

# 1 Watt LL-41 Hermetically Sealed Glass Zener Voltage Regulators

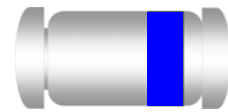


SURFACE MOUNT  
LL-41

## Absolute Maximum Ratings $T_A = 25^\circ\text{C}$ unless otherwise noted

| Parameter                              | Value       | Units                       |
|--|-------------|-----------------------------|
| Storage Temperature Range              | -65 to +200 | $^\circ\text{C}$            |
| Maximum Junction Operating Temperature | +175        | $^\circ\text{C}$            |
| Total Device Dissipation               | 1.0         | Watt                        |
| Thermal Resistance Junction to Ambient | 170         | $^\circ\text{C} / \text{W}$ |

DEVICE MARKING DIAGRAM



Cathode Band Color: Blue

These ratings are limiting values above which the serviceability of the diode may be impaired.

## Specification Features:

- Zener Voltage Range 3.3 to 56 Volts
- LL-41 MELF Package (JEDEC DO-213AB)
- Surface Mount Devices (SMD)
- Hermetically Sealed Glass
- Compression Bonded Construction
- All External Surfaces Are Corrosion Resistant And Terminals Are Readily Solderable
- RoHS Compliant
- Matte Tin (Sn) Lead Finish
- Color band Indicates Negative Polarity



ELECTRICAL SYMBOL

## Electrical Characteristics $T_A = 25^\circ\text{C}$ unless otherwise noted

| Device Type | $V_Z @ I_{ZT}$<br>(Volts)<br>Nominal | $I_{ZT}$<br>(mA) | $Z_{ZT} @ I_{ZT}$<br>( $\Omega$ )<br>Max | $I_{ZK}$<br>(mA) | $Z_{ZK} @ I_{ZK}$<br>( $\Omega$ )<br>Max | $I_R @ V_R$<br>( $\mu\text{A}$ )<br>Max | $V_R$<br>(Volts) |
|-------------|--------------------------------------|------------------|--|------------------|--|---|------------------|
| TCZM4728A   | 3.3                                  | 76               | 10                                       | 1                | 400                                      | 100                                     | 1                |
| TCZM4729A   | 3.6                                  | 69               | 10                                       | 1                | 400                                      | 100                                     | 1                |
| TCZM4730A   | 3.9                                  | 64               | 9  | 1                | 400                                      | 50                                      | 1                |
| TCZM4731A   | 4.3                                  | 58               | 9  | 1                | 400                                      | 10                                      | 1                |
| TCZM4732A   | 4.7                                  | 53               | 8  | 1                | 500                                      | 10                                      | 1                |
| TCZM4733A   | 5.1                                  | 49               | 7  | 1                | 550                                      | 10                                      | 1                |
| TCZM4734A   | 5.6                                  | 45               | 5  | 1                | 600                                      | 10                                      | 2                |
| TCZM4735A   | 6.2                                  | 41               | 2  | 1                | 700                                      | 10                                      | 3                |
| TCZM4736A   | 6.8                                  | 37               | 3.5                                      | 1                | 700                                      | 10                                      | 4                |
| TCZM4737A   | 7.5                                  | 34               | 4  | 0.5              | 700                                      | 10                                      | 5                |
| TCZM4738A   | 8.2                                  | 31               | 4.5                                      | 0.5              | 700                                      | 10                                      | 6                |
| TCZM4739A   | 9.1                                  | 28               | 5  | 0.5              | 700                                      | 10                                      | 7                |
| TCZM4740A   | 10                                   | 25               | 7  | 0.25             | 700                                      | 10                                      | 7.6              |
| TCZM4741A   | 11                                   | 23               | 8  | 0.25             | 700                                      | 5                                       | 8.4              |
| TCZM4742A   | 12                                   | 21               | 9  | 0.25             | 700                                      | 5                                       | 9.1              |
| TCZM4743A   | 13                                   | 19               | 10                                       | 0.25             | 700                                      | 5                                       | 9.9              |
| TCZM4744A   | 15                                   | 17               | 14                                       | 0.25             | 700                                      | 5                                       | 11.4             |
| TCZM4745A   | 16                                   | 15.5             | 16                                       | 0.25             | 700                                      | 5                                       | 12.2             |
| TCZM4746A   | 18                                   | 14               | 20                                       | 0.25             | 700                                      | 5                                       | 13.7             |

**Electrical Characteristics**  $T_A = 25^\circ\text{C}$  unless otherwise noted

| Device Type | VZ @ IZT<br>(Volts)<br>Nominal | IZT<br>(mA) | ZZT @ IZT<br>( $\Omega$ )<br>Max | IZK<br>(mA) | ZZK @ IZK<br>( $\Omega$ )<br>Max | IR @ VR<br>( $\mu\text{A}$ )<br>Max | VR<br>(Volts) |
|-------------|--------------------------------|-------------|----------------------------------|-------------|----------------------------------|-------------------------------------|---------------|
| TCZM4747A   | 20                             | 12.5        | 22                               | 0.25        | 750                              | 5                                   | 15.2          |
| TCZM4748A   | 22                             | 11.5        | 23                               | 0.25        | 750                              | 5                                   | 16.7          |
| TCZM4749A   | 24                             | 10.5        | 25                               | 0.25        | 750                              | 5                                   | 18.2          |
| TCZM4750A   | 27                             | 9.5         | 35                               | 0.25        | 750                              | 5                                   | 20.6          |
| TCZM4751A   | 30                             | 8.5         | 40                               | 0.25        | 1000                             | 5                                   | 22.8          |
| TCZM4752A   | 33                             | 7.5         | 45                               | 0.25        | 1000                             | 5                                   | 25.1          |
| TCZM4753A   | 36                             | 7           | 50                               | 0.25        | 1000                             | 5                                   | 27.4          |
| TCZM4754A   | 39                             | 6.5         | 60                               | 0.25        | 1000                             | 5                                   | 29.7          |
| TCZM4755A   | 43                             | 6           | 70                               | 0.25        | 1500                             | 5                                   | 32.7          |
| TCZM4756A   | 47                             | 5.5         | 80                               | 0.25        | 1500                             | 5                                   | 35.8          |
| TCZM4757A   | 51                             | 5           | 95                               | 0.25        | 1500                             | 5                                   | 38.8          |
| TCZM4758A   | 56                             | 4.5         | 110                              | 0.25        | 2000                             | 5                                   | 42.6          |

