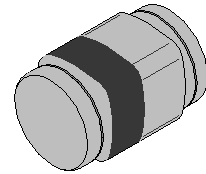




# Zener diode

## Features

1. Saving space
2. Fits onto SOD 323/SOT 23 footprints
3. Micro Melf package



## Applications

Voltage stabilization

## Construction

Silicon epitaxial planar

## Absolute Maximum Ratings

$T_j=25^{\circ}\text{C}$

| Parameter                 | Test Conditions               | Type | Symbol    | Value     | Unit               |
|---------------------------|-------------------------------|------|-----------|-----------|--------------------|
| Power dissipation         | $R_{thJA} \leq 300\text{K/W}$ |      | $P_V$     | 500       | mW                 |
| Z-current                 |                               |      | $I_Z$     | $P_V/V_Z$ | mA                 |
| Junction temperature      |                               |      | $T_j$     | 175       | $^{\circ}\text{C}$ |
| Storage temperature range |                               |      | $T_{stg}$ | -65~+175  | $^{\circ}\text{C}$ |

## Maximum Thermal Resistance

$T_j=25^{\circ}\text{C}$

| Parameter        | Test Conditions                 | Symbol     | Value | Unit |
|------------------|---------------------------------|------------|-------|------|
| Junction ambient | on PC board 50mm × 50mm × 1.6mm | $R_{thJA}$ | 500   | K/W  |

## Electrical Characteristics

$T_j=25^{\circ}\text{C}$

| Parameter       | Test Conditions    | Type | Symbol | Min | Typ | Max | Unit |
|-----------------|--------------------|------|--------|-----|-----|-----|------|
| Forward voltage | $I_F=200\text{mA}$ |      | $V_F$  |     |     | 1.5 | V    |

