Surface Mount Power Voltage-Regulating Diodes



SMA (DO-214AC)

DESIGN SUPPORT TOOLS AVAILABLE

3D Models

PRIMARY CHARACTERISTICS	
V_Z	5.6 V to 68 V
P_{tot} at T_L = 75 °C	1500 mW
P_{tot} at T_A = 25 °C	500 mW
T_J max.	150 °C
V_Z specification	Pulse current
Circuit configuration	Single

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

TYPICAL APPLICATIONS

For general purpose regulation and protection applications.

MECHANICAL DATA

Case: SMA (DO-214AC)

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

Terminals: matte tin plated leads, solderable per J-STD-002 and JESD22-B102
M3 suffix meets JESD 201 class 1A whisker test

Polarity: color band denotes cathode end

MAXIMUM RATINGS (T_A = 25 °C, unless otherwise noted)			
PARAMETER	**SYMBOL**	**VALUE**	**UNIT**
Power dissipation at T_L = 75 °C (fig. 1)	P_{tot} (1)	1500	mW
Power dissipation at T_A = 25 °C (fig. 1)	P_{tot} (2)	500	
Maximum instantaneous forward voltage at 200 mA for all types	V_F (3)	1.5	V
Operating junction and storage temperature range	T_J, T_{STG}	- 65 to + 150	°C

Notes

(1) Mounted on PCB with 5.0 mm x 5.0 mm copper pads attached to each terminal
(2) Mounted on minimum recommended pad layout
(3) Pulse test: 300 µs pulse width, 1 % duty cycle

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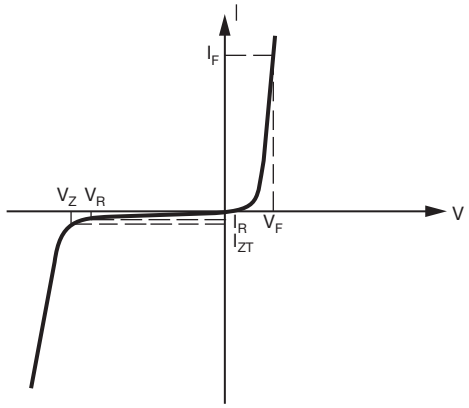
ELECTRICAL CHARACTERISTICS	
SYMBOL	**PARAMETER**
V_Z	Reverse Zener voltage at I_{ZT}
I_{ZT}	Reverse current
Z_{ZT}	Maximum Zener impedance at I_{ZT}
I_{ZK}	Reverse current
Z_{ZK}	Maximum Zener impedance at I_{ZK}
I_R	Reverse leakage current at V_R
V_R	Reverse voltage
I_F	Forward current
V_F	Forward voltage 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.
SMAZ5919B	19B	5.32	5.6	5.88	66.9	1	5	700	200	3	268
SMAZ5920B	20B	5.89	6.2	6.51	60.5	1	2	700	200	4	242
SMAZ5921B	21B	6.46	6.8	7.14	55.1	1	2.5	400	200	5.2	221
SMAZ5923B	23B	7.79	8.2	8.61	45.7	0.5	5.0	700	10	6.5	183
SMAZ5924B	24B	8.64	9.1	9.56	41.2	0.5	5.0	700	10	7.0	165
SMAZ5925B	25B	9.5	10	10.5	37.5	0.25	5.0	700	10	8.0	150
SMAZ5926B	26B	10.5	11	11.6	34.1	0.25	5.5	550	5	8.4	136
SMAZ5927B	27B	11.4	12	12.6	31.2	0.25	6.5	550	1	9.1	125
SMAZ5928B	28B	12.4	13	13.7	28.8	0.25	7.0	550	1	9.9	115
SMAZ5929B	29B	14.3	15	15.8	25.0	0.25	9.0	600	1	11.4	100
SMAZ5930B	30B	15.2	16	16.8	23.4	0.25	10.0	600	1	12.2	94
SMAZ5931B	31B	17.1	18	18.9	20.8	0.25	12.0	650	1	13.7	83
SMAZ5932B	32B	19.0	20	21.0	18.7	0.25	14.0	650	1	15.2	75
SMAZ5933B	33B	20.9	22	23.1	17.0	0.25	17.5	650	1	16.7	68
SMAZ5934B	34B	22.8	24	25.2	15.6	0.25	19.0	700	1	18.2	62
SMAZ5935B	35B	25.7	27	28.4	13.9	0.25	23.0	700	1	20.6	56
SMAZ5936B	36B	28.5	30	31.5	12.5	0.25	28.0	750	1	22.8	50
SMAZ5937B	37B	31.4	33	34.7	11.4	0.25	33.0	800	1	25.1	45
SMAZ5938B	38B	34.2	36	37.8	10.4	0.25	38.0	850	1	27.4	42
SMAZ5939B	39B	37.1	39	41.0	9.6	0.25	45.0	900	1	29.7	38
SMAZ5940B	40B	40.9	43	45.2	8.7	0.25	53.0	950	1	32.7	35
SMAZ5941B	41B	44.65	47	49.35	8.0	0.25	67	1000	1	35.8	32
SMAZ5942B	42B	48.45	51	53.55	7.3	0.25	70	1100	1	38.8	29
SMAZ5943B	43B	53.2	56	58.8	6.7	0.25	86	1300	1	42.6	27
SMAZ5944B	44B	58.9	62	65.1	6.0	0.25	100	1500	1	47.1	24
SMAZ5945B	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	$R_{\theta JL}$ (1)	50	°C/W
Typical thermal resistance, junction to ambient	$R_{\theta JA}$ (2)	250	°C/W

