

DESCRIPTION

The popular 1N4728AG thru 1N4764AG glass body series of 1.0 watt Zeners provides voltage regulation in a selection from 3.3 to 100 volts in 5% tolerances with other tighter tolerances also available as identified by different suffix letters on the part number. These glass encapsulated Zeners with a G suffix provide hermetic-sealed qualities and higher rated temperature when required beyond that optionally provided in the same size DO-41 plastic-body (P suffix) for these JEDEC part numbers. Both of these package options are available by Microsemi including RoHS Compliant devices with an "e3" suffix. A variety of other Zener product offerings and packages are available by Microsemi to meet higher and lower power or test current applications.

APPEARANCE

**DO-41 or
DO-204AL
(Glass)**



IMPORTANT: For the most current data, consult MICROSEMI's website: <http://www.microsemi.com>

FEATURES

- JEDEC registered 1N4728A to 1N4764A
- Options for screening in accordance with MIL-PRF-19500 for JAN, JANTX, JANTXV, and JANS are available by adding MQ, MX, MV, or MSP prefixes respectively to part numbers.
- Surface mount equivalents available as SMAJ4728A to SMAJ4764A and MLL4728A to MLL4764A (consult factory for others)
- Plastic body axial-leaded Zener equivalents are also available as 1N4728AP to 1N4764AP
- RoHS Compliant devices available by adding "e3" suffix

APPLICATIONS / BENEFITS

- Regulates voltage over a broad operating current and temperature range
- Extensive voltage selection from 3.3 to 100 V
- Flexible axial-lead mounting terminals
- Standard voltage tolerances are plus/minus 5% with A suffix and 10 % with no suffix identification
- Tight tolerances available in plus or minus 2% or 1% with C or D suffix respectively
- Nonsensitive to ESD per MIL-STD-750 Method 1020
- Hermetically sealed glass body construction

MAXIMUM RATINGS

- Power dissipation at 25°C: 1.0 watts (also see derating in Figure 1).
- Operating and Storage temperature: -65°C to +175°C
- Thermal Resistance: 80 °C/W junction to lead at 3/8 (10 mm) lead length from body, or 140°C/W junction to ambient when mounted on FR4 PC board (1 oz Cu) with 4 mm² copper pads and track width 1 mm, length 25 mm
- Steady-State Power: 1.0 watts at T_L ≤ 95°C 3/8 inch (10 mm) from body or 1.00 watt at T_A ≤ 35°C when mounted on FR4 PC board as described for thermal resistance above (also see Figure 1)
- Forward voltage @200 mA: 1.2 volts (maximum)
- Solder Temperatures: 260 °C for 10 s (max)

MECHANICAL AND PACKAGING

- CASE: Hermetically sealed axial-lead glass package
- TERMINALS: Tin-Lead (Sn/Pb) or RoHS Compliant annealed matte-Tin plated solderable per MIL-STD-750, method 2026
- POLARITY: Cathode indicated by band. Diode to be operated with the banded end positive with respect to the opposite end for Zener regulation
- MARKING: Part number
- TAPE & REEL option: Standard per EIA-296 (add "TR" suffix to part number)
- WEIGHT: 0.4 grams
- See package dimensions on last page

