



# Zener Diodes



## FEATURES

- Silicon planar power Zener diodes
- For use in stabilizing and clipping circuits with high power rating
- Standard Zener voltage tolerance is  $\pm 5\%$
- AEC-Q101 qualified
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



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## APPLICATIONS

- Voltage stabilization

| PRIMARY CHARACTERISTICS      |                     |      |
|------------------------------|---------------------|------|
| PARAMETER                    | VALUE               | UNIT |
| V <sub>Z</sub> range nom.    | 3.3 to 100          | V    |
| Test current I <sub>ZT</sub> | 2.5 to 76           | mA   |
| V <sub>Z</sub> specification | Thermal equilibrium |      |
| Circuit configuration        | Single              |      |

| ORDERING INFORMATION |                               |                               |                        |
|----------------------|-------------------------------|-------------------------------|------------------------|
| DEVICE NAME          | ORDERING CODE                 | TAPED UNITS PER REEL          | MINIMUM ORDER QUANTITY |
| 1N4728A to 1N4764A   | 1N4728A to 1N4764A -series-TR | 5000 per 13" reel             | 25 000/box             |
| 1N4728A to 1N4764A   | 1N4728A to 1N4764A-series-TAP | 5000 per ammpack (52 mm tape) | 25 000/box             |

| PACKAGE      |        |                                      |                                   |                          |
|--------------|--------|--------------------------------------|-----------------------------------|--------------------------|
| PACKAGE NAME | WEIGHT | MOLDING COMPOUND FLAMMABILITY RATING | MOISTURE SENSITIVITY LEVEL        | SOLDERING CONDITIONS     |
| DO-41        | 310 mg | UL 94 V-0                            | MSL level 1 (according J-STD-020) | 260 °C/10 s at terminals |

| ABSOLUTE MAXIMUM RATINGS (T <sub>amb</sub> = 25 °C, unless otherwise specified) |   |                   |                                |      |  |
|---|---|-------------------|--------------------------------|------|--|
| PARAMETER   | TEST CONDITION  | SYMBOL            | VALUE                          | UNIT |  |
| Power dissipation   | Valid provided that leads at a distance of 4 mm from case are kept at ambient temperature | P <sub>tot</sub>  | 1300                           | mW   |  |
| Zener current   |   | I <sub>Z</sub>    | P <sub>V</sub> /V <sub>Z</sub> | mA   |  |
| Thermal resistance junction to ambient air                                      | Valid provided that leads at a distance of 4 mm from case are kept at ambient temperature | R <sub>thJA</sub> | 110                            | K/W  |  |
| Junction temperature  |   | T <sub>j</sub>    | 175                            | °C   |  |
| Storage temperature range   |   | T <sub>stg</sub>  | -65 to +175                    | °C   |  |
| Forward voltage (max.)  | I <sub>F</sub> = 200 mA   | V <sub>F</sub>    | 1.2                            | V    |  |



