

Surface Mount Power Voltage-Regulating Diodes

eSMP™ Series



DO-220AA (SMP)

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-020C, LF max peak of 260 °C
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC



TYPICAL APPLICATIONS

For general purpose regulation and protection applications.

PRIMARY CHARACTERISTICS

V_Z	5.6 V to 43 V
P_D	1.5 W at $T_L = 75\text{ °C}$
P_D	0.5 W at $T_A = 25\text{ °C}$
T_J max.	150 °C

MECHANICAL DATA

Case: DO-220AA (SMP)

Epoxy meets UL 94V-0 flammability rating

Terminals: Matte tin plated leads, solderable per J-STD-002B and JESD22-B102D

E3 suffix for commercial grade

Polarity: Color band denotes cathode end

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

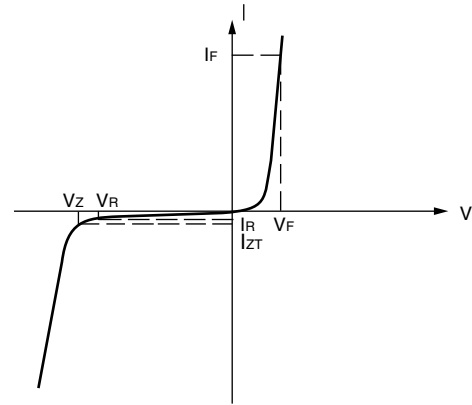
PARAMETER	SYMBOL	VALUE	UNIT
Power dissipation at $T_L = 75\text{ °C}$ (Fig. 1) ⁽¹⁾	P_D	1.5	W
Power dissipation at $T_A = 25\text{ °C}$ (Fig. 1) ⁽²⁾	P_D	0.5	W
Maximum instantaneous forward voltage at 200 mA for all types ⁽³⁾	V_F	1.5	V
Operating junction and storage temperature range	T_J, T_{STG}	- 65 to + 150	°C

Notes:

- (1) Mounted on P.C.B. with 5.0 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



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} (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 (μA)	V_R (V)		
						(Ω)	(Ω)			(mA)	
SMPZ3919B	19B	5.32	5.6	5.88	66.9	5.0	700	1.0	200	3.0	268
SMPZ3920B	20B	5.89	6.2	6.51	60.5	2.0	700	1.0	200	4.0	242
SMPZ3921B	21B	6.46	6.8	7.14	55.1	2.5	400	1.0	200	5.2	221
SMPZ3922B	22B	7.12	7.5	7.88	50.0	3.0	400	0.5	150	6.0	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	4.0	500	0.5	10	7.0	165
SMPZ3925B	25B	9.5	10	10.5	37.5	4.5	500	0.25	2.5	8.0	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	7.0	550	0.25	0.5	9.9	115
SMPZ3929B	29B	14.3	15	15.8	25.0	9.0	600	0.25	0.5	11.4	100
SMPZ3930B	30B	15.2	16	16.8	23.4	10.0	600	0.25	0.5	12.2	94
SMPZ3931B	31B	17.1	18	18.9	20.8	12.0	650	0.25	0.5	13.7	83
SMPZ3932B	32B	19.0	20	21.0	18.7	14.0	650	0.25	0.5	15.2	75
SMPZ3933B	33B	20.9	22	23.1	17.0	17.5	650	0.25	0.5	16.7	68
SMPZ3934B	34B	22.8	24	25.2	15.6	19.0	700	0.25	0.5	18.2	63
SMPZ3935B	35B	25.7	27	28.4	13.9	23.0	700	0.25	0.5	20.6	56
SMPZ3936B	36B	28.5	30	31.5	12.5	26.0	750	0.25	0.5	22.8	50
SMPZ3937B	37B	31.4	33	34.7	11.4	33.0	800	0.25	0.5	25.1	45
SMPZ3938B	38B	34.2	36	37.8	10.4	38.0	850	0.25	0.5	27.4	42
SMPZ3939B	39B	37.1	39	41.0	9.6	45.0	900	0.25	0.5	29.7	38
SMPZ3940B	40B	40.9	43	45.2	8.7	53.0	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 P.C.B. with 5.0 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
SMPZ3925B-E3/84A	0.024	84A	3000	7" diameter plastic tape and reel
SMPZ3925B-E3/85A	0.024	85A	10000	13" diameter plastic tape and reel

