

# 1N4728 THRU 1N4761

**1.0 Watt  
Zener Diode  
3.3 to 75 Volts**

## Features

- Hermetic Glass Package
- Silicon Planar Zener Diodes
- Lead Free Finish/Rohs Compliant (Note2) ("P" Suffix designates Compliant. See ordering information)
- Moisture Sensitivity: Level 1

## Mechanical Data

- Case: DO-41 Glass Package
- Marking : Cathode band and type number
- Weight: 0.309 grams (Approx.)

## Maximum Ratings

- Operating Temperature: -65°C to +200°C
- Storage Temperature: -65°C to +200°C
- For capacitive load, derate current by 20%

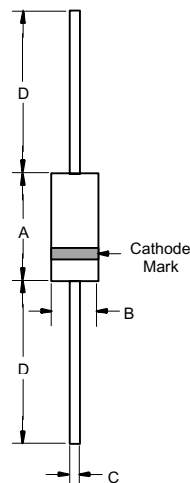
## Electrical Characteristics @ 25°C Unless Otherwise Specified

|                           |            |         |                             |
|---------------------------|------------|---------|-----------------------------|
| DC Power Dissipation      | $P_d$      | 1.0W    | $T_A \leq 50^\circ\text{C}$ |
| Forward Voltage Drop      | $V_F$      | 1.2V    |                             |
| Thermal Resistance        | $R_{thJA}$ | 100K/W  | Note 1                      |
| Power Derating from 100°C | $P_{tot}$  | 10mW/°C |                             |

**Note:** (1) Valid provided that electrodes at a distance of 10mm from case are kept at ambient temperature.

(2). Lead in Glass Exemption Applied, see EU Directive Annex 5.

DO-41G

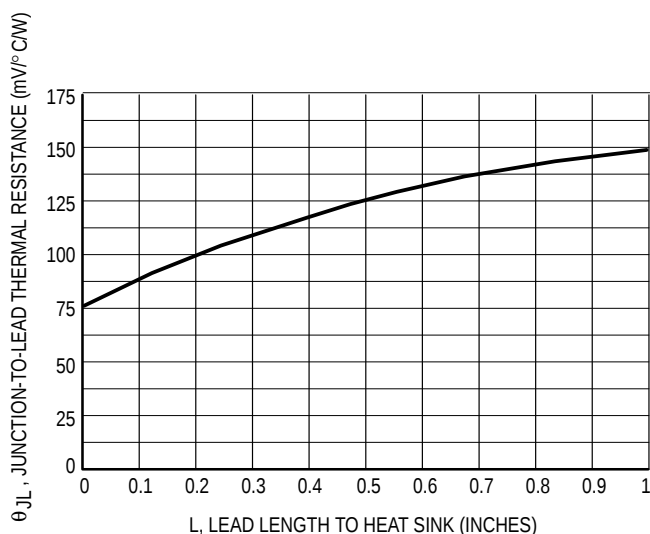


| DIM | INCHES |       | MM    |       | NOTE     |
|-----|--------|-------|-------|-------|----------|
|     | MIN    | MAX   | MIN   | MAX   |          |
| A   | -----  | 0.177 | ----- | 4.50  |          |
| B   | -----  | 0.110 | ----- | 2.80  | Diameter |
| C   | 0.026  | 0.034 | 0.70  | 0.90  | Diameter |
| D   | 1.000  | ----- | 25.40 | ----- |          |