# MCL55C Series



| Type    | V <sub>Znom</sub> | I <sub>ZT</sub> | for V <sub>ZT</sub> and | r <sub>zT</sub> | r <sub>zIK</sub> at | I <sub>ZK</sub> | I <sub>R</sub> and | I <sub>R</sub> at | V <sub>R</sub> | TK <sub>VZ</sub> |
|---------|-------------------|-----------------|-------------------------|-----------------|---------------------|-----------------|--------------------|-------------------|----------------|------------------|
| MCL55C. | V                 | mA              | V <sup>1)</sup>         | Ω               | Ω                   | mA              | μ A                | μ A <sup>2)</sup> | V              | %/K              |
| 2V4     | 2.4               | 5               | 2.28~2.56               | <85             | <600                | 1               | <50                | <100              | 1              | -0.09~-0.06      |
| 2V7     | 2.7               | 5               | 2.5~2.9                 | <85             | <600                | 1               | <10                | <50               | 1              | -0.09~-0.06      |
| 3V0     | 3.0               | 5               | 2.8~3.2                 | <85             | <600                | 1               | <4                 | <40               | 1              | -0.08~-0.05      |
| 3V3     | 3.3               | 5               | 3.1~3.5                 | <85             | <600                | 1               | <2                 | <40               | 1              | -0.08~-0.05      |
| 3V6     | 3.6               | 5               | 3.4~3.8                 | <85             | <600                | 1               | <2                 | <40               | 1              | -0.08~-0.05      |
| 3V9     | 3.9               | 5               | 3.7~4.1                 | <85             | <600                | 1               | <2                 | <40               | 1              | -0.08~-0.05      |
| 4V3     | 4.3               | 5               | 4.0~4.6                 | <75             | <600                | 1               | <1                 | <20               | 1              | -0.06~-0.03      |
| 4V7     | 4.7               | 5               | 4.4~5.0                 | <60             | <600                | 1               | <0.5               | <10               | 1              | -0.05~+0.02      |
| 5V1     | 5.1               | 5               | 4.8~5.4                 | <35             | <550                | 1               | <0.1               | <2                | 1              | -0.02~+0.02      |
| 5V6     | 5.6               | 5               | 5.2~6.0                 | <25             | <450                | 1               | <0.1               | <2                | 1              | -0.05~+0.05      |
| 6V2     | 6.2               | 5               | 5.8~6.6                 | <10             | <200                | 1               | <0.1               | <2                | 2              | 0.03~0.06        |
| 6V8     | 6.8               | 5               | 6.4~7.2                 | <8              | <150                | 1               | <0.1               | <2                | 3              | 0.03~0.07        |
| 7V5     | 7.5               | 5               | 7.0~7.9                 | <7              | <50                 | 1               | <0.1               | <2                | 5              | 0.03~0.07        |
| 8V2     | 8.2               | 5               | 7.7~8.7                 | <7              | <50                 | 1               | <0.1               | <2                | 6.2            | 0.03~0.08        |
| 9V1     | 9.1               | 5               | 8.5~9.6                 | <10             | <50                 | 1               | <0.1               | <2                | 6.8            | 0.03~0.09        |
| 10      | 10                | 5               | 9.4~10.6                | <15             | <70                 | 1               | <0.1               | <2                | 7.5            | 0.03~0.1         |
| 11      | 11                | 5               | 10.4~11.6               | <20             | <70                 | 1               | <0.1               | <2                | 8.2            | 0.03~0.11        |
| 12      | 12                | 5               | 11.4~12.7               | <20             | <90                 | 1               | <0.1               | <2                | 9.1            | 0.03~0.11        |
| 13      | 13                | 5               | 12.4~14.1               | <26             | <110                | 1               | <0.1               | <2                | 10             | 0.03~0.11        |
| 15      | 15                | 5               | 13.8~15.6               | <30             | <110                | 1               | <0.1               | <2                | 11             | 0.03~0.11        |
| 16      | 16                | 5               | 15.3~17.1               | <40             | <170                | 1               | <0.1               | <2                | 12             | 0.03~0.11        |
| 18      | 18                | 5               | 16.8~19.1               | <50             | <170                | 1               | <0.1               | <2                | 13             | 0.03~0.11        |
| 20      | 20                | 5               | 18.8~21.2               | <55             | <220                | 1               | <0.1               | <2                | 15             | 0.03~0.11        |
| 22      | 22                | 5               | 20.8~23.3               | <55             | <220                | 1               | <0.1               | <2                | 16             | 0.04~0.12        |
| 24      | 24                | 5               | 22.8~25.6               | <80             | <220                | 1               | <0.1               | <2                | 18             | 0.04~0.12        |
| 27      | 27                | 5               | 25.1~28.9               | <80             | <220                | 1               | <0.1               | <2                | 20             | 0.04~0.12        |
| 30      | 30                | 5               | 28~32                   | <80             | <220                | 1               | <0.1               | <2                | 22             | 0.04~0.12        |
| 33      | 33                | 5               | 31~35                   | <80             | <220                | 1               | <0.1               | <2                | 24             | 0.04~0.12        |
| 36      | 36                | 5               | 34~38                   | <80             | <220                | 1               | <0.1               | <2                | 27             | 0.04~0.12        |
| 39      | 39                | 2.5             | 37~41                   | <90             | <500                | 0.5             | <0.1               | <5                | 30             | 0.04~0.12        |
| 43      | 43                | 2.5             | 40~46                   | <90             | <600                | 0.5             | <0.1               | <5                | 33             | 0.04~0.12        |
| 47      | 47                | 2.5             | 44~50                   | <110            | <700                | 0.5             | <0.1               | <5                | 36             | 0.04~0.12        |
| 51      | 51                | 2.5             | 48~54                   | <125            | <700                | 0.5             | <0.1               | <10               | 39             | 0.04~0.12        |
| 56      | 56                | 2.5             | 52~60                   | <135            | <1000               | 0.5             | <0.1               | <10               | 43             | 0.04~0.12        |
| 62      | 62                | 2.5             | 58~66                   | <150            | <1000               | 0.5             | <0.1               | <10               | 47             | 0.04~0.12        |
| 68      | 68                | 2.5             | 64~72                   | <200            | <1000               | 0.5             | <0.1               | <10               | 51             | 0.04~0.12        |
| 75      | 75                | 2.5             | 70~79                   | <250            | <1500               | 0.5             | <0.1               | <10               | 56             | 0.04~0.12        |

<sup>1)</sup> Tighter tolerances available request:

MCL55A... ±1% of V<sub>Znom</sub>

MCL55B... ±2% of V<sub>Znom</sub>

MCL55F... ±3% of V<sub>Znom</sub>

<sup>2)</sup> at T<sub>J</sub>=150°C



## Characteristics ( $T_j=25^\circ\text{C}$ unless otherwise specified)

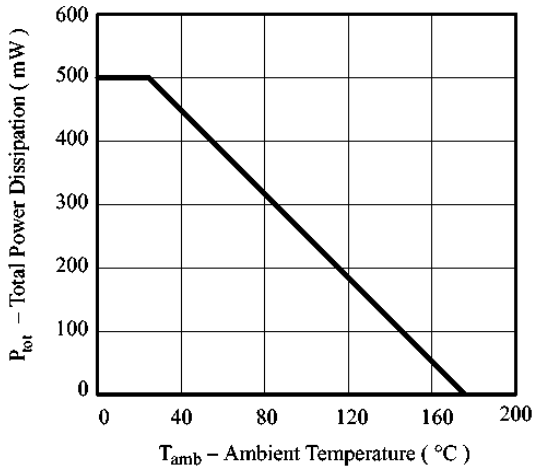


Figure 1. Total Power Dissipation vs. Ambient Temperature

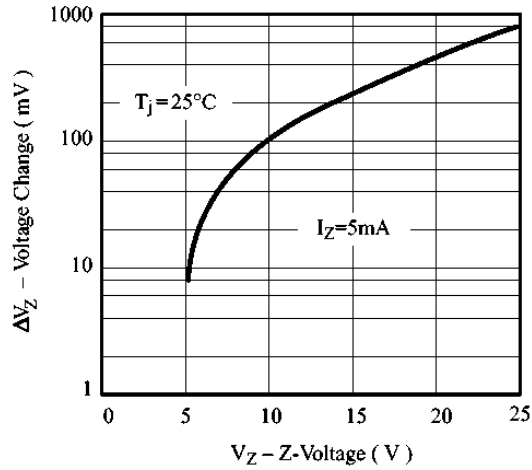


Figure 2. Typical Change of Working Voltage under Operating Conditions at  $T_{\text{amb}}=25^\circ\text{C}$

