



### ■ Features

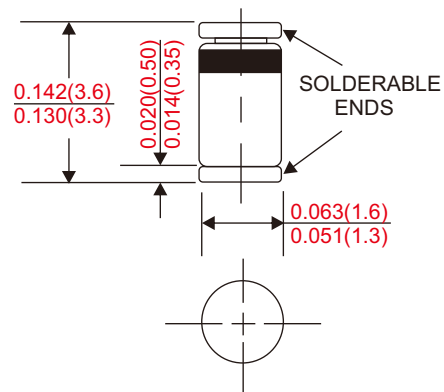
- Silicon epitaxial planar chip structure.
- Wide zener reverse voltage range 2.40V to 100V.
- Small package size for high density applications.
- Ideally suited for automated assembly processes.
- Lead free in compliance with EU RoHS.

### ■ Mechanical data

- Case : GLASS MINI-MELF / SOD-80
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Polarity : Indicated by cathode band
- Mounting Position : Any
- Weight : Approximated 0.030 gram

### ■ Outline

SOD-80



Dimensions in inches and (millimeters)

### ■ Maximum ratings and electrical characteristics

Rating at 25°C ambient temperature unless otherwise specified. Single phase, half wave, 60Hz, resistive or inductive load.  
For capacitive load, derate current by 20%.

| Parameter                      | Conditions           | Symbol    | MIN. | TYP. | MAX. | UNIT |
|--------------------------------|----------------------|-----------|------|------|------|------|
| Power dissipation              |                      | $P_D$     |      |      | 500  | mW   |
| Forward voltage                | $I_F = 200\text{mA}$ | $V_F$     |      |      | 1.5  | V    |
| Storage temperature            |                      | $T_{STG}$ | -55  |      | +150 | °C   |
| Operating Junction temperature |                      | $T_J$     | -55  |      | +175 | °C   |