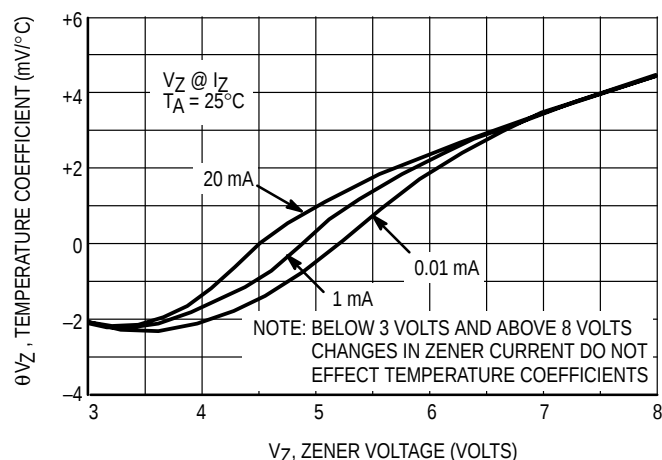
**Electrical Characteristics** ( $T_A = 25^\circ\text{C}$  unless otherwise noted). Maximum  $V_F = 1.2\text{V}$  at  $I_F = 200\text{mA}$ 

| MCC<br>Part Number | Zener<br>Voltage | Test<br>Current | Maximum Dynamic Impedance |                   |          | Maximum Reverse<br>Leakage Current |       | Surge<br>Current | Maximum<br>Regulator<br>Current |
|--------------------|------------------|-----------------|---------------------------|-------------------|----------|------------------------------------|-------|------------------|---------------------------------|
|                    | $V_Z @ I_{ZT}$   | $I_{ZT}$        | $Z_{ZT} @ I_{ZT}$         | $Z_{ZK} @ I_{ZK}$ | $I_{ZK}$ | $I_R @ V_R$                        | $V_R$ | $I_R$            | $I_{ZM}$                        |
|                    | Volts            | mA              | OHMS                      | OHMS              | mA       | uA                                 | Volts | mA               | mA                              |
| 1N4728             | 3.3              | 76              | 10                        | 400               | 1        | 100                                | 1     | 1380             | 276                             |
| 1N4729             | 3.6              | 69              | 10                        | 400               | 1        | 100                                | 1     | 1260             | 252                             |
| 1N4730             | 3.9              | 64              | 9                         | 400               | 1        | 50                                 | 1     | 1190             | 234                             |
| 1N4731             | 4.3              | 58              | 9                         | 400               | 1        | 10                                 | 1     | 1070             | 217                             |
| 1N4732             | 4.7              | 53              | 8                         | 500               | 1        | 10                                 | 1     | 970              | 193                             |
| 1N4733             | 5.1              | 49              | 7                         | 550               | 1        | 10                                 | 1     | 890              | 178                             |
| 1N4734             | 5.6              | 45              | 5                         | 600               | 1        | 10                                 | 2     | 810              | 162                             |
| 1N4735             | 6.2              | 41              | 2                         | 700               | 1        | 10                                 | 3     | 730              | 146                             |
| 1N4736             | 6.8              | 37              | 3.5                       | 700               | 1        | 10                                 | 4     | 660              | 133                             |
| 1N4737             | 7.5              | 34              | 4                         | 700               | 0.5      | 10                                 | 5     | 605              | 121                             |
| 1N4738             | 8.2              | 31              | 4.5                       | 700               | 0.5      | 10                                 | 6     | 550              | 110                             |
| 1N4739             | 9.1              | 28              | 5                         | 700               | 0.5      | 10                                 | 7     | 500              | 100                             |
| 1N4740             | 10               | 25              | 7                         | 700               | 0.25     | 10                                 | 7.6   | 454              | 91                              |
| 1N4741             | 11               | 23              | 8                         | 700               | 0.25     | 5                                  | 8.4   | 414              | 83                              |
| 1N4742             | 12               | 21              | 9                         | 700               | 0.25     | 5                                  | 9.1   | 380              | 76                              |
| 1N4743             | 13               | 19              | 10                        | 700               | 0.25     | 5                                  | 9.9   | 344              | 69                              |
| 1N4744             | 15               | 17              | 14                        | 700               | 0.25     | 5                                  | 11.4  | 304              | 61                              |
| 1N4745             | 16               | 15.5            | 16                        | 700               | 0.25     | 5                                  | 12.2  | 285              | 57                              |
| 1N4746             | 18               | 14              | 20                        | 750               | 0.25     | 5                                  | 13.7  | 250              | 50                              |
| 1N4747             | 20               | 12.5            | 22                        | 750               | 0.25     | 5                                  | 15.2  | 225              | 45                              |
| 1N4748             | 22               | 11.5            | 23                        | 750               | 0.25     | 5                                  | 16.7  | 205              | 41                              |
| 1N4749             | 24               | 10.5            | 25                        | 750               | 0.25     | 5                                  | 18.2  | 190              | 38                              |
| 1N4750             | 27               | 9.5             | 35                        | 750               | 0.25     | 5                                  | 20.6  | 170              | 34                              |
| 1N4751             | 30               | 8.5             | 40                        | 1000              | 0.25     | 5                                  | 22.8  | 150              | 30                              |
| 1N4752             | 33               | 7.5             | 45                        | 1000              | 0.25     | 5                                  | 25.1  | 135              | 27                              |
| 1N4753             | 36               | 7               | 50                        | 1000              | 0.25     | 5                                  | 27.4  | 125              | 25                              |
| 1N4754             | 39               | 6.5             | 60                        | 1000              | 0.25     | 5                                  | 29.7  | 115              | 23                              |
| 1N4755             | 43               | 6               | 70                        | 1500              | 0.25     | 5                                  | 32.7  | 110              | 22                              |
| 1N4756             | 47               | 5.5             | 80                        | 1500              | 0.25     | 5                                  | 35.8  | 95               | 19                              |
| 1N4757             | 51               | 5               | 95                        | 1500              | 0.25     | 5                                  | 38.8  | 90               | 18                              |
| 1N4758             | 56               | 4.5             | 110                       | 2000              | 0.25     | 5                                  | 42.6  | 80               | 16                              |
| 1N4759             | 62               | 4               | 125                       | 2000              | 0.25     | 5                                  | 47.1  | 70               | 14                              |
| 1N4760             | 68               | 3.7             | 150                       | 2000              | 0.25     | 5                                  | 51.7  | 65               | 13                              |
| 1N4761             | 75               | 3.3             | 175                       | 2000              | 0.25     | 5                                  | 56    | 60               | 12                              |