RATINGS AND CHARACTERISTICS CURVES

($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)

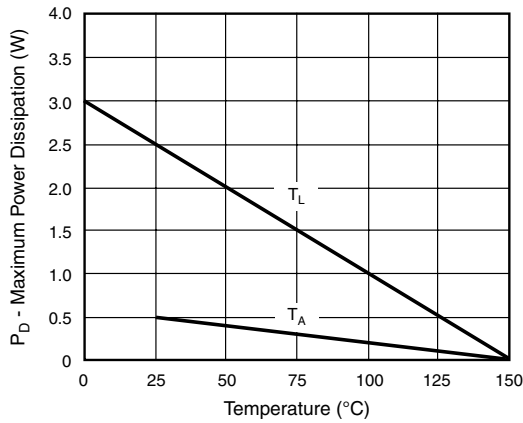


Figure 1. Steady State Power During

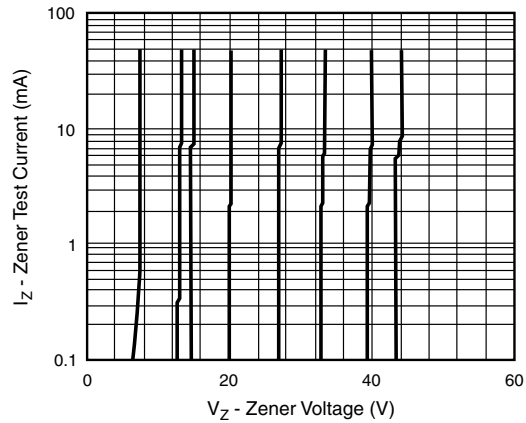


Figure 3. Typical Zener Voltage

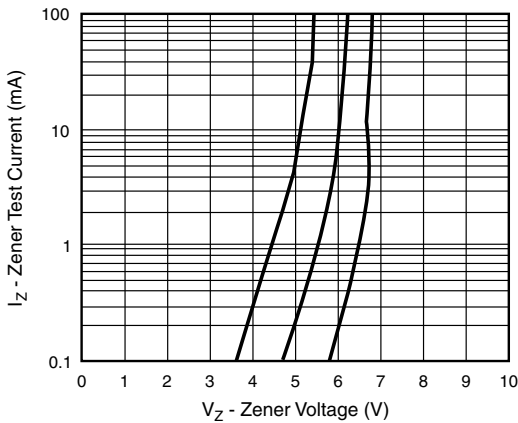


Figure 2. Typical Zener Voltage

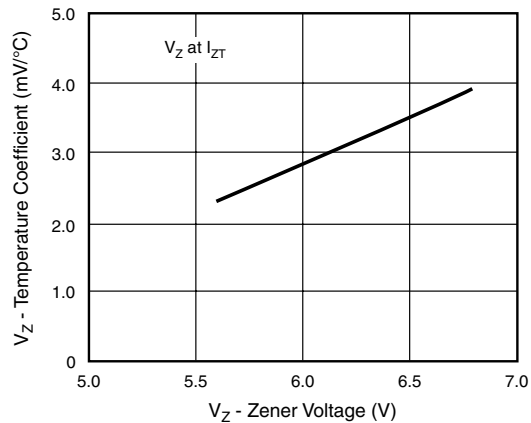


Figure 4. Typical Temperature Coefficients