ELECTRICAL CHARACTERISTICS*

| JEDEC TYPE NUMBER (Note 1) | ZENER VOLTAGE (Note 4) | TEST CURRENT | MAXIMUM DYNAMIC IMPEDANCE (Note 2) | MAXIMUM REVERSE CURRENT | TEST VOLTAGE | MAXIMUM REGULATOR CURRENT T _A = 50°C | MAXIMUM KNEE IMPEDANCE (Note 2) | TEST CURRENT | MAXIMUM (SURGE) CURRENT (Note 3) |
|----------------------------|------------------------|--------------------|--------------------------------------|------------------------------------|-------------------|--|--------------------------------------|--------------------|----------------------------------|
| | (V _Z) | (I _{ZT}) | (Z _{ZT} @ I _{ZT}) | (I _R @ V _R) | (V _R) | (I _{ZM}) | (Z _{ZK} @ I _{ZK}) | (I _{ZK}) | (I _S) |
| | VOLTS | mA | OHMS | μA | VOLTS | mA | OHMS | mA | mA |
| 1N4728A | 3.3 | 76 | 10 | 100 | 1 | 276 | 400 | 1.0 | 1380 |
| 1N4729A | 3.6 | 69 | 10 | 100 | 1 | 252 | 400 | 1.0 | 1260 |
| 1N4730A | 3.9 | 64 | 9 | 50 | 1 | 234 | 400 | 1.0 | 1190 |
| 1N4731A | 4.3 | 58 | 9 | 10 | 1 | 217 | 400 | 1.0 | 1070 |
| 1N4732A | 4.7 | 53 | 8 | 10 | 1 | 193 | 500 | 1.0 | 970 |
| 1N4733A | 5.1 | 49 | 7 | 10 | 1 | 178 | 550 | 1.0 | 890 |
| 1N4734A | 5.6 | 45 | 5 | 10 | 2 | 162 | 600 | 1.0 | 810 |
| 1N4735A | 6.2 | 41 | 2 | 10 | 3 | 146 | 700 | 1.0 | 730 |
| 1N4736A | 6.8 | 37 | 3.5 | 10 | 4 | 133 | 700 | 1.0 | 660 |
| 1N4737A | 7.5 | 34 | 4.0 | 10 | 5 | 121 | 700 | 0.5 | 605 |
| 1N4738A | 8.2 | 31 | 4.5 | 10 | 6 | 110 | 700 | 0.5 | 550 |
| 1N4739A | 9.1 | 28 | 5.0 | 10 | 7 | 100 | 700 | 0.5 | 500 |
| 1N4740A | 10 | 25 | 7 | 10 | 7.6 | 91 | 700 | 0.25 | 454 |
| 1N4741A | 11 | 23 | 8 | 5 | 8.4 | 83 | 700 | 0.25 | 414 |
| 1N4742A | 12 | 21 | 9 | 5 | 9.1 | 76 | 700 | 0.25 | 380 |
| 1N4743A | 13 | 19 | 10 | 5 | 9.9 | 69 | 700 | 0.25 | 344 |
| 1N4744A | 15 | 17 | 14 | 5 | 11.4 | 61 | 700 | 0.25 | 304 |
| 1N4745A | 16 | 15.5 | 16 | 5 | 12.2 | 57 | 700 | 0.25 | 285 |
| 1N4746A | 18 | 14 | 20 | 5 | 13.7 | 50 | 750 | 0.25 | 250 |
| 1N4747A | 20 | 12.5 | 22 | 5 | 15.2 | 45 | 750 | 0.25 | 225 |
| 1N4748A | 22 | 11.5 | 23 | 5 | 16.7 | 41 | 750 | 0.25 | 205 |
| 1N4749A | 24 | 10.5 | 25 | 5 | 18.2 | 38 | 750 | 0.25 | 190 |
| 1N4750A | 27 | 9.5 | 35 | 5 | 20.6 | 34 | 750 | 0.25 | 170 |
| 1N4751A | 30 | 8.5 | 40 | 5 | 22.8 | 30 | 1000 | 0.25 | 150 |
| 1N4752A | 33 | 7.5 | 45 | 5 | 25.1 | 27 | 1000 | 0.25 | 135 |
| 1N4753A | 36 | 7.0 | 50 | 5 | 27.4 | 25 | 1000 | 0.25 | 125 |
| 1N4754A | 39 | 6.5 | 60 | 5 | 29.7 | 23 | 1000 | 0.25 | 115 |
| 1N4755A | 43 | 6.0 | 70 | 5 | 32.7 | 22 | 1500 | 0.25 | 110 |
| 1N4756A | 47 | 5.5 | 80 | 5 | 35.8 | 19 | 1500 | 0.25 | 95 |
| 1N4757A | 51 | 5.0 | 95 | 5 | 38.8 | 18 | 1500 | 0.25 | 90 |
| 1N4758A | 56 | 4.5 | 110 | 5 | 42.6 | 16 | 2000 | 0.25 | 80 |
| 1N4759A | 62 | 4.0 | 125 | 5 | 47.1 | 14 | 2000 | 0.25 | 70 |
| 1N4760A | 68 | 3.7 | 150 | 5 | 51.7 | 13 | 2000 | 0.25 | 65 |
| 1N4761A | 75 | 3.3 | 175 | 5 | 56.0 | 12 | 2000 | 0.25 | 60 |
| 1N4762A | 82 | 3.0 | 200 | 5 | 62.2 | 11 | 3000 | 0.25 | 55 |
| 1N4763A | 91 | 2.8 | 250 | 5 | 69.2 | 10 | 3000 | 0.25 | 50 |
| 1N4764A | 100 | 2.5 | 350 | 5 | 76.0 | 9 | 3000 | 0.25 | 45 |