Notes

(1) Mounted on PCB with 5.0 mm x 5.0 mm copper pads attached to each terminal

(2) Mounted on minimum recommended pad layout

ORDERING INFORMATION (Example)				
PREFERRED P/N	**UNIT WEIGHT (g)**	**PREFERRED PACKAGE CODE**	**BASE QUANTITY**	**DELIVERY MODE**
SMAZ5925B-M3/61	0.064	61	1800	7" diameter plastic tape and reel
SMAZ5925B-M3/5A	0.064	5A	7500	13" diameter plastic tape and reel

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

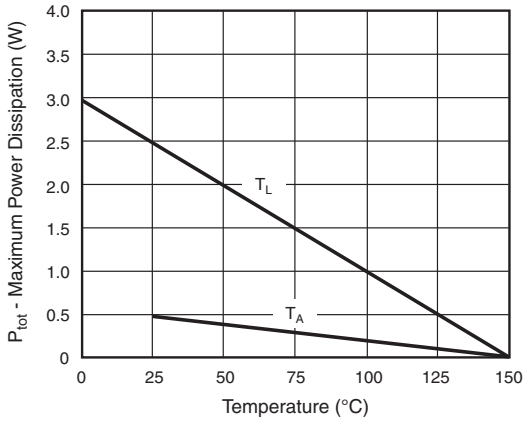

Fig. 1 - Steady State Power Durating

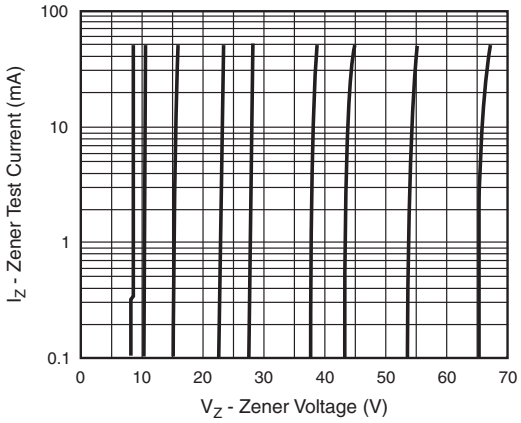

Fig. 3 - Typical Zener Voltage

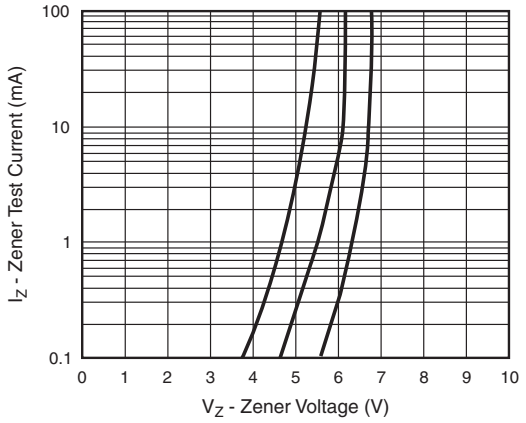

