

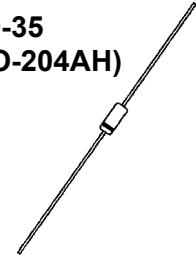
### DESCRIPTION

The popular 1N746 thru 1N759A and 1N4370 thru 1N4372A series of 0.5 watt Zener Voltage Regulators provides a selection from 2.4 to 12 volts in standard 5% or 10% tolerances as well as tighter tolerances identified by different suffix letters on the part number. These glass axial-leaded DO-35 Zeners are also available with an internal-metallurgical-bond option by adding a "-1" suffix. These are also available in JAN, JANTX, and JANTXV military qualifications. Microsemi also offers numerous other Zener products to meet higher and lower power applications.

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

### APPEARANCE

**DO-35  
(DO-204AH)**



### FEATURES

- JEDEC registered 1N746 thru 1N759A and 1N4370 thru 1N4372A series
- Internal metallurgical bond option available by adding a "-1" suffix
- Also available in JAN, JANTX, and JANTXV qualifications per MIL-PRF-19500/127 by adding the JAN, JANTX, or JANTXV prefixes to part numbers for desired level of screening as well as "-1" suffix; (e.g. JANTX1N751A-1, JANTXV1N758C-1, etc.)
- Military Surface Mount equivalents also available in DO-213AA by adding a UR-1 suffix in addition to the JAN, JANTX, and JANTXV prefix; e.g. JANTX1N962BUR-1 (see separate data sheet)
- Commercial Surface Mount equivalents available as MLL746 to MLL759A and MLL4370 to MLL4372A including the "-1" suffix in the DO-213AA MELF style package (consult factory for others)
- DO-7 glass body axial-leaded Zener equivalents are also available

### MAXIMUM RATINGS

- Operating and Storage temperature:  $-65^{\circ}\text{C}$  to  $+175^{\circ}\text{C}$
- Thermal Resistance:  $250^{\circ}\text{C/W}$  junction to lead at 3/8 (10 mm) lead length from body, or  $310^{\circ}\text{C/W}$  junction to ambient when mounted on FR4 PC board (1 oz Cu) with 4 mm<sup>2</sup> copper pads and track width 1 mm, length 25 mm
- Steady-State Power: 0.5 watts at  $T_L \leq 50^{\circ}\text{C}$  3/8 inch (10 mm) from body or 0.48 W at  $T_A \leq 25^{\circ}\text{C}$  when mounted on FR4 PC board as described for thermal resistance above (also see Figure1)
- Forward voltage @200 mA: 1.1 volts
- Solder Temperatures:  $260^{\circ}\text{C}$  for 10 s (max)

### APPLICATIONS / BENEFITS

- Regulates voltage over a broad operating current and temperature range
- Selection from 2.4 to 12 V
- Standard voltage tolerances are plus/minus 5% with A suffix identification and 10 % with no suffix
- Tight tolerances available in plus or minus 2% or 1% with C or D suffix respectively
- Flexible axial-lead mounting terminals
- Nonsensitive to ESD per MIL-STD-750 Method 1020
- Minimal capacitance (see Figure 3)
- Inherently radiation hard as described in Microsemi MicroNote 050

### MECHANICAL AND PACKAGING

- CASE: Hermetically sealed axial-lead glass DO-35 (DO-204AH) package
- TERMINALS: Leads, tin-lead 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: 0.2 grams
- See package dimensions on last page