$V_F$  Forward Voltage = 1.2 V Maximum @  $I_F = 200$  mA for all types

**Notes:**
**1. TOLERANCE AND TYPE NUMBER DESIGNATION ( $V_Z$ )**

The type numbers listed have a standard tolerance on the nominal zener voltage of  $\pm 5\%$ . Device tolerance of  $\pm 2\%$  is indicated by a "C" instead of an "A".

**2. SPECIALS AVAILABLE INCLUDE**

Nominal zener voltages between the voltages shown and tighter voltage, for detailed information on price, availability and delivery, contact you nearest Tak Cheong representative.

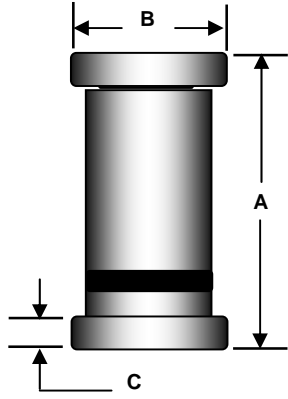
**3. ZENER VOLTAGE ( $V_Z$ ) MEASUREMENT**

The zener voltage ( $V_Z$ ) is tested under pulse condition.

**4. ZENER IMPEDANCE ( $Z_Z$ ) DERIVATION**

The zener impedance is derived from the 60 cycle AC voltage, which results when an AC current having an RMS value equal to 10% of the DC zener current ( $I_{ZT}$  or  $I_{ZK}$ ) is superimposed on  $I_{ZT}$  or  $I_{ZK}$ .

Package Outline

| Package     | Case Outline   |      |             |       |  |  |             |  |        |  |     |     |     |     |   |      |      |       |       |   |      |      |       |       |   |      |      |       |       |
|-------------|--|------|-------------|-------|--|--|-------------|--|--------|--|-----|-----|-----|-----|---|------|------|-------|-------|---|------|------|-------|-------|---|------|------|-------|-------|
| LL- 41 MELF |  <table border="1" data-bbox="746 526 1412 817"> <thead> <tr> <th rowspan="3">DIM</th> <th colspan="4">LL- 41 MELF</th> </tr> <tr> <th colspan="2">Millimeters</th> <th colspan="2">Inches</th> </tr> <tr> <th>Min</th> <th>Max</th> <th>Min</th> <th>Max</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>4.80</td> <td>5.20</td> <td>0.189</td> <td>0.205</td> </tr> <tr> <td>B</td> <td>2.39</td> <td>2.66</td> <td>0.094</td> <td>0.105</td> </tr> <tr> <td>C</td> <td>0.41</td> <td>0.55</td> <td>0.016</td> <td>0.022</td> </tr> </tbody> </table> | DIM  | LL- 41 MELF |       |  |  | Millimeters |  | Inches |  | Min | Max | Min | Max | A | 4.80 | 5.20 | 0.189 | 0.205 | B | 2.39 | 2.66 | 0.094 | 0.105 | C | 0.41 | 0.55 | 0.016 | 0.022 |
| DIM         | LL- 41 MELF  |      |             |       |  |  |             |  |        |  |     |     |     |     |   |      |      |       |       |   |      |      |       |       |   |      |      |       |       |
|             | Millimeters  |      | Inches      |       |  |  |             |  |        |  |     |     |     |     |   |      |      |       |       |   |      |      |       |       |   |      |      |       |       |
|             | Min  | Max  | Min         | Max   |  |  |             |  |        |  |     |     |     |     |   |      |      |       |       |   |      |      |       |       |   |      |      |       |       |
| A           | 4.80   | 5.20 | 0.189       | 0.205 |  |  |             |  |        |  |     |     |     |     |   |      |      |       |       |   |      |      |       |       |   |      |      |       |       |
| B           | 2.39   | 2.66 | 0.094       | 0.105 |  |  |             |  |        |  |     |     |     |     |   |      |      |       |       |   |      |      |       |       |   |      |      |       |       |
| C           | 0.41   | 0.55 | 0.016       | 0.022 |  |  |             |  |        |  |     |     |     |     |   |      |      |       |       |   |      |      |       |       |   |      |      |       |       |


Notes:

1. All dimensions are within DO-213AB JEDEC standard.
2. LL-41 MELF polarity denoted by cathode band.

This datasheet presents technical data of Tak Cheong's Zener Diodes. Complete specifications for the individual devices are provided in the form of datasheets. A comprehensive Selector Guide is included to simplify the task of choosing the best set of components required for a specific application. For additional information, please visit our website <http://www.takcheong.com>.

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