

# DATA SHEET

## GLZ2.0~GLZ56

### SURFACE MOUNT ZENER DIODES

**VOLTAGE** 2.0 to 56 Volts

**POWER** 500 mWatts

**MINI-MELF/LL-34**

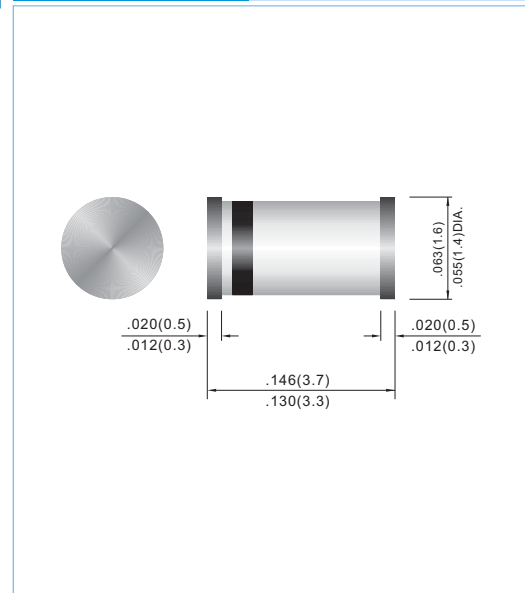
Unit : inch (mm)

#### FEATURES

- Planar Die construction
- 500mW Power Dissipation
- Ideally Suited for Automated Assembly Processes
- Both normal and Pb free product are available :  
Normal : 80~95% Sn, 5~20% Pb  
Pb free: 98.5% Sn above

#### MECHANICAL DATA

- Case: Molded Glass MINI-MELF
- Terminals: Solderable per MIL-STD-202E, Method 208
- Polarity: See Diagram Below
- Approx. Weight: 0.03 grams
- Mounting Position: Any
- Packing information  
T/R - 2.5K per 7" plastic Reel  
T/R - 10K per 13" plastic Reel



#### MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

| Parameter                         | Symbol           | Value       | Units |
|-----------------------------------|------------------|-------------|-------|
| Power Dissipation at Tamb = 25 °C | P <sub>TOT</sub> | 500         | mW    |
| Junction Temperature              | T <sub>J</sub>   | 175         | °C    |
| Storage Temperature Range         | T <sub>S</sub>   | -65 to +175 | °C    |

Valid provided that leads at a distance of 10mm from case are kept at ambient temperature.

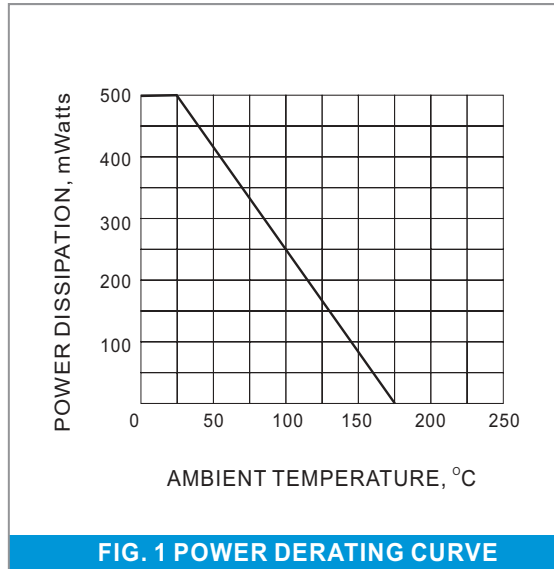
| Parameter                                  | Symbol           | Min. | Typ. | Max. | Units |
|--|------------------|------|------|------|-------|
| Thermal Resistance Junction to Ambient Air | R <sub>thA</sub> | —    | —    | 0.3  | K/W   |
| Forward Voltage at I <sub>F</sub> = 100mA  | V <sub>F</sub>   | —    | —    | 1    | V     |

Valid provided that leads at a distance of 10mm from case are kept at ambient temperature.