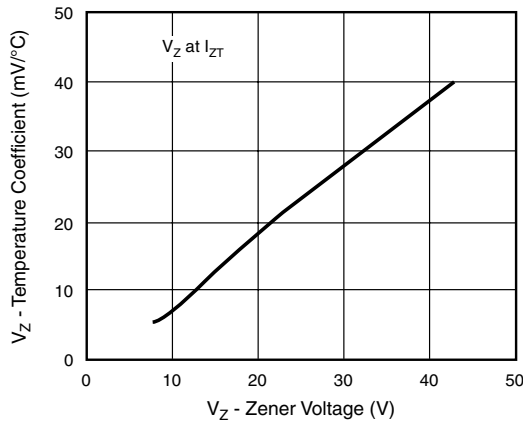


Figure 5. Typical Temperature Coefficients

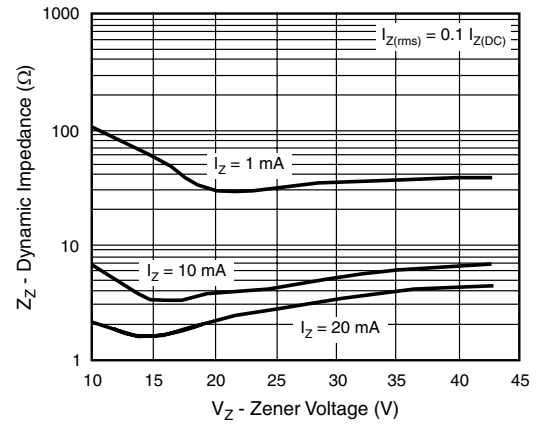


Figure 7. Typical Zener Impedance

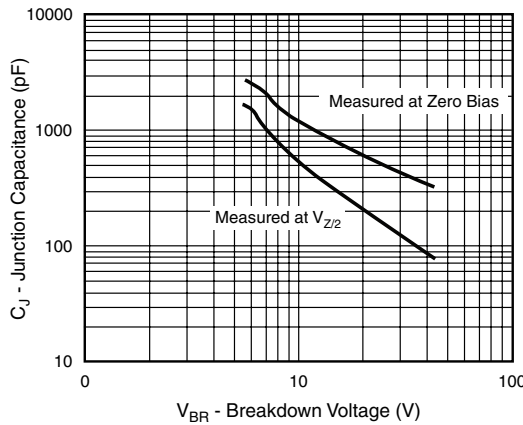
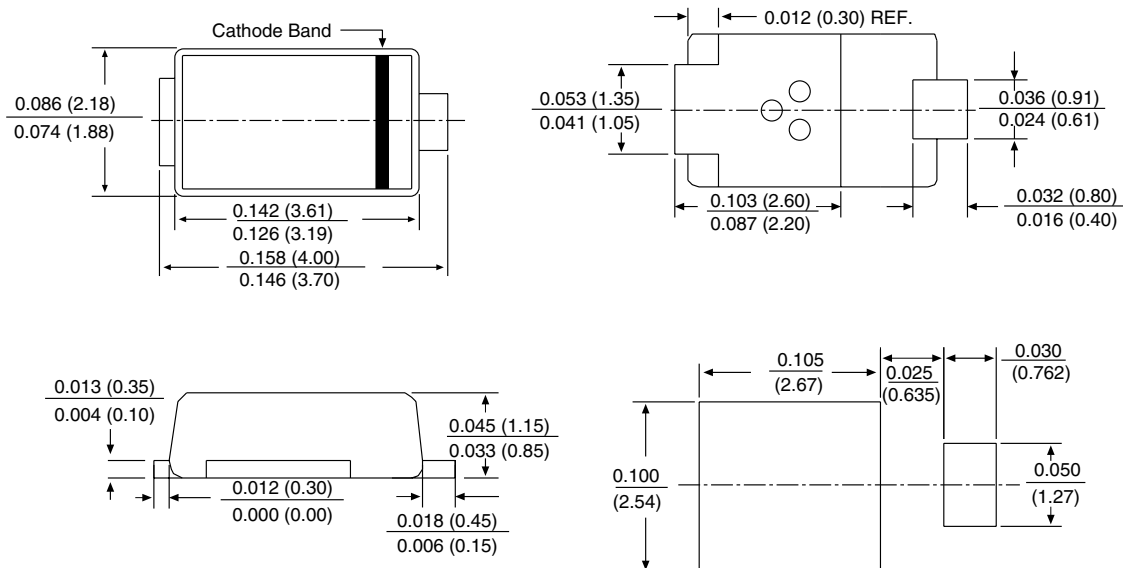


Figure 6. Typical Junction Capacitance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-220AA (SMP)





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