



Surface Mount Power Voltage-Regulating Diodes



DO-214AC (SMA)

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
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC



RoHS COMPLIANT

TYPICAL APPLICATIONS

For general purpose regulation and protection applications.

| PRIMARY CHARACTERISTICS | |
|-------------------------|-------------------------------|
| V_Z | 5.6 V to 68 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-214AC (SMA)

Molding compound meets UL 94 V-0 flammability rating

Base P/N-E3 - RoHS compliant, commercial grade

Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD22-B102

E3 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 | 1.5 | W |
| Power dissipation at $T_A = 25\text{ °C}$ (Fig. 1) ⁽²⁾ | P_D | 0.5 | |
| 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:

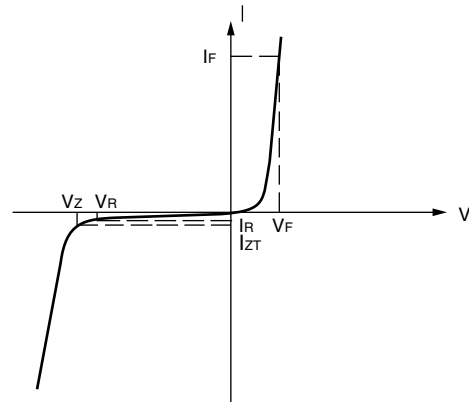
- (1) Mounted on P.C.B. with 5.0 x 5.0 mm copper pads attached to each terminal
- (2) Mounted on minimum recommended pad layout
- (3) Pulse test: 300 μ s pulse width, 1 % duty cycle

SMAZ5919B thru SMAZ5945B



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} (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} (Ω) | Z_{ZK} AT I_{ZK} (Ω) | (mA) | (μA) | (V) | |
| | | | | | | | | | | | |
| SMAZ5919B | 19B | 5.32 | 5.6 | 5.88 | 66.9 | 5 | 700 | 1 | 200 | 3 | 268 |
| SMAZ5920B | 20B | 5.89 | 6.2 | 6.51 | 60.5 | 2 | 700 | 1 | 200 | 4 | 242 |
| SMAZ5921B | 21B | 6.46 | 6.8 | 7.14 | 55.1 | 2.5 | 400 | 1 | 200 | 5.2 | 221 |
| SMAZ5923B | 23B | 7.79 | 8.2 | 8.61 | 45.7 | 5.0 | 700 | 0.5 | 10 | 6.5 | 183 |
| SMAZ5924B | 24B | 8.64 | 9.1 | 9.56 | 41.2 | 5.0 | 700 | 0.5 | 10 | 7.0 | 165 |
| SMAZ5925B | 25B | 9.5 | 10 | 10.5 | 37.5 | 5.0 | 700 | 0.25 | 10 | 8.0 | 150 |
| SMAZ5926B | 26B | 10.5 | 11 | 11.6 | 34.1 | 5.5 | 550 | 0.25 | 5 | 8.4 | 136 |
| SMAZ5927B | 27B | 11.4 | 12 | 12.6 | 31.2 | 6.5 | 550 | 0.25 | 1 | 9.1 | 125 |
| SMAZ5928B | 28B | 12.4 | 13 | 13.7 | 28.8 | 7.0 | 550 | 0.25 | 1 | 9.9 | 115 |
| SMAZ5929B | 29B | 14.3 | 15 | 15.8 | 25.0 | 9.0 | 600 | 0.25 | 1 | 11.4 | 100 |
| SMAZ5930B | 30B | 15.2 | 16 | 16.8 | 23.4 | 10.0 | 600 | 0.25 | 1 | 12.2 | 94 |
| SMAZ5931B | 31B | 17.1 | 18 | 18.9 | 20.8 | 12.0 | 650 | 0.25 | 1 | 13.7 | 83 |
| SMAZ5932B | 32B | 19.0 | 20 | 21.0 | 18.7 | 14.0 | 650 | 0.25 | 1 | 15.2 | 75 |
| SMAZ5933B | 33B | 20.9 | 22 | 23.1 | 17.0 | 17.5 | 650 | 0.25 | 1 | 16.7 | 68 |
| SMAZ5934B | 34B | 22.8 | 24 | 25.2 | 15.6 | 19.0 | 700 | 0.25 | 1 | 18.2 | 62 |
| SMAZ5935B | 35B | 25.7 | 27 | 28.4 | 13.9 | 23.0 | 700 | 0.25 | 1 | 20.6 | 56 |
| SMAZ5936B | 36B | 28.5 | 30 | 31.5 | 12.5 | 28.0 | 750 | 0.25 | 1 | 22.8 | 50 |
| SMAZ5937B | 37B | 31.4 | 33 | 34.7 | 11.4 | 33.0 | 800 | 0.25 | 1 | 25.1 | 45 |
| SMAZ5938B | 38B | 34.2 | 36 | 37.8 | 10.4 | 38.0 | 850 | 0.25 | 1 | 27.4 | 42 |
| SMAZ5939B | 39B | 37.1 | 39 | 41.0 | 9.6 | 45.0 | 900 | 0.25 | 1 | 29.7 | 38 |
| SMAZ5940B | 40B | 40.9 | 43 | 45.2 | 8.7 | 53.0 | 950 | 0.25 | 1 | 32.7 | 35 |
| SMAZ5941B | 41B | 44.65 | 47 | 49.35 | 8.0 | 67 | 1000 | 0.25 | 1 | 35.8 | 32 |
| SMAZ5942B | 42B | 48.45 | 51 | 53.55 | 7.3 | 70 | 1100 | 0.25 | 1 | 38.8 | 29 |
| SMAZ5943B | 43B | 53.2 | 56 | 58.8 | 6.7 | 86 | 1300 | 0.25 | 1 | 42.6 | 27 |
| SMAZ5944B | 44B | 58.9 | 62 | 65.1 | 6.0 | 100 | 1500 | 0.25 | 1 | 47.1 | 24 |
| SMAZ5945B | 45B | 64.6 | 68 | 71.4 | 5.5 | 120 | 1700 | 0.25 | 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 ⁽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 |
| SMAZ5925B-E3/61 | 0.064 | 61 | 1800 | 7" diameter plastic tape and reel |
| SMAZ5925B-E3/5A | 0.064 | 5A | 7500 | 13" diameter plastic tape and reel |