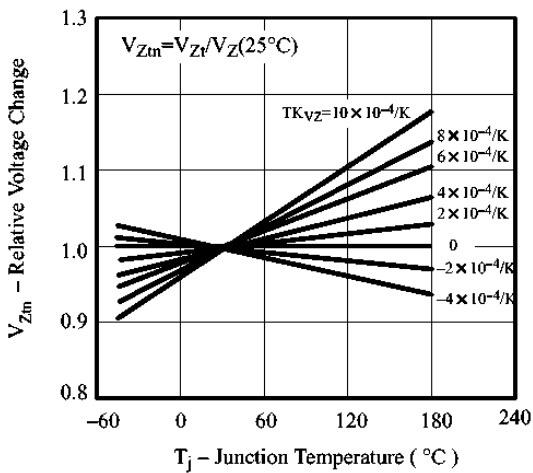


Figure 3. Typical Change of Working Voltage vs. Junction Temperature

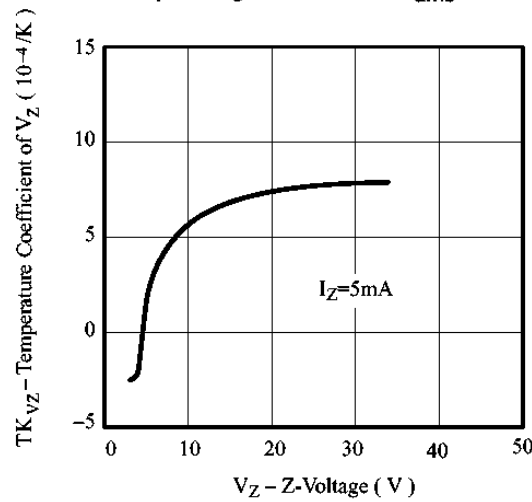


Figure 4. Temperature Coefficient of  $V_Z$  vs. Z-Voltage

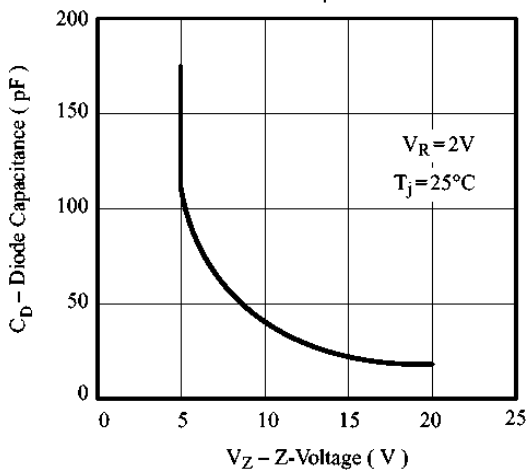


Figure 5. Diode Capacitance vs. Z-Voltage

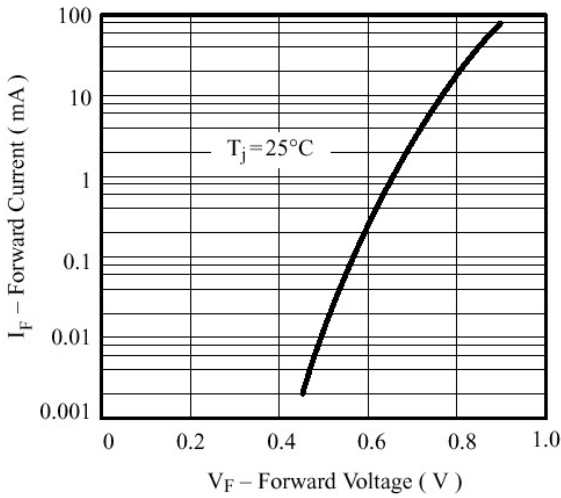


Figure 6. Forward Current vs. Forward Voltage

