



Surface Mount Power Voltage-Regulating Diodes

eSMP® Series



DO-220AA (SMP)

PRIMARY CHARACTERISTICS

V_{WM}	5.6 V to 43 V
P_D	1500 mW at $T_L = 75\text{ °C}$
P_D	500 mW at $T_L = 25\text{ °C}$
T_J max.	150 °C

TYPICAL APPLICATIONS

For general purpose regulation and protection applications.

FEATURES

- Very low profile - typical height of 1.0 mm
- Ideal for automated placement
- Low Zener impedance
- Low regulation factor
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- Not recommended for PCB bottom side wave mounting
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21 definition



RoHS
COMPLIANT
HALOGEN
FREE

MECHANICAL DATA

Case: DO-220AA (SMP)

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 JESD 22-B102

M3 suffix meets JESD 201 class 1A whisker test

Polarity: Color band denotes cathode end

MAXIMUM RATINGS ($T_A = 25\text{ °C}$ unless otherwise noted)

PARAMETER	SYMBOL	VALUE	UNIT
Power dissipation at $T_L = 75\text{ °C}$ (fig. 1) ⁽¹⁾	P_D	1500	mW
Power dissipation at $T_A = 25\text{ °C}$ (fig. 1) ⁽²⁾	P_D	500	mW
Maximum instantaneous forward voltage at 200 mA for all types ⁽³⁾	V_F	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

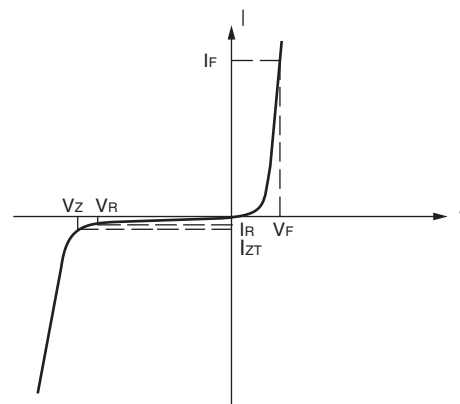
⁽³⁾ Pulse test: 300 μ s pulse width, 1 % duty cycle

SMPZ3919B thru SMPZ3940B

Vishay General Semiconductor



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 ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)											
PART NUMBER	DEVICE MARKING CODE	ZENER VOLTAGE V_Z AT I_{ZT} ⁽¹⁾ (V)			TEST CURRENT I_{ZT} (mA)	MAXIMUM ZENER IMPEDANCE			MAXIMUM REVERSE LEAKAGE CURRENT I_R AT V_R		MAXIMUM ZENER CURRENT I_{ZM} (mA)
		MIN.	NOM.	MAX.		Z_{ZT} AT I_{ZT}	Z_{ZK} AT I_{ZK}	I_R AT V_R	I_R AT V_R		
SMPZ3919B	19B	5.32	5.6	5.88	66.9	5	700	1	200	3	268
SMPZ3920B	20B	5.89	6.2	6.51	60.5	2	700	1	200	4	242
SMPZ3921B	21B	6.46	6.8	7.14	55.1	2.5	400	1	200	5.2	221
SMPZ3922B	22B	7.12	7.5	7.88	50	3	400	0.5	150	6	200
SMPZ3923B	23B	7.79	8.2	8.61	45.7	3.5	400	0.5	50	6.5	183
SMPZ3924B	24B	8.64	9.1	9.56	41.2	4	500	0.5	10	7	165
SMPZ3925B	25B	9.5	10	10.5	37.5	4.5	500	0.25	2.5	8	150
SMPZ3926B	26B	10.5	11	11.6	34.1	5.5	550	0.25	0.5	8.4	136
SMPZ3927B	27B	11.4	12	12.6	31.2	6.5	550	0.25	0.5	9.1	125
SMPZ3928B	28B	12.4	13	13.7	28.8	7	550	0.25	0.5	9.9	115
SMPZ3929B	29B	14.3	15	15.8	25	9	600	0.25	0.5	11.4	100
SMPZ3930B	30B	15.2	16	16.8	23.4	10	600	0.25	0.5	12.2	94
SMPZ3931B	31B	17.1	18	18.9	20.8	12	650	0.25	0.5	13.7	83
SMPZ3932B	32B	19.0	20	21	18.7	14	650	0.25	0.5	15.2	75
SMPZ3933B	33B	20.9	22	23.1	17	17.5	650	0.25	0.5	16.7	68
SMPZ3934B	34B	22.8	24	25.2	15.6	19	700	0.25	0.5	18.2	63
SMPZ3935B	35B	25.7	27	28.4	13.9	23	700	0.25	0.5	20.6	56
SMPZ3936B	36B	28.5	30	31.5	12.5	26	750	0.25	0.5	22.8	50
SMPZ3937B	37B	31.4	33	34.7	11.4	33	800	0.25	0.5	25.1	45
SMPZ3938B	38B	34.2	36	37.8	10.4	38	850	0.25	0.5	27.4	42
SMPZ3939B	39B	37.1	39	41	9.6	45	900	0.25	0.5	29.7	38
SMPZ3940B	40B	40.9	43	45.2	8.7	53	950	0.25	0.5	32.7	35

THERMAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)			
PARAMETER	SYMBOL	LIMIT	UNIT
Typical thermal resistance, junction to lead ⁽¹⁾	$R_{\theta JL}$	50	$^\circ\text{C/W}$
Typical thermal resistance, junction to ambient ⁽²⁾	$R_{\theta JA}$	250	$^\circ\text{C/W}$

Notes

- ⁽¹⁾ Mounted on PCB with 5.0 mm x 5.0 mm copper pad areas 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
SMPZ3919B-M3/84A	0.024	84A	3000	7" diameter plastic tape and reel
SMPZ3919B-M3/85A	0.024	85A	10 000	13" diameter plastic tape and reel

RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

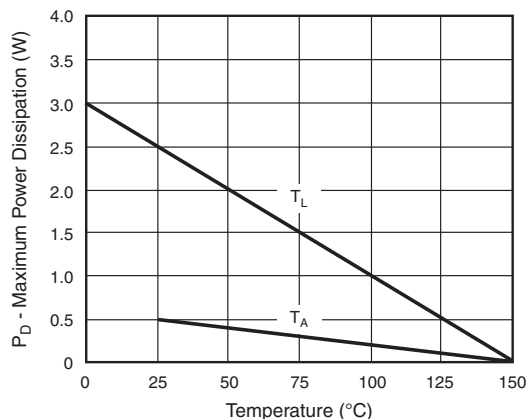


Fig. 1 - Steady State Power Derating

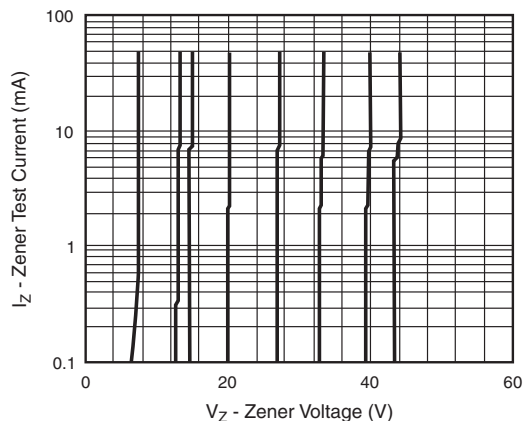