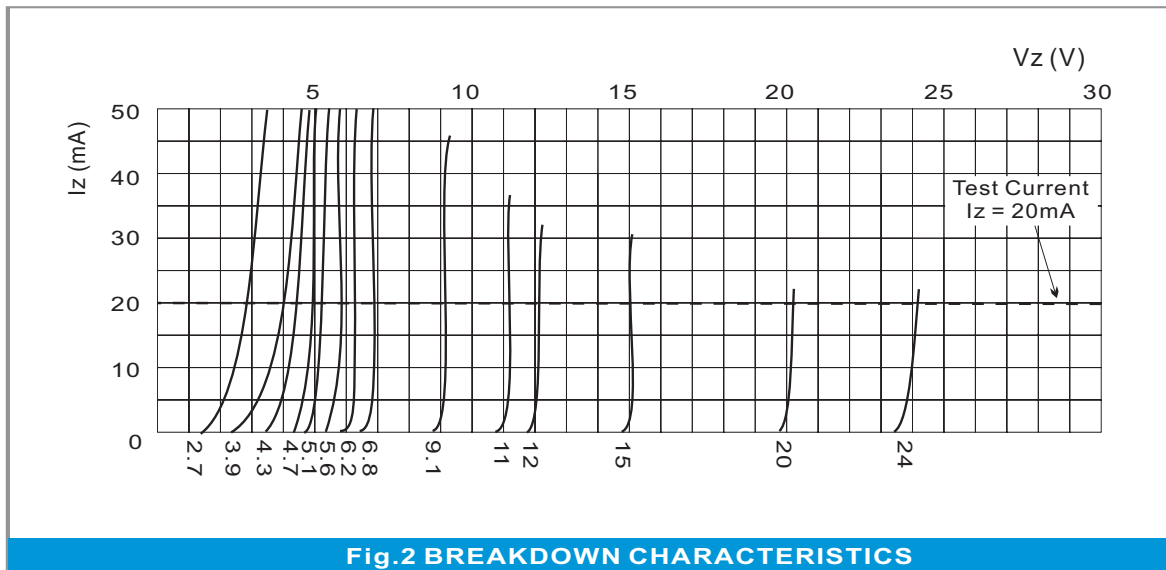
| PartNumber | CLASS | V <sub>Z</sub> @ I <sub>T</sub> |         | I <sub>Z</sub><br>(m A ) | V <sub>R</sub><br>(V ) | I <sub>R</sub> (uA )<br>M A X | I <sub>zT</sub><br>(m A ) | Z <sub>zT</sub> (Ω)<br>M A X | E <sub>K</sub><br>(m A ) | Z <sub>ZK</sub> (Ω)<br>M A X | Marking<br>code |
|------------|-------|---------------------------------|---------|--------------------------|------------------------|-------------------------------|---------------------------|------------------------------|--------------------------|------------------------------|-----------------|
|            |       | M in. V                         | M ax. V |                          |                        |                               |                           |                              |                          |                              |                 |
| GLZ 2.0    | A     | 1.88                            | 2.10    | 20                       | 0.5                    | 120                           | 20                        | 140                          | 1                        | 2000                         | 2A0             |
|            | B     | 2.02                            | 2.20    |                          |                        |                               |                           |                              |                          |                              | 2B0             |
| GLZ 2.2    | A     | 2.12                            | 2.30    | 20                       | 0.7                    | 120                           | 20                        | 120                          | 1                        | 2000                         | 2A2             |
|            | B     | 2.22                            | 2.41    |                          |                        |                               |                           |                              |                          |                              | 2B2             |
| GLZ 2.4    | A     | 2.33                            | 2.52    | 20                       | 1.0                    | 120                           | 20                        | 100                          | 1                        | 2000                         | 2A4             |
|            | B     | 2.43                            | 2.63    |                          |                        |                               |                           |                              |                          |                              | 2B4             |
| GLZ 2.7    | A     | 2.54                            | 2.75    | 20                       | 1.0                    | 120                           | 20                        | 100                          | 1                        | 1000                         | 2A7             |
|            | B     | 2.69                            | 2.91    |                          |                        |                               |                           |                              |                          |                              | 2B7             |
| GLZ 3.0    | A     | 2.85                            | 3.07    | 20                       | 1.0                    | 50                            | 20                        | 80                           | 1                        | 1000                         | 3A0             |
|            | B     | 3.01                            | 3.22    |                          |                        |                               |                           |                              |                          |                              | 3B0             |
| GLZ 3.3    | A     | 3.16                            | 3.38    | 20                       | 1.0                    | 20                            | 20                        | 70                           | 1                        | 1000                         | 3A3             |
|            | B     | 3.32                            | 3.53    |                          |                        |                               |                           |                              |                          |                              | 3B3             |
| GLZ 3.6    | A     | 3.455                           | 3.695   | 20                       | 1.0                    | 10                            | 20                        | 60                           | 1                        | 1000                         | 3A6             |
|            | B     | 3.60                            | 3.845   |                          |                        |                               |                           |                              |                          |                              | 3B6             |
| GLZ 3.9    | A     | 3.74                            | 4.01    | 20                       | 1.0                    | 5                             | 20                        | 50                           | 1                        | 1000                         | 3A9             |
|            | B     | 3.89                            | 4.16    |                          |                        |                               |                           |                              |                          |                              | 3B9             |
| GLZ 4.3    | A     | 4.04                            | 4.29    | 20                       | 1.0                    | 5                             | 20                        | 40                           | 1                        | 1000                         | 4A3             |
|            | B     | 4.17                            | 4.43    |                          |                        |                               |                           |                              |                          |                              | 4B3             |
|            | C     | 4.30                            | 4.57    |                          |                        |                               |                           |                              |                          |                              | 4C3             |
| GLZ 4.7    | A     | 4.44                            | 4.68    | 20                       | 1.0                    | 5                             | 20                        | 25                           | 1                        | 900                          | 4A7             |
|            | B     | 4.55                            | 4.80    |                          |                        |                               |                           |                              |                          |                              | 4B7             |
|            | C     | 4.68                            | 4.93    |                          |                        |                               |                           |                              |                          |                              | 4C7             |
| GLZ 5.1    | A     | 4.81                            | 5.07    | 20                       | 1.5                    | 5                             | 20                        | 20                           | 1                        | 800                          | 5A1             |