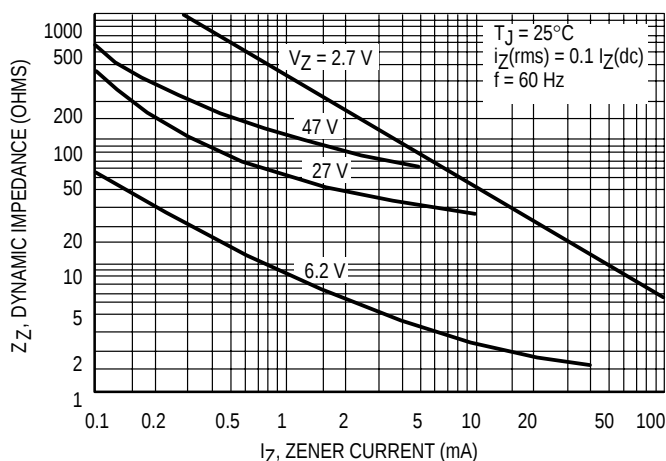
- Note**
- 1: The JEDEC type number shown with an A suffix have a 5% tolerance on nominal zener voltage. No suffix signifies a 10% tolerance, C signifies 2%.
  - 2: The Zener impedance is derived from the 60 Hz ac voltage, which results when an ac current having an rms value equal to 10% of the DC Zener current ( $I_{ZT}$  or  $I_{ZK}$ ) is superimposed on  $I_{ZT}$  or  $I_{ZK}$ . Zener impedance is measured at two points to insure a sharp knee on the breakdown curve and eliminate unstable units.
  - 3: The reverse surge current is measured at  $25^\circ\text{C}$  ambient using a 1/2 square wave or equivalent sine wave pulse 1/120 second duration superimposed on  $I_{ZT}$ .
  - 4: Voltage measurements to be performed 90 seconds after application of DC current.
  - 5: RoHs Compliant already and Pb-free sticker on reel , box & carton indicated RoHs compliant .