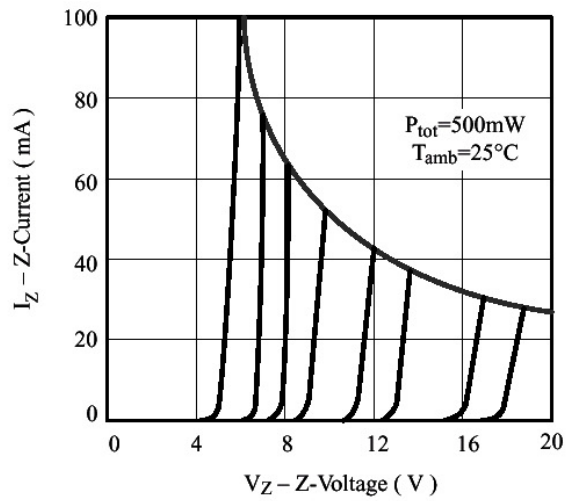


Figure 7. Z-Current vs. Z-Voltage

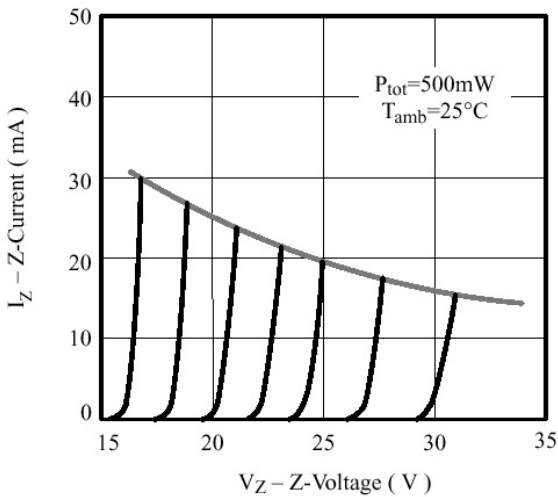


Figure 8. Z-Current vs. Z-Voltage

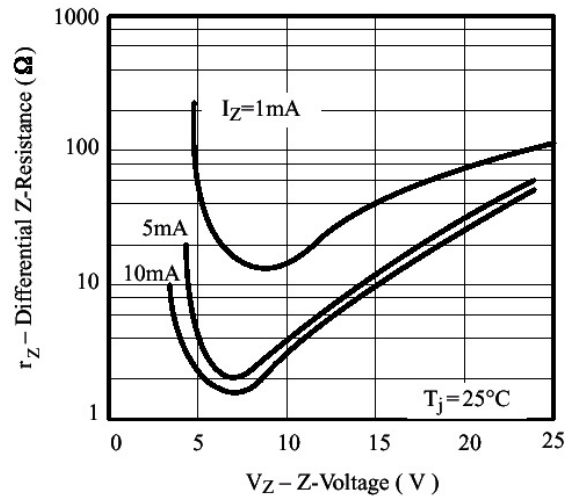


Figure 9. Differential Z-Resistance vs. Z-Voltage

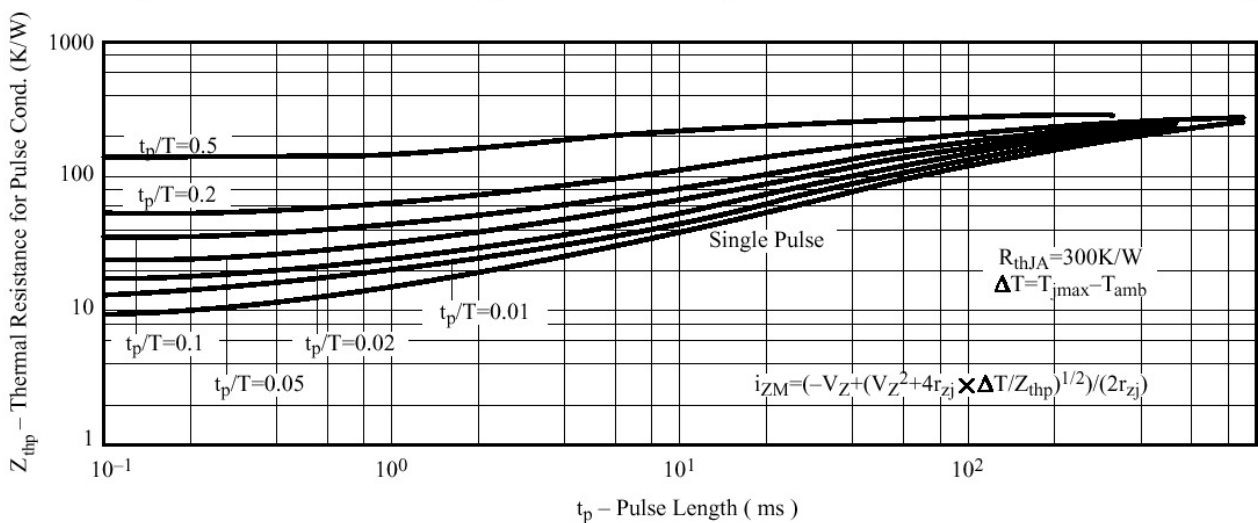
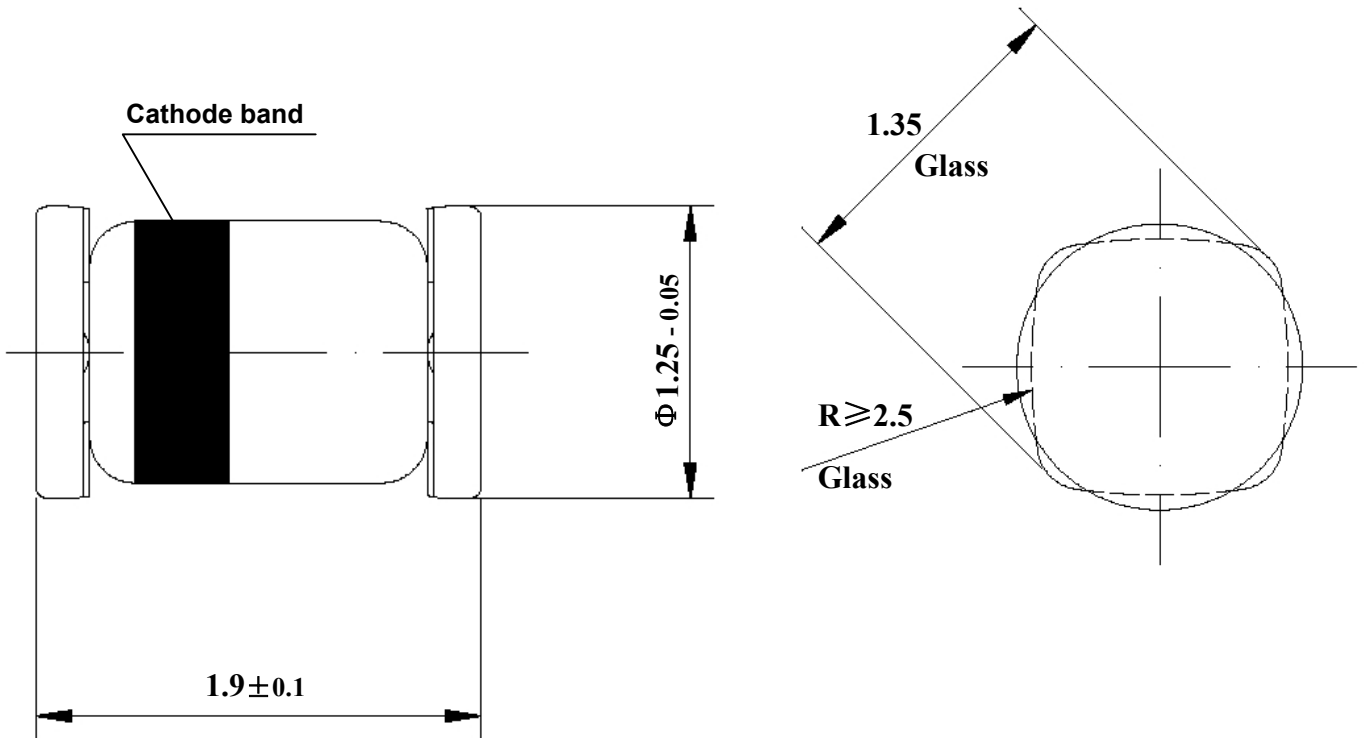


Figure 10. Thermal Response



Dimensions in mm



Glass Case

Micro Melf