

## Zener Diodes



### FEATURES

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



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

### APPLICATIONS

- Voltage stabilization

### LINKS TO ADDITIONAL RESOURCES



### PRIMARY CHARACTERISTICS

| PARAMETER             | VALUE               | UNIT |
|-----------------------|---------------------|------|
| $V_Z$ range nom.      | 3.3 to 75           | V    |
| Test current $I_{ZT}$ | 3.3 to 76           | mA   |
| $V_Z$ specification   | Thermal equilibrium |      |
| Circuit configuration | Single              |      |

### ORDERING INFORMATION

| DEVICE NAME        | ORDERING CODE                 | TAPED UNITS PER REEL             | MINIMUM ORDER QUANTITY |
|--------------------|-------------------------------|----------------------------------|------------------------|
| 1N4728A to 1N4761A | 1N4728A to 1N4761A -series-TR | 5000 per 13" reel                | 25 000/box             |
| 1N4728A to 1N4761A | 1N4728A to 1N4761A-series-TAP | 5000 per ammpack<br>(52 mm tape) | 25 000/box             |

### PACKAGE

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

### ABSOLUTE MAXIMUM RATINGS ( $T_{amb} = 25\text{ °C}$ , 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 | $P_{tot}$  | 1300        | mW   |
| Zener current                              |                                                                                           | $I_Z$      | $P_V/V_Z$   | mA   |
| Thermal resistance junction to ambient air | Valid provided that leads at a distance of 4 mm from case are kept at ambient temperature | $R_{thJA}$ | 110         | K/W  |
| Junction temperature                       |                                                                                           | $T_j$      | 175         | °C   |
| Storage temperature range                  |                                                                                           | $T_{stg}$  | -65 to +175 | °C   |
| Forward voltage (max.)                     | $I_F = 200\text{ mA}$                                                                     | $V_F$      | 1.2         | V    |

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

| PART<br>NUMBER | ZENER VOLTAGE<br>RANGE <sup>(1)</sup> | TEST<br>CURRENT |           | REVERSE LEAKAGE<br>CURRENT |      | DYNAMIC<br>RESISTANCE<br>$f = 1\text{ kHz}$ |                       | SURGE<br>CURRENT <sup>(3)</sup> | REGULATOR<br>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                                  |

**Notes**

<sup>(1)</sup> 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

<sup>(2)</sup> Valid provided that electrodes at a distance of 4 mm from case are kept at ambient temperature

<sup>(3)</sup>  $t_p = 10\text{ ms}$ .

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

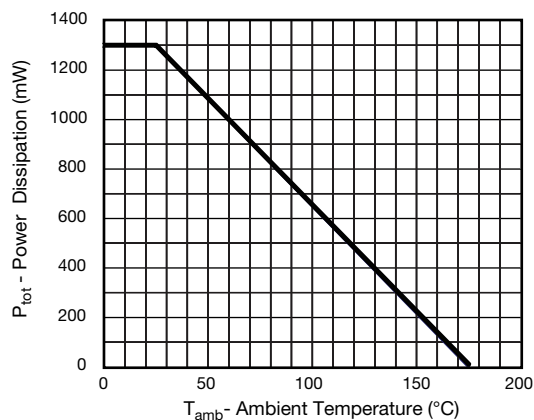
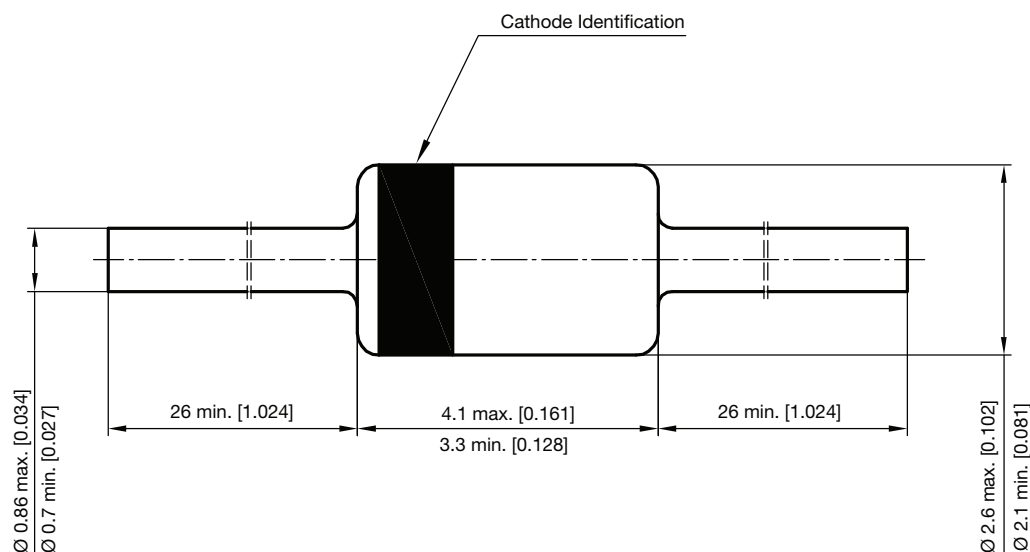


Fig. 1 - Admissible Power Dissipation vs. Ambient Temperature  
 $P_{tot} = f(T_{amb})$

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



Document no. S8-V-3901.04-001(4)  
 Rev. 1 - Date: 30. Nov. 2011  
 22624



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