### ■ Electrical characteristics

| Part No.                             | Zener voltage                    |      |      | Test current    | Zener impedance                   |                                   |                 | Leakage current |                | Typical Temperature Coefficient |
|--------------------------------------|----------------------------------|------|------|-----------------|-----------------------------------|-----------------------------------|-----------------|-----------------|----------------|---------------------------------|
|                                      | V <sub>Z</sub> @ I <sub>ZT</sub> |      |      | I <sub>ZT</sub> | Z <sub>ZT</sub> @ I <sub>ZT</sub> | Z <sub>ZK</sub> @ I <sub>ZK</sub> | I <sub>ZK</sub> | I <sub>R</sub>  | V <sub>R</sub> | TK <sub>VZ</sub>                |
|                                      | Min.                             | Nom. | Max. | mA              | OHMs                              | OHMs                              | mA              | uA              | Volts          | % / W                           |
| ZMM55B2V0                            | 1.96                             | 2.0  | 2.04 | 5.0             | 100                               | 600                               | 1.0             | 150             | 1.0            | -0.09~-0.06                     |
| ZMM55B2V2                            | 2.12                             | 2.2  | 2.24 | 5.0             | 100                               | 600                               | 1.0             | 150             | 1.0            | -0.09~-0.06                     |
| ZMM55B2V4                            | 2.35                             | 2.4  | 2.45 | 5.0             | 85                                | 600                               | 1.0             | 50              | 1.0            | -0.09~-0.06                     |
| ZMM55B2V7                            | 2.65                             | 2.7  | 2.75 | 5.0             | 85                                | 600                               | 1.0             | 10              | 1.0            | -0.09~-0.06                     |
| ZMM55B3V0                            | 2.94                             | 3.0  | 3.06 | 5.0             | 85                                | 600                               | 1.0             | 4.0             | 1.0            | -0.08~-0.05                     |
| ZMM55B3V3                            | 3.23                             | 3.3  | 3.37 | 5.0             | 85                                | 600                               | 1.0             | 2.0             | 1.0            | -0.08~-0.05                     |
| ZMM55B3V6                            | 3.53                             | 3.6  | 3.67 | 5.0             | 85                                | 600                               | 1.0             | 2.0             | 1.0            | -0.08~-0.05                     |
| ZMM55B3V9                            | 3.82                             | 3.9  | 3.98 | 5.0             | 85                                | 600                               | 1.0             | 2.0             | 1.0            | -0.08~-0.05                     |
| ZMM55B4V3                            | 4.21                             | 4.3  | 4.39 | 5.0             | 75                                | 600                               | 1.0             | 1.0             | 1.0            | -0.06~-0.03                     |
| ZMM55B4V7                            | 4.61                             | 4.7  | 4.79 | 5.0             | 60                                | 600                               | 1.0             | 0.5             | 1.0            | -0.05~+0.02                     |
| ZMM55B5V1                            | 5.00                             | 5.1  | 5.20 | 5.0             | 35                                | 550                               | 1.0             | 0.1             | 1.0            | -0.02~+0.02                     |
| ZMM55B5V6                            | 5.49                             | 5.6  | 5.71 | 5.0             | 25                                | 450                               | 1.0             | 0.1             | 1.0            | -0.05~+0.05                     |
| ZMM55B6V2                            | 6.08                             | 6.2  | 6.32 | 5.0             | 10                                | 200                               | 1.0             | 0.1             | 2.0            | 0.03~0.06                       |
| ZMM55B6V8                            | 6.66                             | 6.8  | 6.94 | 5.0             | 8                                 | 150                               | 1.0             | 0.1             | 3.0            | 0.03~0.07                       |
| ZMM55B7V5                            | 7.35                             | 7.5  | 7.65 | 5.0             | 7                                 | 50                                | 1.0             | 0.1             | 5.0            | 0.03~0.07                       |
| ZMM55B8V2                            | 8.04                             | 8.2  | 8.36 | 5.0             | 7                                 | 50                                | 1.0             | 0.1             | 6.2            | 0.03~0.08                       |
| ZMM55B9V1                            | 8.92                             | 9.1  | 9.28 | 5.0             | 10                                | 50                                | 1.0             | 0.1             | 6.8            | 0.03~0.09                       |
| ZMM55B10                             | 9.8                              | 10   | 10.2 | 5.0             | 15                                | 70                                | 1.0             | 0.1             | 7.5            | 0.03~0.10                       |
| ZMM55B11                             | 10.8                             | 11   | 11.2 | 5.0             | 20                                | 70                                | 1.0             | 0.1             | 8.2            | 0.03~0.11                       |