|            | B     | 4.94                            | 5.20    |                          |                        |                               |                           |                              |                          |                              | 5B1             |
|            | C     | 5.09                            | 5.37    |                          |                        |                               |                           |                              |                          |                              | 5C1             |
| GLZ 5.6    | A     | 5.28                            | 5.55    | 20                       | 2.5                    | 5                             | 20                        | 13                           | 1                        | 500                          | 5A6             |
|            | B     | 5.45                            | 5.73    |                          |                        |                               |                           |                              |                          |                              | 5B6             |
|            | C     | 5.61                            | 5.91    |                          |                        |                               |                           |                              |                          |                              | 5C6             |
| GLZ 6.2    | A     | 5.78                            | 6.09    | 20                       | 3.0                    | 5                             | 20                        | 10                           | 1                        | 300                          | 6A2             |
|            | B     | 5.96                            | 6.27    |                          |                        |                               |                           |                              |                          |                              | 6B2             |
|            | C     | 6.12                            | 6.44    |                          |                        |                               |                           |                              |                          |                              | 6C2             |
| GLZ 6.8    | A     | 6.29                            | 6.63    | 20                       | 3.5                    | 2                             | 20                        | 8                            | 0.5                      | 150                          | 6A8             |
|            | B     | 6.49                            | 6.83    |                          |                        |                               |                           |                              |                          |                              | 6B8             |
|            | C     | 6.66                            | 7.01    |                          |                        |                               |                           |                              |                          |                              | 6C8             |
| GLZ 7.5    | A     | 6.85                            | 7.22    | 20                       | 4.0                    | 0.5                           | 20                        | 8                            | 0.5                      | 120                          | 7A5             |
|            | B     | 7.07                            | 7.45    |                          |                        |                               |                           |                              |                          |                              | 7B5             |
|            | C     | 7.29                            | 7.67    |                          |                        |                               |                           |                              |                          |                              | 7C5             |
| GLZ 8.2    | A     | 7.53                            | 7.92    | 20                       | 5.0                    | 0.5                           | 20                        | 8                            | 0.5                      | 120                          | 8A2             |
|            | B     | 7.78                            | 8.19    |                          |                        |                               |                           |                              |                          |                              | 8B2             |
|            | C     | 8.03                            | 8.45    |                          |                        |                               |                           |                              |                          |                              | 8C2             |
| GLZ 9.1    | A     | 8.29                            | 8.73    | 20                       | 6.0                    | 0.5                           | 20                        | 8                            | 0.5                      | 120                          | 9A1             |
|            | B     | 8.57                            | 9.01    |                          |                        |                               |                           |                              |                          |                              | 9B1             |
|            | C     | 8.83                            | 9.30    |                          |                        |                               |                           |                              |                          |                              | 9C1             |
| GLZ 10     | A     | 9.12                            | 9.59    | 20                       | 7.0                    | 0.2                           | 20                        | 8                            | 0.5                      | 120                          | 10A             |
|            | B     | 9.41                            | 9.90    |                          |                        |                               |                           |                              |                          |                              | 10B             |
|            | C     | 9.70                            | 10.20   |                          |                        |                               |                           |                              |                          |                              | 10C             |
|            | D     | 9.94                            | 10.44   |                          |                        |                               |                           |                              |                          |                              | 11D             |
| GLZ 11     | A     | 10.18                           | 10.71   | 10                       | 8.0                    | 0.2                           | 10                        | 10                           | 0.5                      | 120                          | 11A             |
|            | B     | 10.50                           | 11.05   |                          |                        |                               |                           |                              |                          |                              | 11B             |
|            | C     | 10.82                           | 11.38   |                          |                        |                               |                           |                              |                          |                              | 11C             |

