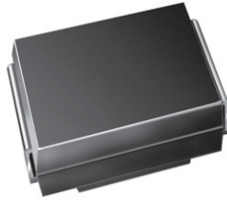




Surface Mount Power Voltage-Regulating Diodes



DO-214AA (SMBJ)

FEATURES

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



RoHS COMPLIANT

| PRIMARY CHARACTERISTICS | |
|--|---------------|
| V _Z | 5.6 V to 85 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 |
| Int. construction | Single |

MECHANICAL DATA

Case: DO-214AA (SMBJ)

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

Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

E3 suffix meets JESD 201 class 1A whisker test

Polarity: Color band denotes cathode end

TYPICAL APPLICATIONS

For general purpose regulation and protection applications.

| 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) ⁽¹⁾ | P _{tot} | 550 | mW |
| Maximum instantaneous forward voltage at 200 mA for all types ⁽²⁾ | V _F | 1.5 | V |
| Operating junction and storage temperature range | T _J , T _{STG} | - 65 to + 150 | °C |

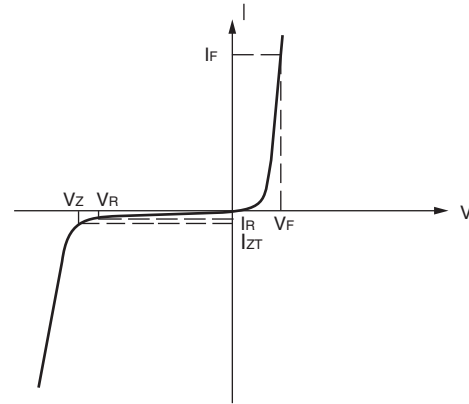
Notes

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

⁽²⁾ Pulse test: 300 μs 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 ($T_A = 25^\circ\text{C}$ 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 | 1.0 | 5.0 | 700 | 200 | 3.0 | 267 |
| SMBZ5920B | 20B | 5.89 | 6.2 | 6.51 | 60.5 | 1.0 | 2.0 | 700 | 200 | 4.0 | 241 |
| SMBZ5921B | 21B | 6.46 | 6.8 | 7.14 | 55.1 | 1.0 | 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 | 67.0 | 1000 | 1 | 35.8 | 31 |
| SMBZ5942B | 42B | 48.4 | 51 | 53.6 | 7.3 | 0.25 | 70.0 | 1100 | 1 | 38.8 | 29 |
| SMBZ5943B | 43B | 53.2 | 56 | 58.8 | 6.7 | 0.25 | 86.0 | 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 |



| THERMAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) | | | |
|--|-----------------|-------|--------------------|
| PARAMETER | SYMBOL | LIMIT | UNIT |
| Typical thermal resistance, junction to lead | $R_{\theta JL}$ | 25 | $^\circ\text{C/W}$ |
| Typical thermal resistance, junction to ambient ⁽¹⁾ | $R_{\theta JA}$ | 226 | $^\circ\text{C/W}$ |

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 | 0.096 | 52 | 750 | 7" diameter plastic tape and reel |
| SMBZ5935B-E3/5B | 0.096 | 5B | 3200 | 13" diameter plastic tape and reel |