**ELECTRICAL CHARACTERISTICS\* @ 25°C**

| JEDEC<br>TYPE NO.<br><br>(NOTE 1) | NOMINAL<br>ZENER<br>VOLTAGE<br>$V_Z @ I_{ZT}$<br>(NOTE 2) | ZENER<br>TEST<br>CURRENT<br>$I_{ZT}$ | MAXIMUM<br>ZENER<br>IMPEDANCE<br>$Z_{ZT} @ I_{ZT}$<br>(NOTE 3) | MAXIMUM REVERSE<br>CURRENT $I_R$<br>@ $V_R = 1$ VOLT |         | MAXIMUM<br>ZENER<br>CURRENT<br>$I_{ZM}$<br>(NOTE 4) | TYPICAL<br>TEMP COEFF.<br>OF ZENER<br>VOLTAGE<br><br>$\alpha_{VZ}$<br>%/°C |
|-----------------------------------|---|--------------------------------------|--|--|---------|---|--|
|                                   |   |                                      |  | @25°C  | @+150°C |   |  |
|                                   |   |                                      |  | $\mu A$  | $\mu A$ |   |  |
| 1N4370                            | 2.4   | 20                                   | 30   | 100  | 200     | 150   | -.085  |
| 1N4371                            | 2.7   | 20                                   | 30   | 75   | 150     | 135   | -.080  |
| 1N4372                            | 3.0   | 20                                   | 29   | 50   | 100     | 120   | -.075  |
| 1N746                             | 3.3   | 20                                   | 28   | 10   | 30      | 110   | -.066  |
| 1N747                             | 3.6   | 20                                   | 24   | 10   | 30      | 100   | -.058  |
| 1N748                             | 3.9   | 20                                   | 23   | 10   | 30      | 95  | -.046  |
| 1N749                             | 4.3   | 20                                   | 22   | 2  | 30      | 85  | -.033  |
| 1N750                             | 4.7   | 20                                   | 19   | 2  | 30      | 75  | -.015  |
| 1N751                             | 5.1   | 20                                   | 17   | 1  | 20      | 70  | +/- .010   |
| 1N752                             | 5.6   | 20                                   | 11   | 1  | 20      | 65  | + .030   |
| 1N753                             | 6.2   | 20                                   | 7  | .1   | 20      | 60  | + .049   |
| 1N754                             | 6.8   | 20                                   | 5  | .1   | 20      | 55  | + .053   |
| 1N755                             | 7.5   | 20                                   | 6  | .1   | 20      | 50  | + .057   |
| 1N756                             | 8.2   | 20                                   | 8  | .1   | 20      | 45  | + .060   |
| 1N757                             | 9.1   | 20                                   | 10   | .1   | 20      | 40  | + .061   |
| 1N758                             | 10.0  | 20                                   | 17   | .1   | 20      | 35  | + .062   |
| 1N759                             | 12.0  | 20                                   | 30   | .1   | 20      | 30  | + .062   |

\* JEDEC Registered Data

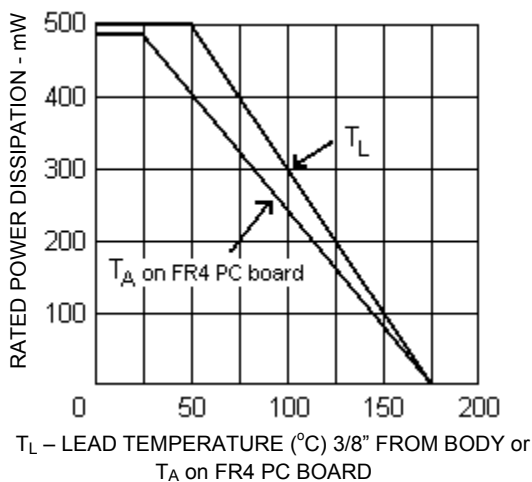
**NOTE 1:** Standard tolerance on JEDEC types shown is +/- 10%. Suffix letter A denotes +/- 5% tolerance; suffix letter C denotes +/- 2%; and suffix letter D denotes +/- 1% tolerance.