*JEDEC Registered Data

NOTES:

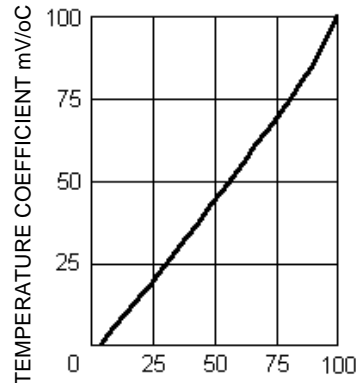
- The JEDEC type numbers shown with an A suffix have a 5% tolerance on nominal zener voltage. No suffix signifies a 10% tolerance, C signifies 2%, and D signifies 1% tolerance. Also add a G suffix for designating glass construction (P suffix designates plastic body options described by separate data sheet).
- The Zener impedance is derived from the 60 Hz ac voltage that 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 ensure a sharp knee on the breakdown curve and eliminate unstable units. See MicroNote 202 for zener impedance variation with different operating currents.
- The reverse surge current is measured at 25°C ambient using a ½ square wave or equivalent sine wave pulse 1/120 second duration superimposed on I_{ZT}.
- Zener voltage (V_Z) is measured at T_L = 25°C (+8, -2°C) and 90 seconds after application of dc current.

GRAPHS



T_L , LEAD TEMP. ($^{\circ}$ C) 3/8" from body
or T_A on FR4 PC Board

FIGURE 1
Power Derating Curve



NOMINAL ZENER VOLTAGE (VOLTS)

FIGURE 2
Temp. Coeff. vs. Zener Voltage

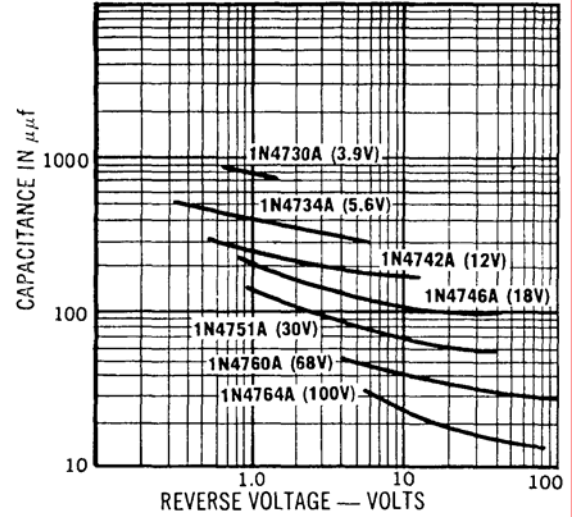


FIGURE 3
Capacitance vs. Voltage
for Representative Types

PACKAGE DIMENSIONS (DO-41 or DO-204AL)