| ZMM55B12                             | 11.8                             | 12   | 12.2 | 5.0             | 20                                | 90                                | 1.0             | 0.1             | 9.1            | 0.03~0.11                       |
| ZMM55B13                             | 12.7                             | 13   | 13.3 | 5.0             | 26                                | 110                               | 1.0             | 0.1             | 10             | 0.03~0.11                       |
| ZMM55B15                             | 14.7                             | 15   | 15.3 | 5.0             | 30                                | 110                               | 1.0             | 0.1             | 11             | 0.03~0.11                       |
| ZMM55B16                             | 15.7                             | 16   | 16.3 | 5.0             | 40                                | 170                               | 1.0             | 0.1             | 12             | 0.03~0.11                       |
| ZMM55B18                             | 17.6                             | 18   | 18.4 | 5.0             | 50                                | 170                               | 1.0             | 0.1             | 13             | 0.03~0.11                       |
| ZMM55B20                             | 19.6                             | 20   | 20.4 | 5.0             | 55                                | 220                               | 1.0             | 0.1             | 15             | 0.03~0.11                       |
| ZMM55B22                             | 21.6                             | 22   | 22.4 | 5.0             | 55                                | 220                               | 1.0             | 0.1             | 16             | 0.04~0.12                       |
| ZMM55B24                             | 23.5                             | 24   | 24.5 | 5.0             | 80                                | 220                               | 1.0             | 0.1             | 18             | 0.04~0.12                       |
| ZMM55B27                             | 26.5                             | 27   | 27.5 | 5.0             | 80                                | 220                               | 1.0             | 0.1             | 20             | 0.04~0.12                       |
| ZMM55B30                             | 29.4                             | 30   | 30.6 | 5.0             | 80                                | 220                               | 1.0             | 0.1             | 22             | 0.04~0.12                       |
| ZMM55B33                             | 32.3                             | 33   | 33.7 | 5.0             | 80                                | 220                               | 1.0             | 0.1             | 24             | 0.04~0.12                       |
| ZMM55B36                             | 35.3                             | 36   | 36.7 | 5.0             | 80                                | 220                               | 1.0             | 0.1             | 27             | 0.04~0.12                       |
| ZMM55B39                             | 38.2                             | 39   | 39.8 | 2.5             | 90                                | 500                               | 1.0             | 0.1             | 30             | 0.04~0.12                       |
| ZMM55B43                             | 42.1                             | 43   | 43.9 | 2.5             | 90                                | 600                               | 0.5             | 0.1             | 33             | 0.04~0.12                       |
| ZMM55B47                             | 46.1                             | 47   | 47.9 | 2.5             | 110                               | 700                               | 0.5             | 0.1             | 36             | 0.04~0.12                       |
| ZMM55B51                             | 50.0                             | 51   | 52.0 | 2.5             | 125                               | 700                               | 0.5             | 0.1             | 39             | 0.04~0.12                       |
| ZMM55B56                             | 54.9                             | 56   | 57.1 | 2.5             | 135                               | 1000                              | 0.5             | 0.1             | 43             | 0.04~0.12                       |
| ZMM55B62                             | 60.8                             | 62   | 63.2 | 2.5             | 150                               | 1000                              | 0.5             | 0.1             | 47             | 0.04~0.12                       |
| ZMM55B68                             | 66.6                             | 68   | 69.4 | 2.5             | 200                               | 1000                              | 0.5             | 0.1             | 51             | 0.04~0.12                       |
| ZMM55B75                             | 73.5                             | 75   | 76.5 | 2.5             | 250                               | 1500                              | 0.5             | 0.1             | 56             | 0.04~0.12                       |
| ZMM55B82                             | 80.4                             | 82   | 83.6 | 2.5             | 300                               | 2000                              | 0.5             | 0.1             | 62             | 0.04~0.12                       |
| ZMM55B91                             | 89.2                             | 91   | 92.8 | 1.0             | 450                               | 5000                              | 0.1             | 0.1             | 68             | 0.04~0.12                       |
| ZMM55B100                            | 98                               | 100  | 102  | 1.0             | 450                               | 5000                              | 0.1             | 0.1             | 75             | 0.04~0.12                       |
| Note : 2% tolerance of Zener voltage |                                  |      |      |                 |                                   |                                   |                 |                 |                |                                 |