**NOTE 2:** Voltage measurements to be performed 20 seconds after application of dc test current.

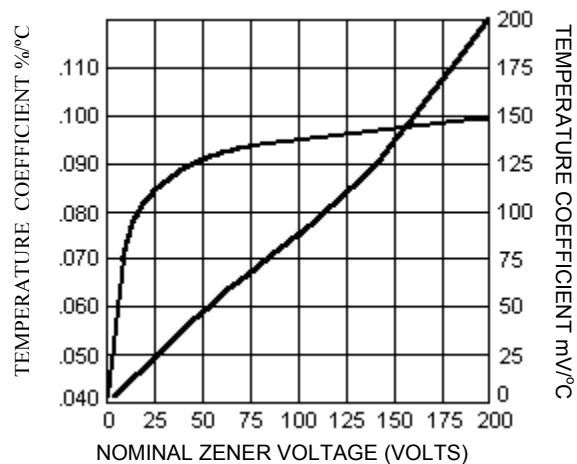
**NOTE 3:** Zener impedance derived by superimposing on  $I_{ZT}$ , a 60 cps, rms ac current equal to 10%  $I_{ZT}$  (2mA ac). See MicroNote 202 for typical zener impedance variation with different operating currents.

**NOTE 4:** Allowance has been made for the increase in  $V_Z$  due to  $Z_Z$  and for the increase in junction temperature as the unit approaches thermal equilibrium at the power dissipation of 400 mW.

**GRAPHS**

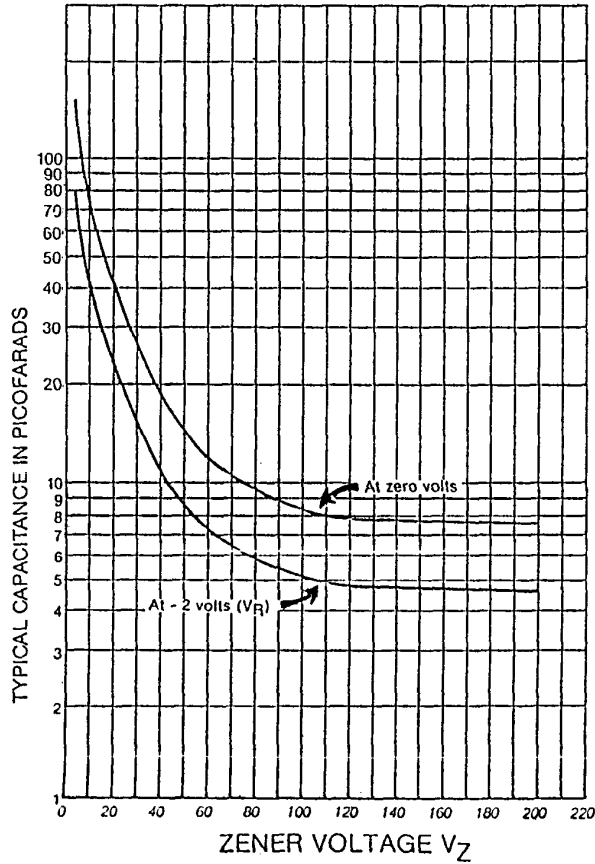


**FIGURE 1**  
POWER DERATING CURVE



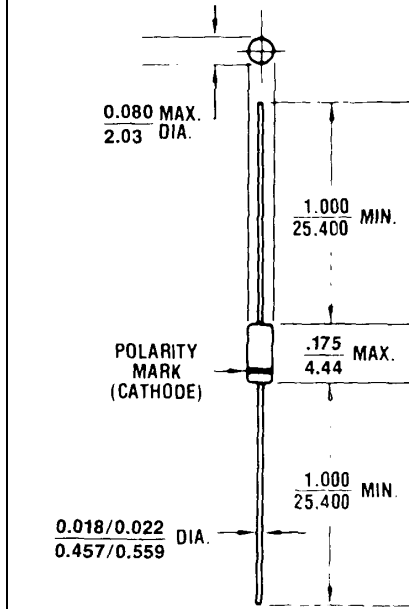
**FIGURE 2**  
ZENER VOLTAGE TEMPERATURE  
COEFFICIENT vs. ZENER VOLTAGE

CAPACITANCE vs.  $V_Z$  CURVE



**FIGURE 3**  
CAPACITANCE vs. ZENER VOLTAGE  
(TYPICAL)

**PACKAGE DIMENSIONS**



All dimensions in: INCH  
mm

This datasheet has been download from:

[www.datasheetcatalog.com](http://www.datasheetcatalog.com)

Datasheets for electronics components.