Fig. 3 - Typical Zener Voltage

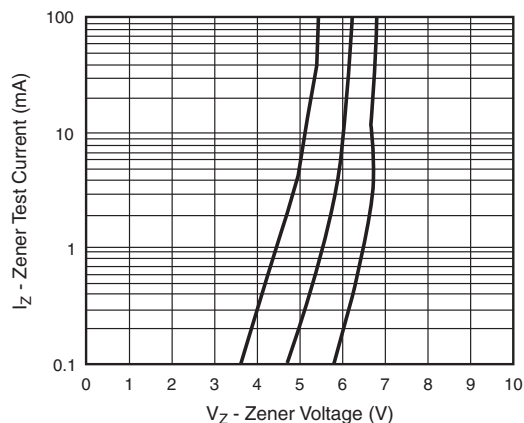


Fig. 2 - Typical Zener Voltage

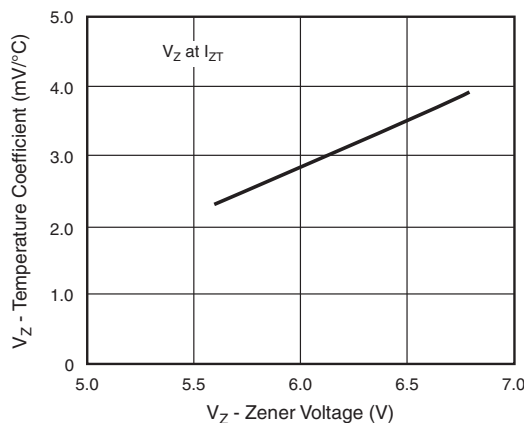


Fig. 4 - Typical temperature Coefficients

SMPZ3919B thru SMPZ3940B

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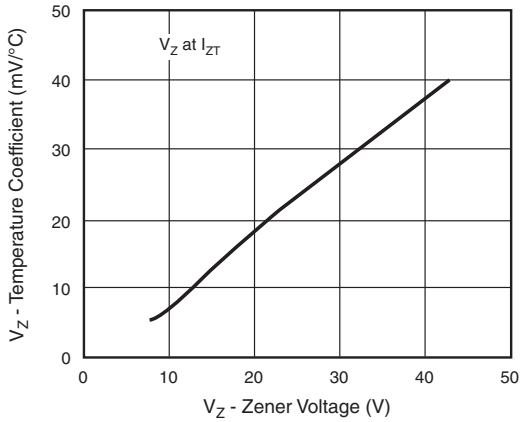


Fig. 5 - Typical Transient Temperature Coefficients

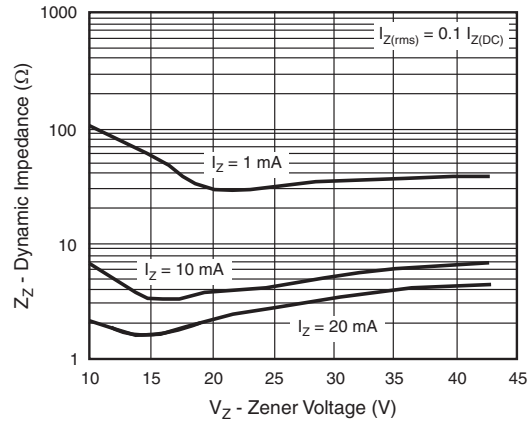


Fig. 7 - Typical Zener Impedance

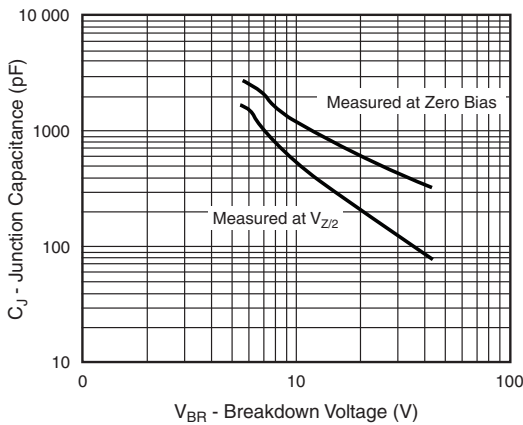
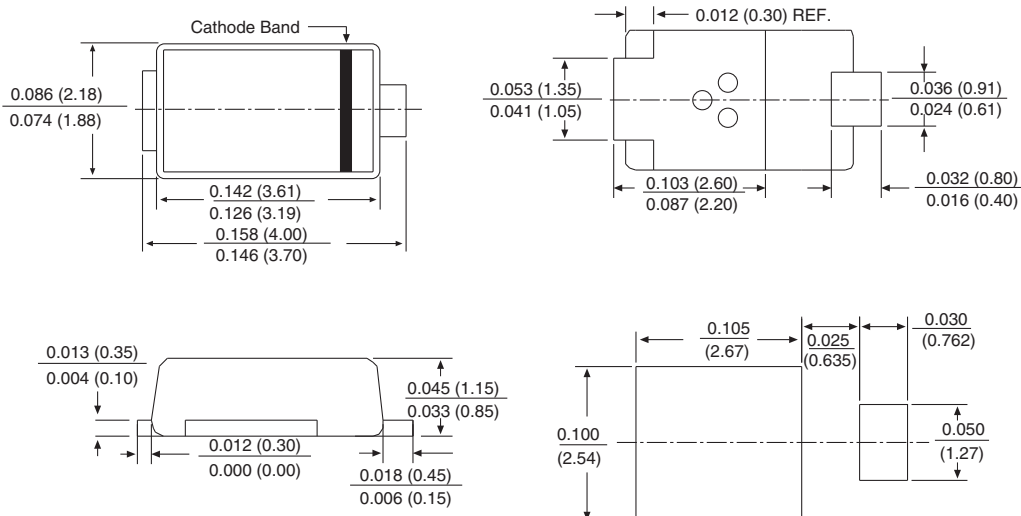


Fig. 6 - Typical Junction Capacitance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-220AA (SMP)





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