### ■ Rating and characteristic curves

FIG.1-TOTAL POWER DISSIPATION VS. AMBIENT TEMPERATURE

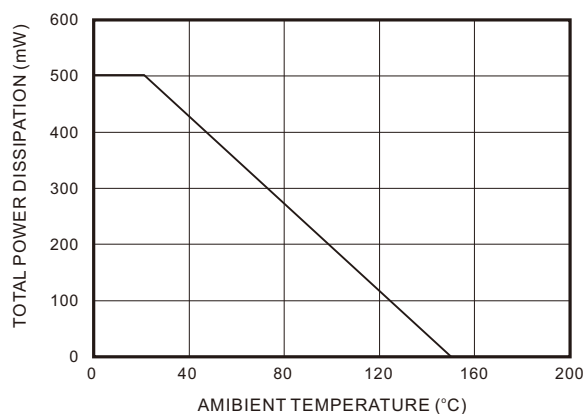


FIG. 2-TYPICAL CHANGE OF WORKING VOLTAGE UNDER OPERATING CONDITIONS AT  $T_A = 25^\circ\text{C}$

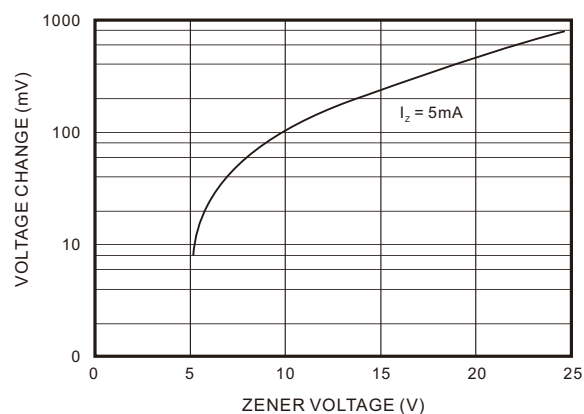


FIG. 3-TYPICAL CHANGE OF WORKING VOLTAGE VS. JUNCTION TEMPERATURE

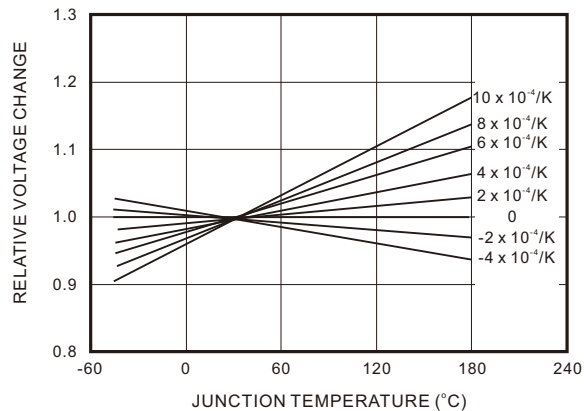


FIG. 4-TEMPERATURE COEFFICIENT OF  $V_Z$  VS. Z-VOLTAGE

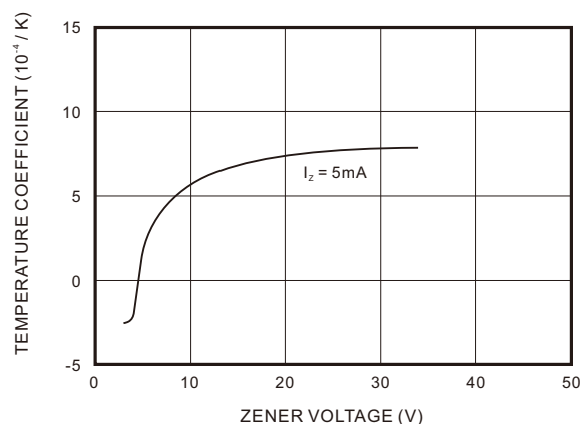
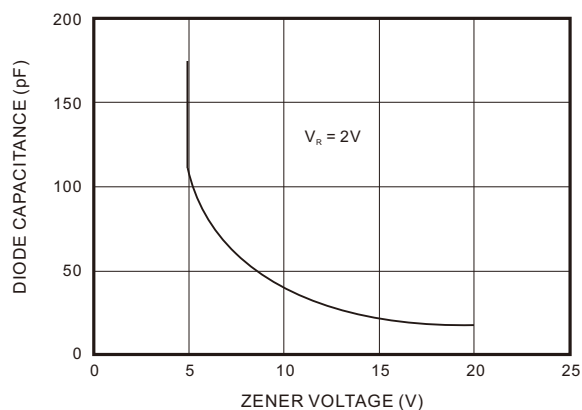