| ELECTRICAL CHARACTERISTICS (T <sub>amb</sub> = 25 °C, unless otherwise specified) |                                    |                  |                  |                                  |      |                                     |                                     |                              |                                  |
|---|------------------------------------|------------------|------------------|----------------------------------|------|-------------------------------------|-------------------------------------|------------------------------|----------------------------------|
| PART NUMBER   | ZENER VOLTAGE RANGE <sup>(1)</sup> | TEST CURRENT     |                  | REVERSE LEAKAGE CURRENT          |      | DYNAMIC RESISTANCE f = 1 kHz        |                                     | SURGE CURRENT <sup>(3)</sup> | REGULATOR CURRENT <sup>(2)</sup> |
|   | V <sub>Z</sub> at I <sub>ZT1</sub> | I <sub>ZT1</sub> | I <sub>ZT2</sub> | I <sub>R</sub> at V <sub>R</sub> |      | Z <sub>ZT</sub> at I <sub>ZT1</sub> | Z <sub>ZK</sub> at I <sub>ZT2</sub> | I <sub>R</sub>               | I <sub>ZM</sub>                  |
|   | V                                  | mA               | mA               | μA                               | V    | Ω                                   |                                     | mA                           | mA                               |
|   | NOM.                               |                  |                  | MAX.                             |      | TYP.                                | MAX.                                |                              | MAX.                             |
| 1N4728A   | 3.3                                | 76               | 1                | 100                              | 1    | 10                                  | 400                                 | 1380                         | 276                              |
| 1N4729A   | 3.6                                | 69               | 1                | 100                              | 1    | 10                                  | 400                                 | 1260                         | 252                              |
| 1N4730A   | 3.9                                | 64               | 1                | 50                               | 1    | 9                                   | 400                                 | 1190                         | 234                              |
| 1N4731A   | 4.3                                | 58               | 1                | 10                               | 1    | 9                                   | 400                                 | 1070                         | 217                              |
| 1N4732A   | 4.7                                | 53               | 1                | 10                               | 1    | 8                                   | 500                                 | 970                          | 193                              |
| 1N4733A   | 5.1                                | 49               | 1                | 10                               | 1    | 7                                   | 550                                 | 890                          | 178                              |
| 1N4734A   | 5.6                                | 45               | 1                | 10                               | 2    | 5                                   | 600                                 | 810                          | 162                              |
| 1N4735A   | 6.2                                | 41               | 1                | 10                               | 3    | 2                                   | 700                                 | 730                          | 146                              |
| 1N4736A   | 6.8                                | 37               | 1                | 10                               | 4    | 3.5                                 | 700                                 | 660                          | 133                              |
| 1N4737A   | 7.5                                | 34               | 0.5              | 10                               | 5    | 4                                   | 700                                 | 605                          | 121                              |
| 1N4738A   | 8.2                                | 31               | 0.5              | 10                               | 6    | 4.5                                 | 700                                 | 550                          | 110                              |
| 1N4739A   | 9.1                                | 28               | 0.5              | 10                               | 7    | 5                                   | 700                                 | 500                          | 100                              |
| 1N4740A   | 10                                 | 25               | 0.25             | 10                               | 7.6  | 7                                   | 700                                 | 454                          | 91                               |
| 1N4741A   | 11                                 | 23               | 0.25             | 5                                | 8.4  | 8                                   | 700                                 | 414                          | 83                               |
| 1N4742A   | 12                                 | 21               | 0.25             | 5                                | 9.1  | 9                                   | 700                                 | 380                          | 76                               |
| 1N4743A   | 13                                 | 19               | 0.25             | 5                                | 9.9  | 10                                  | 700                                 | 344                          | 69                               |
| 1N4744A   | 15                                 | 17               | 0.25             | 5                                | 11.4 | 14                                  | 700                                 | 304                          | 61                               |
| 1N4745A   | 16                                 | 15.5             | 0.25             | 5                                | 12.2 | 16                                  | 700                                 | 285                          | 57                               |
| 1N4746A   | 18                                 | 14               | 0.25             | 5                                | 13.7 | 20                                  | 750                                 | 250                          | 50                               |
| 1N4747A   | 20                                 | 12.5             | 0.25             | 5                                | 15.2 | 22                                  | 750                                 | 225                          | 45                               |
| 1N4748A   | 22                                 | 11.5             | 0.25             | 5                                | 16.7 | 23                                  | 750                                 | 205                          | 41                               |
| 1N4749A   | 24                                 | 10.5             | 0.25             | 5                                | 18.2 | 25                                  | 750                                 | 190                          | 38                               |
| 1N4750A   | 27                                 | 9.5              | 0.25             | 5                                | 20.6 | 35                                  | 750                                 | 170                          | 34                               |
| 1N4751A   | 30                                 | 8.5              | 0.25             | 5                                | 22.8 | 40                                  | 1000                                | 150                          | 30                               |
| 1N4752A   | 33                                 | 7.5              | 0.25             | 5                                | 25.1 | 45                                  | 1000                                | 135                          | 27                               |
| 1N4753A   | 36                                 | 7                | 0.25             | 5                                | 27.4 | 50                                  | 1000                                | 125                          | 25                               |
| 1N4754A   | 39                                 | 6.5              | 0.25             | 5                                | 29.7 | 60                                  | 1000                                | 115                          | 23                               |
| 1N4755A   | 43                                 | 6                | 0.25             | 5                                | 32.7 | 70                                  | 1500                                | 110                          | 22                               |
| 1N4756A   | 47                                 | 5.5              | 0.25             | 5                                | 35.8 | 80                                  | 1500                                | 95                           | 19                               |
| 1N4757A   | 51                                 | 5                | 0.25             | 5                                | 38.8 | 95                                  | 1500                                | 90                           | 18                               |
| 1N4758A   | 56                                 | 4.5              | 0.25             | 5                                | 42.6 | 110                                 | 2000                                | 80                           | 16                               |
| 1N4759A   | 62                                 | 4                | 0.25             | 5                                | 47.1 | 125                                 | 2000                                | 70                           | 14                               |
| 1N4760A   | 68                                 | 3.7              | 0.25             | 5                                | 51.7 | 150                                 | 2000                                | 65                           | 13                               |
| 1N4761A   | 75                                 | 3.3              | 0.25             | 5                                | 56   | 175                                 | 2000                                | 60                           | 12                               |
| 1N4762A   | 82                                 | 3                | 0.25             | 5                                | 62.2 | 200                                 | 3000                                | 55                           | 11                               |
| 1N4763A   | 91                                 | 2.8              | 0.25             | 5                                | 69.2 | 250                                 | 3000                                | 50                           | 10                               |
| 1N4764A   | 100                                | 2.5              | 0.25             | 5                                | 76   | 350                                 | 3000                                | 45                           | 9                                |