Fig. 2 - Typical Zener Voltage

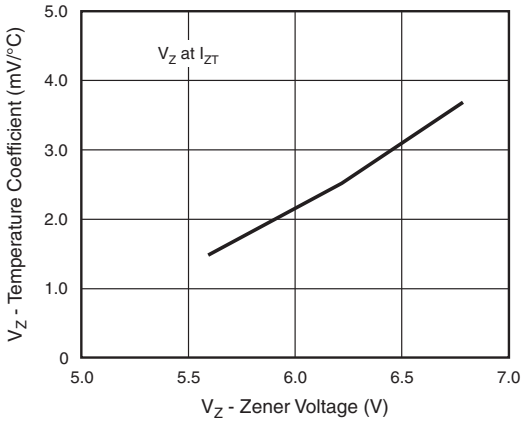

Fig. 4 - Typical Temperature Coefficients

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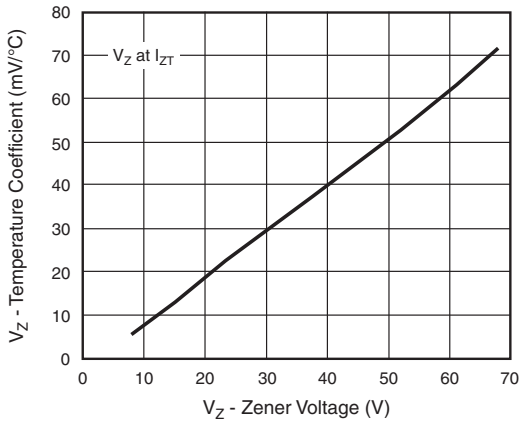


Fig. 5 - Typical Temperature Coefficients

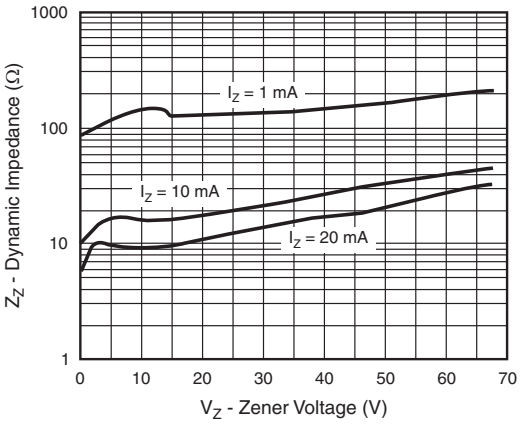


Fig. 7 - Typical Zener Impedance

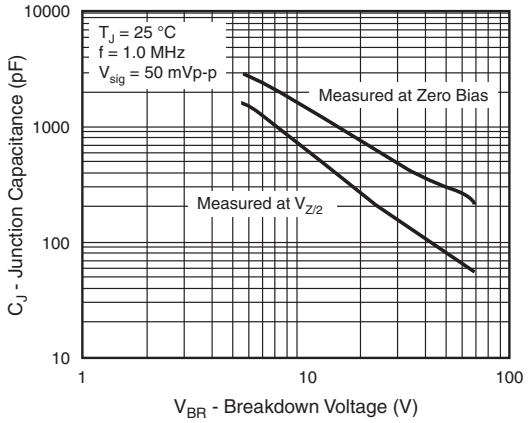
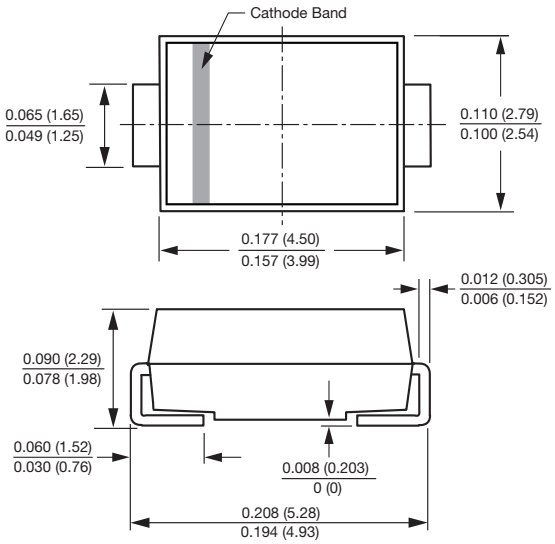


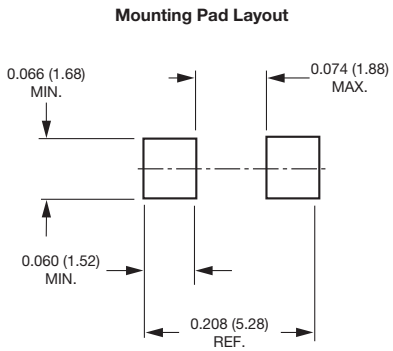
Fig. 6 - Typical Junction Capacitance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SMA (DO-214AC)



Mounting Pad Layout



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