FIG. 5-DIODE CAPACITANCE VS. Z-VOLTAGE



### ■ Rating and characteristic curves

FIG. 6-FORWARD CURRENT VS. FORWARD VOLTAGE

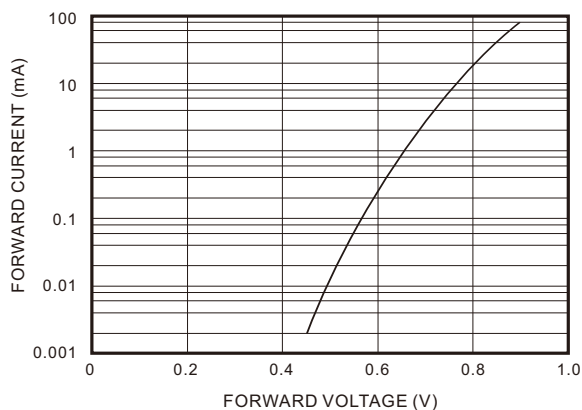


FIG. 7-Z-CURRENT VS. Z-VOLTAGE

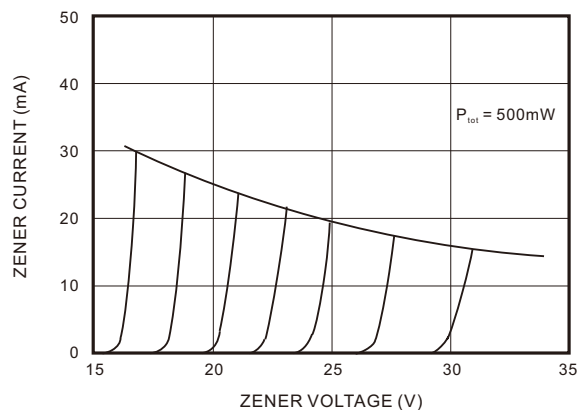


FIG. 8-Z-CURRENT VS. Z-VOLTAGE

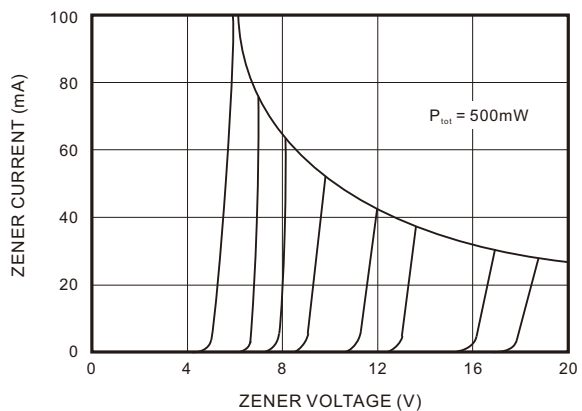


FIG. 9-DIFFERENTIAL Z-RESISTANCE VS. Z-VOLTAGE

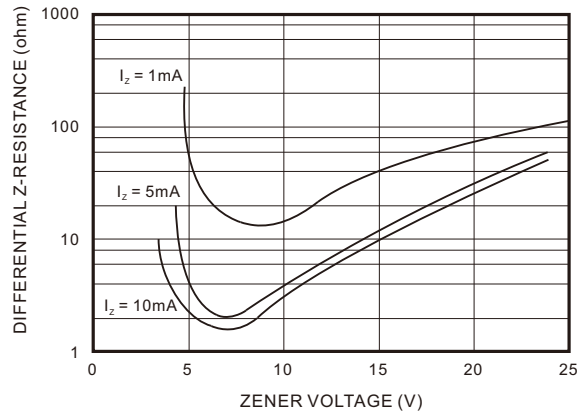
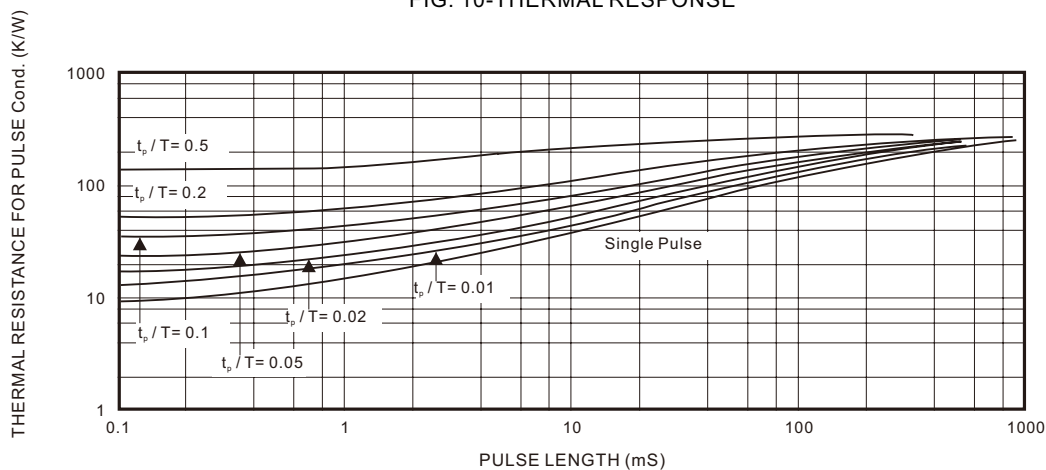


FIG. 10-THERMAL RESPONSE



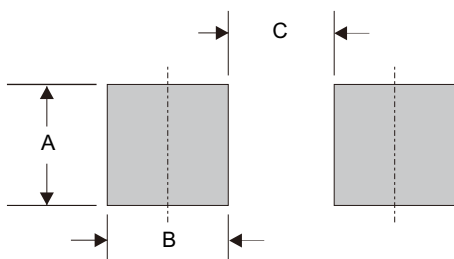


# ZMM55B SERIES

## 500mW Surface Mount Zener Diodes



### ■ SOD-80 foot print



| A            | B            | C            |
|--------------|--------------|--------------|
| 0.071 (1.80) | 0.035 (0.90) | 0.102 (2.60) |

Dimensions in inches and (millimeters)