**Notes**

- (1) Based on DC measurement at thermal equilibrium while maintaining the lead temperature (T<sub>L</sub>) at 30 °C + 1 °C, 9.5 mm (3/8") from the diode body
- (2) Valid provided that electrodes at a distance of 4 mm from case are kept at ambient temperature
- (3) t<sub>p</sub> = 10 ms.



### BASIC CHARACTERISTICS ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)

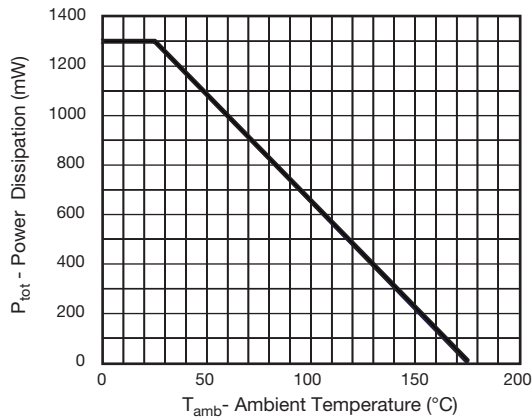
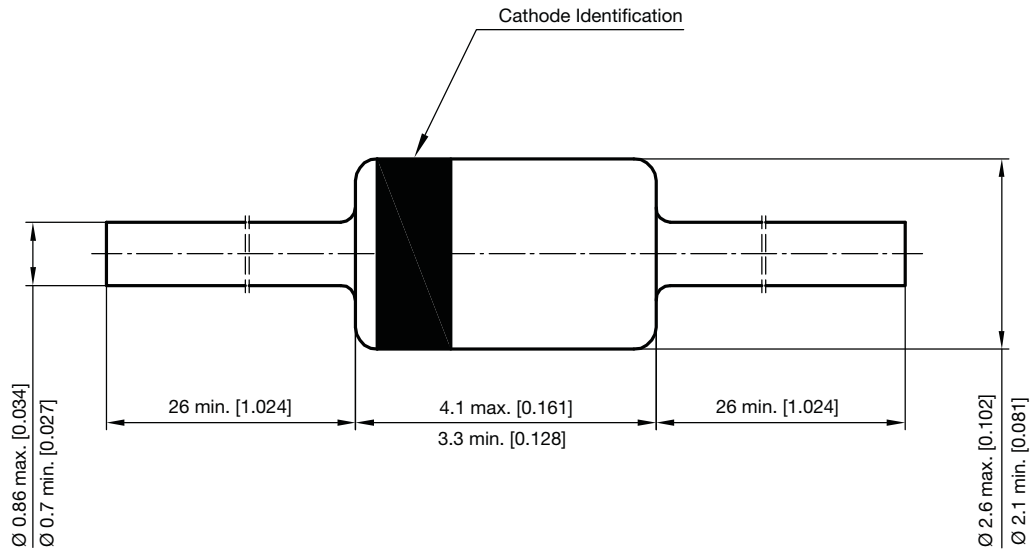


Fig. 1 - Admissible Power Dissipation vs. Ambient Temperature  
 $P_{tot} = f(T_{amb})$

### PACKAGE DIMENSIONS in millimeters (inches): DO-41\_1N47xx



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