



# 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)



**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**

## DESIGN SUPPORT TOOLS AVAILABLE



## 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 ammopack (52 mm tape) | 25 000/box             |

| PACKAGE          |        |                                      |                                   |                              |
|------------------|--------|--------------------------------------|-----------------------------------|------------------------------|
| PACKAGE NAME     | WEIGHT | MOLDING COMPOUND FLAMMABILITY RATING | MOISTURE SENSITIVITY LEVEL        | SOLDERING CONDITIONS         |
| DO-41 (DO-204AL) | 310 mg | UL 94 V-0                            | MSL level 1 (according J-STD-020) | Peak temperature max. 260 °C |

| 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** ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)

| PART NUMBER | ZENER VOLTAGE RANGE <sup>(1)</sup> | TEST CURRENT |           | REVERSE LEAKAGE CURRENT |      | DYNAMIC RESISTANCE $f = 1\text{ kHz}$ |                       | SURGE CURRENT <sup>(3)</sup> | REGULATOR CURRENT <sup>(2)</sup> |
|-------------|------------------------------------|--------------|-----------|-------------------------|------|---------------------------------------|-----------------------|------------------------------|----------------------------------|
|             | $V_Z$ at $I_{ZT1}$                 | $I_{ZT1}$    | $I_{ZT2}$ | $I_R$ at $V_R$          |      | $Z_{ZT}$ at $I_{ZT1}$                 | $Z_{ZK}$ at $I_{ZT2}$ | $I_R$                        | $I_{ZM}$                         |
|             | V                                  | mA           | mA        | $\mu\text{A}$           | V    | $\Omega$                              |                       | 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 ( $T_L$ ) at  $30\text{ }^{\circ}\text{C} + 1\text{ }^{\circ}\text{C}$ , 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)  $t_p = 10\text{ ms}$ .

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

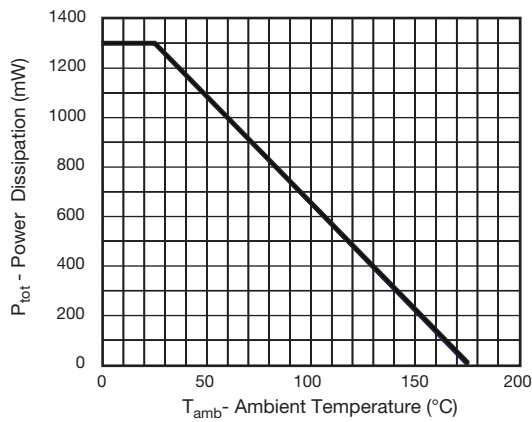
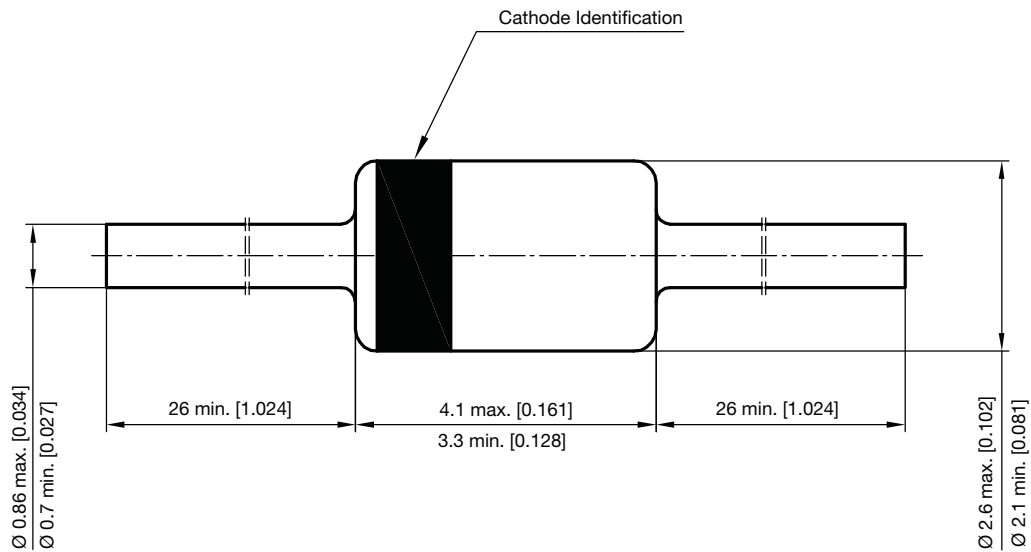


Fig. 1 - Admissible Power Dissipation vs. Ambient Temperature  
 $P_{tot} = f(T_{amb})$

## PACKAGE DIMENSIONS in millimeters (inches): DO-41 (DO-204AL)\_1N47xx



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