| PartNumber | CLASS | V <sub>Z</sub> @ I <sub>T</sub> |        | I <sub>Z</sub><br>(mA) | V <sub>R</sub><br>(V) | I <sub>R</sub> (uA)<br>MAX | I <sub>ZT</sub><br>(mA) | Z <sub>ZT</sub> (Ω)<br>MAX | I <sub>K</sub><br>(mA) | Z <sub>ZK</sub> (Ω)<br>MAX | Marking<br>Code |
|------------|-------|---------------------------------|--------|------------------------|-----------------------|----------------------------|-------------------------|----------------------------|------------------------|----------------------------|-----------------|
|            |       | Min. V                          | Max. V |                        |                       |                            |                         |                            |                        |                            |                 |
| GLZ 12     | A     | 11.13                           | 11.71  | 10                     | 9.0                   | 0.2                        | 10                      | 12                         | 0.5                    | 110                        | 12A             |
|            | B     | 11.44                           | 12.03  |                        |                       |                            |                         |                            |                        |                            | 12B             |
|            | C     | 11.74                           | 12.35  |                        |                       |                            |                         |                            |                        |                            | 12C             |
| GLZ 13     | A     | 12.11                           | 12.75  | 10                     | 10                    | 0.2                        | 10                      | 14                         | 0.5                    | 110                        | 13A             |
|            | B     | 12.55                           | 13.21  |                        |                       |                            |                         |                            |                        |                            | 13B             |
|            | C     | 12.99                           | 13.66  |                        |                       |                            |                         |                            |                        |                            | 13C             |
| GLZ 15     | A     | 13.44                           | 14.13  | 10                     | 11                    | 0.2                        | 10                      | 16                         | 0.5                    | 110                        | 15A             |
|            | B     | 13.89                           | 14.62  |                        |                       |                            |                         |                            |                        |                            | 15B             |
|            | C     | 14.35                           | 15.09  |                        |                       |                            |                         |                            |                        |                            | 15C             |
| GLZ 16     | A     | 14.80                           | 15.57  | 10                     | 12                    | 0.2                        | 10                      | 18                         | 0.5                    | 150                        | 16A             |
|            | B     | 15.25                           | 16.04  |                        |                       |                            |                         |                            |                        |                            | 16B             |
|            | C     | 15.69                           | 16.51  |                        |                       |                            |                         |                            |                        |                            | 16C             |
| GLZ 18     | A     | 16.22                           | 17.06  | 10                     | 13                    | 0.2                        | 10                      | 23                         | 0.5                    | 150                        | 18A             |
|            | B     | 16.82                           | 17.70  |                        |                       |                            |                         |                            |                        |                            | 18B             |
|            | C     | 17.42                           | 18.33  |                        |                       |                            |                         |                            |                        |                            | 18C             |
| GLZ 20     | A     | 18.02                           | 18.96  | 10                     | 15                    | 0.2                        | 10                      | 28                         | 0.5                    | 200                        | 20A             |
|            | B     | 18.63                           | 19.59  |                        |                       |                            |                         |                            |                        |                            | 20B             |
|            | C     | 19.23                           | 20.22  |                        |                       |                            |                         |                            |                        |                            | 20C             |
|            | D     | 19.72                           | 20.72  |                        |                       |                            |                         |                            |                        |                            | 20D             |
| GLZ 22     | A     | 20.15                           | 21.20  | 5                      | 17                    | 0.2                        | 5                       | 30                         | 0.5                    | 200                        | 22A             |
|            | B     | 20.64                           | 21.71  |                        |                       |                            |                         |                            |                        |                            | 22B             |
|            | C     | 21.08                           | 22.17  |                        |                       |                            |                         |                            |                        |                            | 22C             |
|            | D     | 21.52                           | 22.63  |                        |                       |                            |                         |                            |                        |                            | 22D             |
| GLZ 24     | A     | 22.05                           | 23.18  | 5                      | 19                    | 0.2                        | 5                       | 35                         | 0.5                    | 200                        | 24A             |