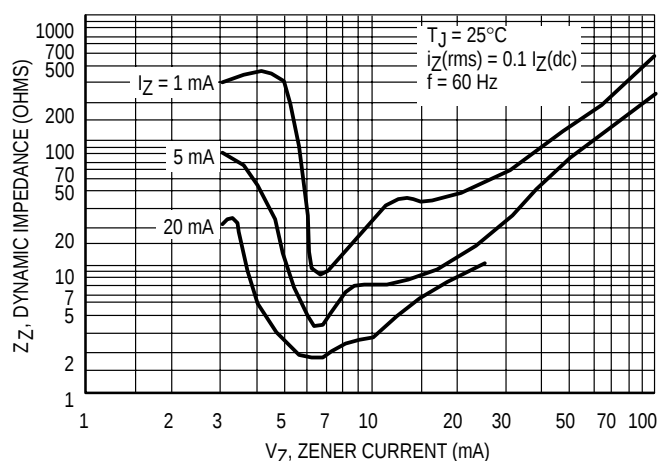
**Figure 1. Typical Thermal Resistance versus Lead Length**



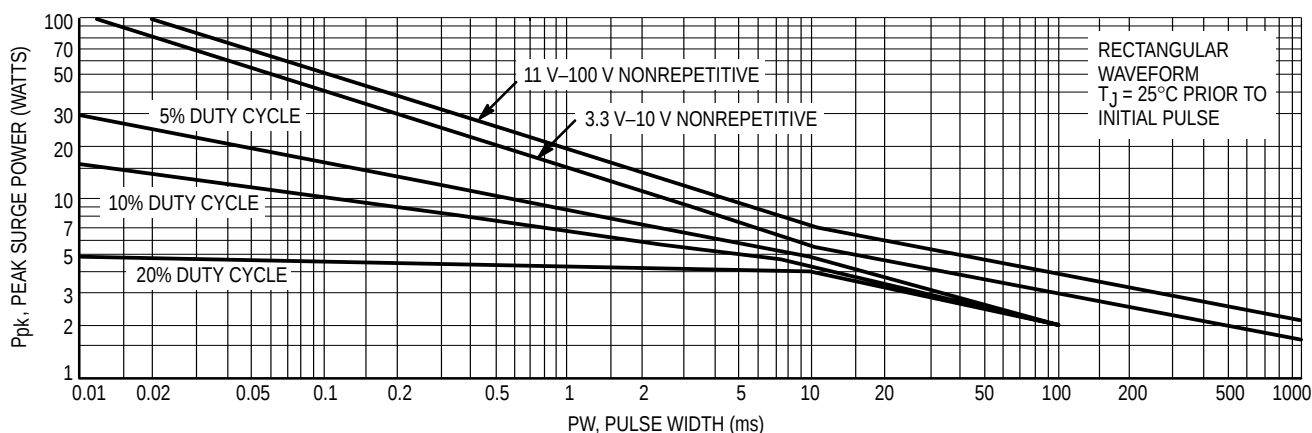
**Figure 2. Effect of Zener Current**



**Figure 3. Effect of Zener Current on Zener Impedance**



**Figure 4. Effect of Zener Voltage on Zener Impedance**



This graph represents 90 percentile data points.  
For worst case design characteristics, multiply surge power by 2/3.

**Figure 5. Maximum Surge Power**



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**Ordering Information :**

| Device         | Packing                        |
|----------------|--------------------------------|
| Part Number-TP | Tape&Reel: 5Kpcs/Reel          |
| Part Number-AP | Ammo Packing: 2.5Kpcs/Ammo Box |
| Part Number-BP | Bulk: 50Kpcs/Carton            |

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