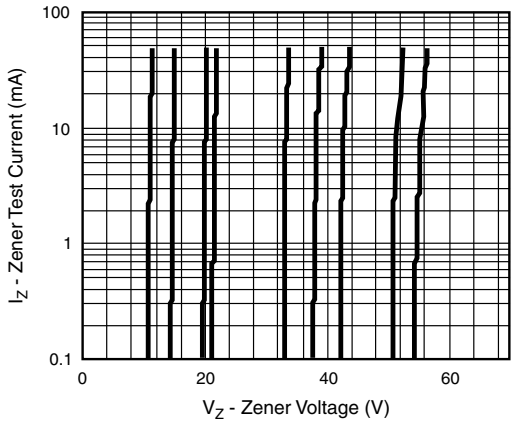


Fig. 5 - Typical Zener Voltage

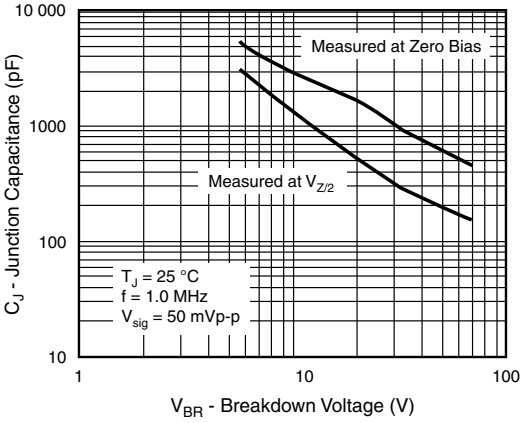


Fig. 7 - Typical Junction Capacitance

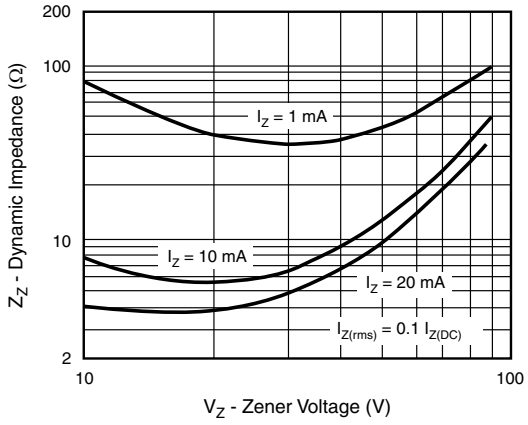
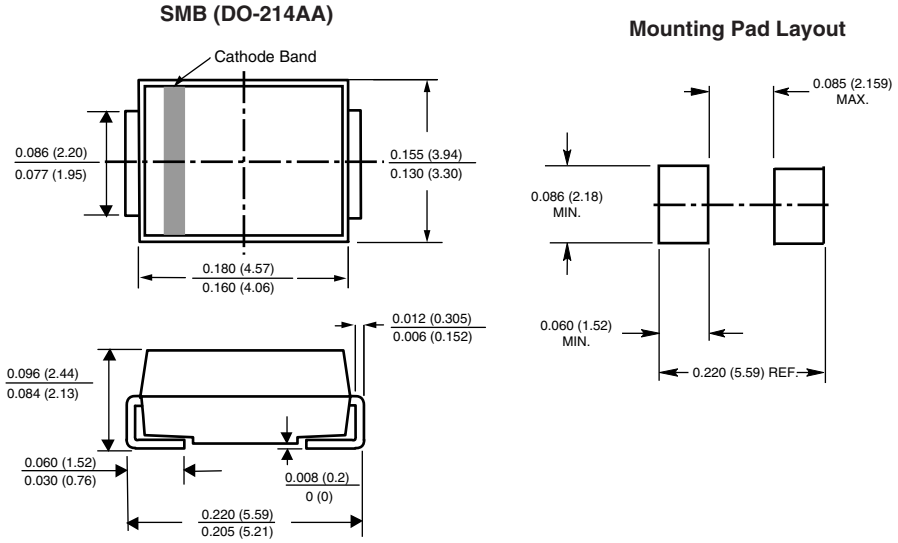


Fig. 6 - Typical Zener Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)



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