RATINGS AND CHARACTERISTICS CURVES

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

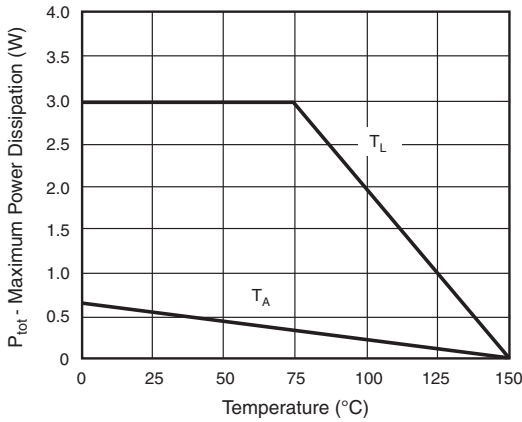


Fig. 1 - Steady State Power Durlating

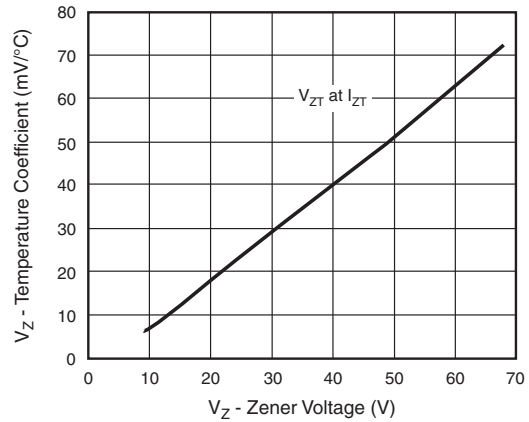


Fig. 3 - Typical Temperature Coefficients

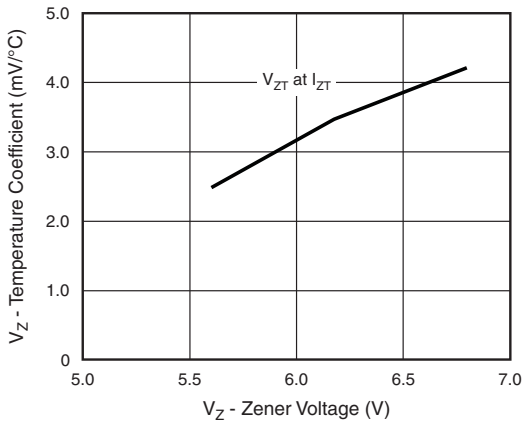


Fig. 2 - Typical Temperature Coefficients

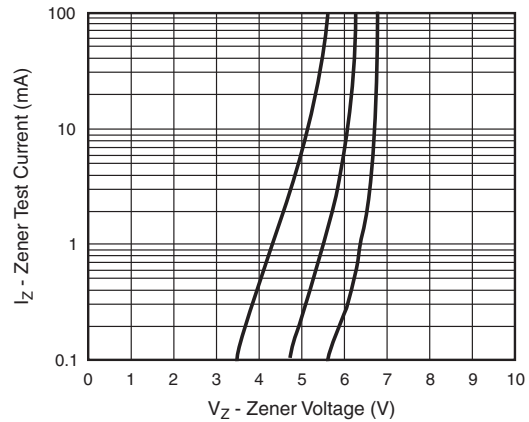


Fig. 4 - Typical Zener Voltage

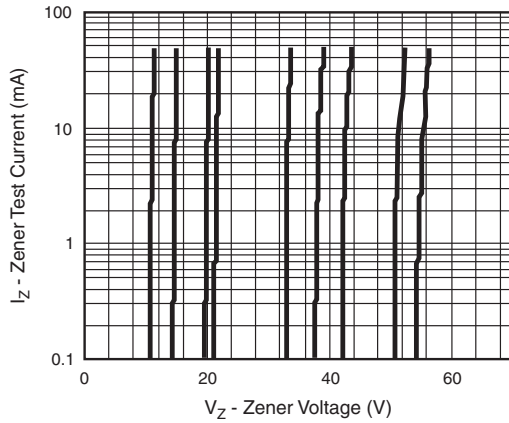


Fig. 5 - Typical Zener Voltage

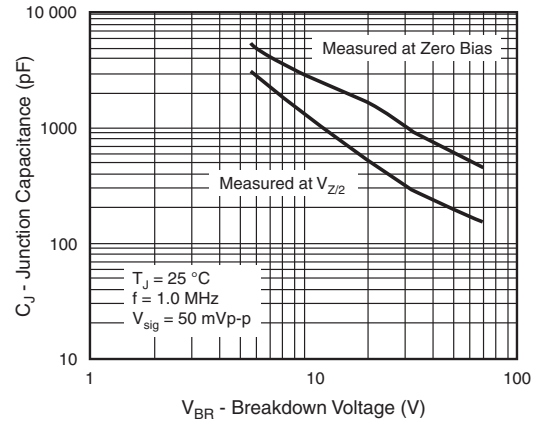


Fig. 7 - Typical Junction Capacitance

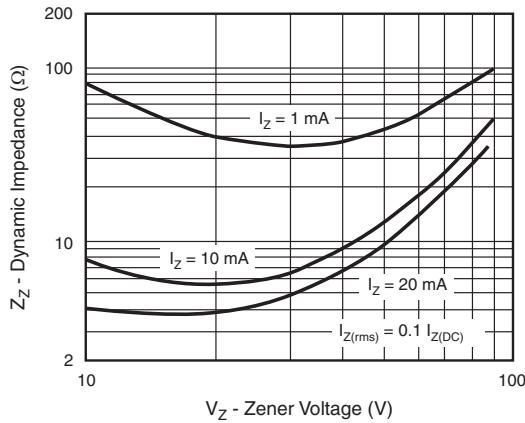
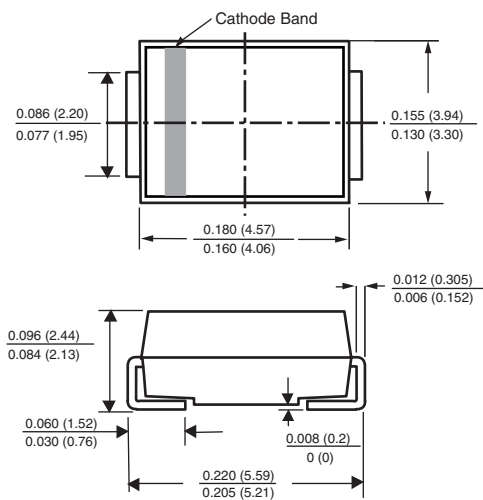


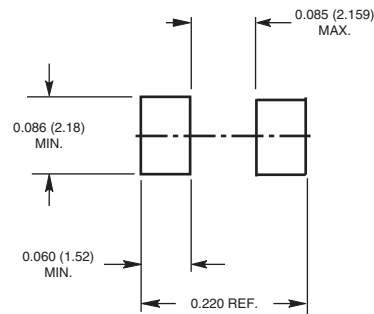
Fig. 6 - Typical Zener Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-214AA (SMB-J-Bend)



Mounting Pad Layout





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