RATINGS AND CHARACTERISTICS CURVES

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

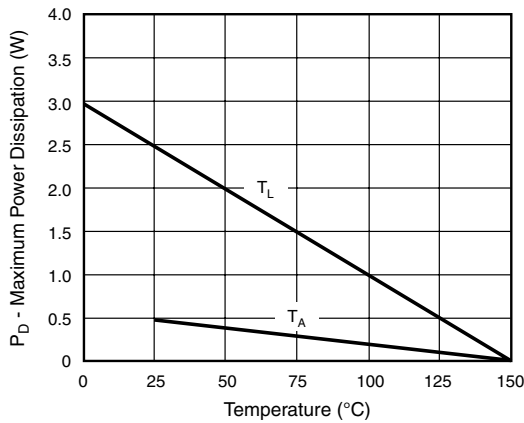


Figure 1. Steady State Power During

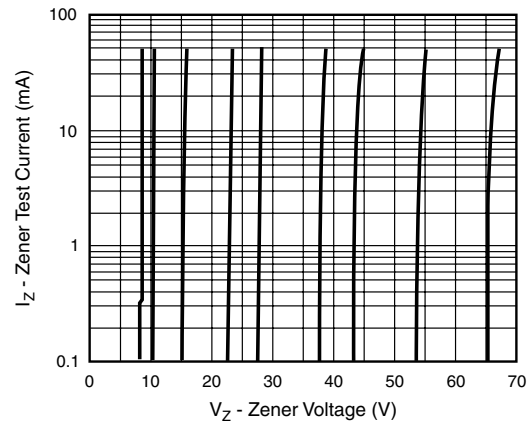


Figure 3. Typical Zener Voltage

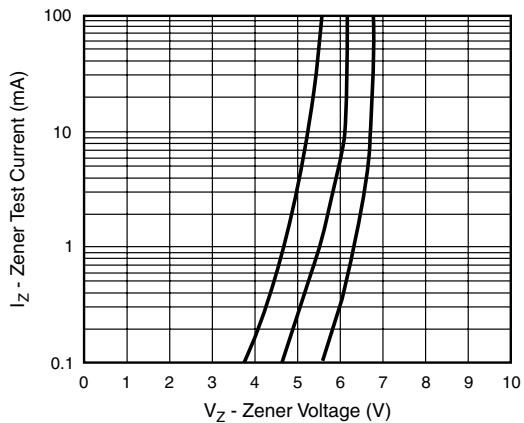


Figure 2. Typical Zener Voltage

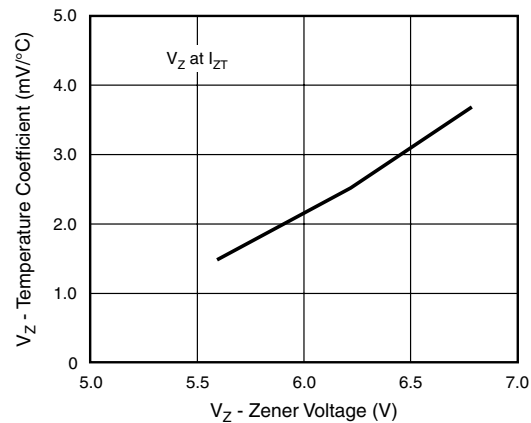


Figure 4. Typical Temperature Coefficients

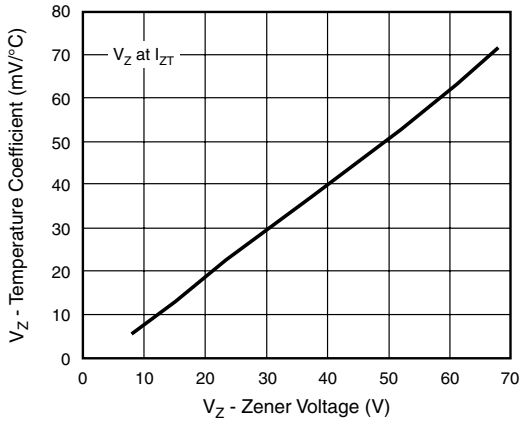


Figure 5. Typical Temperature Coefficients

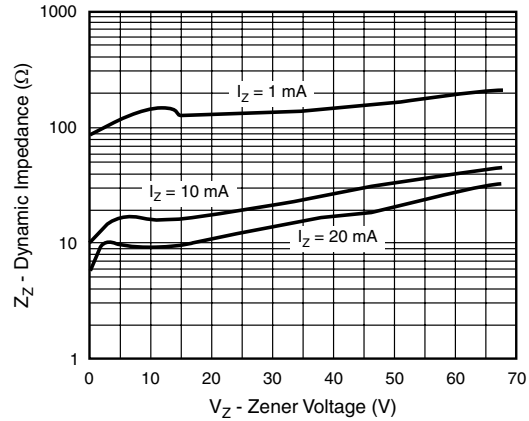


Figure 7. Typical Zener Impedance

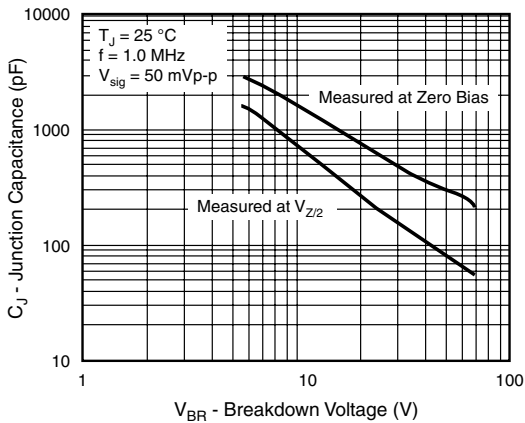
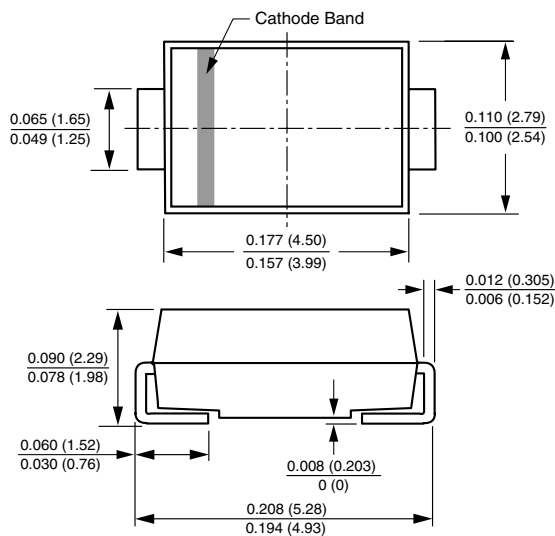


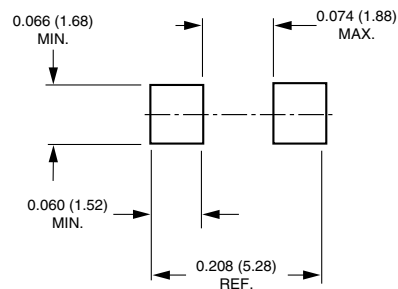
Figure 6. Typical Junction Capacitance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-214AC (SMA)



Mounting Pad Layout





Disclaimer

All product specifications and data are subject to change without notice.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained herein or in any other disclosure relating to any product.

Vishay disclaims any and all liability arising out of the use or application of any product described herein or of any information provided herein to the maximum extent permitted by law. The product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein, which apply to these products.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications unless otherwise expressly indicated. Customers using or selling Vishay products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify Vishay for any damages arising or resulting from such use or sale. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

Product names and markings noted herein may be trademarks of their respective owners.