|            | B     | 22.61                           | 23.77  |                        |                       |                            |                         |                            |                        |                            | 24B             |
|            | C     | 23.12                           | 24.31  |                        |                       |                            |                         |                            |                        |                            | 24C             |
|            | D     | 23.63                           | 24.85  |                        |                       |                            |                         |                            |                        |                            | 24D             |
| GLZ 27     | A     | 24.26                           | 25.52  | 5                      | 21                    | 0.2                        | 5                       | 45                         | 0.5                    | 250                        | 27A             |
|            | B     | 24.97                           | 26.26  |                        |                       |                            |                         |                            |                        |                            | 27B             |
|            | C     | 25.63                           | 26.95  |                        |                       |                            |                         |                            |                        |                            | 27C             |
|            | D     | 26.29                           | 27.64  |                        |                       |                            |                         |                            |                        |                            | 27D             |
| GLZ 30     | A     | 26.99                           | 28.39  | 5                      | 23                    | 0.2                        | 5                       | 55                         | 0.5                    | 250                        | 30A             |
|            | B     | 27.70                           | 29.13  |                        |                       |                            |                         |                            |                        |                            | 30B             |
|            | C     | 28.36                           | 29.82  |                        |                       |                            |                         |                            |                        |                            | 30C             |
|            | D     | 29.02                           | 30.51  |                        |                       |                            |                         |                            |                        |                            | 30D             |
| GLZ 33     | A     | 29.68                           | 31.22  | 5                      | 25                    | 0.2                        | 5                       | 65                         | 0.5                    | 250                        | 33A             |
|            | B     | 30.32                           | 31.88  |                        |                       |                            |                         |                            |                        |                            | 33B             |
|            | C     | 30.90                           | 32.50  |                        |                       |                            |                         |                            |                        |                            | 33C             |
|            | D     | 31.49                           | 33.11  |                        |                       |                            |                         |                            |                        |                            | 33D             |
| GLZ 36     | A     | 32.14                           | 33.79  | 5                      | 27                    | 0.2                        | 5                       | 75                         | 0.5                    | 250                        | 36A             |
|            | B     | 32.79                           | 34.49  |                        |                       |                            |                         |                            |                        |                            | 36B             |
|            | C     | 33.40                           | 35.13  |                        |                       |                            |                         |                            |                        |                            | 36C             |
|            | D     | 34.01                           | 35.77  |                        |                       |                            |                         |                            |                        |                            | 36D             |
| GLZ 39     | A     | 34.68                           | 36.47  | 5                      | 30                    | 0.2                        | 5                       | 85                         | 0.5                    | 250                        | 39A             |
|            | B     | 35.36                           | 37.19  |                        |                       |                            |                         |                            |                        |                            | 39B             |
|            | C     | 36.00                           | 37.85  |                        |                       |                            |                         |                            |                        |                            | 39C             |
|            | D     | 36.63                           | 38.52  |                        |                       |                            |                         |                            |                        |                            | 39D             |
| GLZ 43     |       | 40.00                           | 45.00  | 5                      | 33                    | 0.2                        | 5                       | 90                         | —                      |                            | 43              |
| GLZ 47     |       | 44.00                           | 49.00  | 5                      | 36                    | 0.2                        | 5                       | 90                         | —                      |                            | 47              |
| GLZ 51     |       | 48.00                           | 54.00  | 5                      | 39                    | 0.2                        | 5                       | 110                        | —                      |                            | 51              |
| GLZ 56     |       | 53.00                           | 60.00  | 5                      | 43                    | 0.2                        | 5                       | 110                        | —                      |                            | 56              |

## RATING AND CHARACTERISTIC CURVES



**FIG. 1 POWER DERATING CURVE**



**Fig.2 BREAKDOWN CHARACTERISTICS**