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 as well as RoHS Compliant by adding an "e3" suffix. 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

FEATURES

- JEDEC registered 1N746 thru 1N759A and 1N4370 thru 1N4372A series
- Internal metallurgical bond option available by adding a "-1" suffix similar to military devices
- 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)
- RoHS Compliant devices available by adding "e3" suffix
- DO-7 glass body axial-leaded Zener equivalents are also available

MAXIMUM RATINGS

- Operating and Storage temperature: -65°C to +175°C
- Thermal Resistance: 250 °C/W junction to lead at 3/8 (10 mm) lead length from body, or 310°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: 0.5 watts at Tj ≤ 50°C 3/8 inch (10 mm) from body or 0.48 W at Ta ≤ 25°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°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: Tin-Lead or RoHS Compliant annealed matte-Tin plating 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

<table>
<thead>
<tr>
<th>JEDEC TYPE NO. (NOTE1)</th>
<th>NOMINAL ZENER VOLTAGE $V_z$ @ $I_{ZT}$ (NOTE 2)</th>
<th>NOMINAL ZENER TEST CURRENT $I_{ZT}$</th>
<th>MAXIMUM REVERSE CURRENT $I_R$ @ $V_R = 1$ Volt</th>
<th>MAXIMUM ZENER IMPEDANCE $Z_{ZT}$ @ $I_{ZT}$ (NOTE 3)</th>
<th>MAXIMUM ZENER CURRENT $I_{ZM}$ (NOTE 4)</th>
<th>TYPICAL TEMP COEFF. OF ZENER VOLTAGE</th>
<th>VOLTS</th>
<th>mA</th>
<th>OHMS</th>
<th>μA</th>
<th>μA</th>
<th>mA</th>
<th>%/°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>1N4370</td>
<td>2.4</td>
<td>20</td>
<td>20</td>
<td>100</td>
<td>150</td>
<td>-0.005</td>
<td>20</td>
<td>2</td>
<td>100</td>
<td>20</td>
<td>50</td>
<td>100</td>
<td>-0.085</td>
</tr>
<tr>
<td>1N4371</td>
<td>2.7</td>
<td>20</td>
<td>30</td>
<td>75</td>
<td>150</td>
<td>-0.080</td>
<td>20</td>
<td>2</td>
<td>30</td>
<td>20</td>
<td>50</td>
<td>100</td>
<td>-0.080</td>
</tr>
<tr>
<td>1N4372</td>
<td>3.0</td>
<td>20</td>
<td>29</td>
<td>50</td>
<td>100</td>
<td>-0.075</td>
<td>20</td>
<td>2</td>
<td>50</td>
<td>20</td>
<td>50</td>
<td>100</td>
<td>-0.075</td>
</tr>
<tr>
<td>1N746</td>
<td>3.3</td>
<td>20</td>
<td>28</td>
<td>10</td>
<td>30</td>
<td>-0.066</td>
<td>20</td>
<td>2</td>
<td>10</td>
<td>20</td>
<td>50</td>
<td>100</td>
<td>-0.066</td>
</tr>
<tr>
<td>1N747</td>
<td>3.6</td>
<td>20</td>
<td>24</td>
<td>10</td>
<td>30</td>
<td>-0.058</td>
<td>20</td>
<td>2</td>
<td>10</td>
<td>20</td>
<td>50</td>
<td>100</td>
<td>-0.058</td>
</tr>
<tr>
<td>1N748</td>
<td>3.9</td>
<td>20</td>
<td>23</td>
<td>10</td>
<td>30</td>
<td>-0.046</td>
<td>20</td>
<td>2</td>
<td>10</td>
<td>20</td>
<td>50</td>
<td>100</td>
<td>-0.046</td>
</tr>
<tr>
<td>1N749</td>
<td>4.3</td>
<td>20</td>
<td>22</td>
<td>2</td>
<td>30</td>
<td>-0.033</td>
<td>20</td>
<td>2</td>
<td>2</td>
<td>20</td>
<td>50</td>
<td>100</td>
<td>-0.033</td>
</tr>
<tr>
<td>1N750</td>
<td>4.7</td>
<td>20</td>
<td>19</td>
<td>2</td>
<td>30</td>
<td>-0.015</td>
<td>20</td>
<td>2</td>
<td>2</td>
<td>20</td>
<td>50</td>
<td>100</td>
<td>-0.015</td>
</tr>
<tr>
<td>1N751</td>
<td>5.1</td>
<td>20</td>
<td>17</td>
<td>1</td>
<td>20</td>
<td>+0.010</td>
<td>20</td>
<td>2</td>
<td>1</td>
<td>20</td>
<td>50</td>
<td>100</td>
<td>+0.010</td>
</tr>
<tr>
<td>1N752</td>
<td>5.6</td>
<td>20</td>
<td>11</td>
<td>1</td>
<td>20</td>
<td>+0.030</td>
<td>20</td>
<td>2</td>
<td>1</td>
<td>20</td>
<td>50</td>
<td>100</td>
<td>+0.030</td>
</tr>
<tr>
<td>1N753</td>
<td>6.2</td>
<td>20</td>
<td>7</td>
<td>.1</td>
<td>20</td>
<td>+0.049</td>
<td>20</td>
<td>2</td>
<td>.1</td>
<td>20</td>
<td>50</td>
<td>100</td>
<td>+0.049</td>
</tr>
<tr>
<td>1N754</td>
<td>6.8</td>
<td>20</td>
<td>5</td>
<td>.1</td>
<td>20</td>
<td>+0.053</td>
<td>20</td>
<td>2</td>
<td>.1</td>
<td>20</td>
<td>50</td>
<td>100</td>
<td>+0.053</td>
</tr>
<tr>
<td>1N755</td>
<td>7.5</td>
<td>20</td>
<td>6</td>
<td>.1</td>
<td>20</td>
<td>+0.057</td>
<td>20</td>
<td>2</td>
<td>.1</td>
<td>20</td>
<td>50</td>
<td>100</td>
<td>+0.057</td>
</tr>
<tr>
<td>1N756</td>
<td>8.2</td>
<td>20</td>
<td>8</td>
<td>.1</td>
<td>20</td>
<td>+0.060</td>
<td>20</td>
<td>2</td>
<td>.1</td>
<td>20</td>
<td>50</td>
<td>100</td>
<td>+0.060</td>
</tr>
<tr>
<td>1N757</td>
<td>9.1</td>
<td>20</td>
<td>10</td>
<td>.1</td>
<td>20</td>
<td>+0.061</td>
<td>20</td>
<td>2</td>
<td>.1</td>
<td>20</td>
<td>50</td>
<td>100</td>
<td>+0.061</td>
</tr>
<tr>
<td>1N758</td>
<td>10.0</td>
<td>20</td>
<td>17</td>
<td>.1</td>
<td>20</td>
<td>+0.062</td>
<td>20</td>
<td>2</td>
<td>.1</td>
<td>20</td>
<td>50</td>
<td>100</td>
<td>+0.062</td>
</tr>
<tr>
<td>1N759</td>
<td>12.0</td>
<td>20</td>
<td>30</td>
<td>.1</td>
<td>20</td>
<td>+0.062</td>
<td>20</td>
<td>2</td>
<td>.1</td>
<td>20</td>
<td>50</td>
<td>100</td>
<td>+0.062</td>
</tr>
</tbody>
</table>

*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. ZENER VOLTAGE

FIGURE 3
CAPACITANCE vs. ZENER VOLTAGE (TYPICAL)

PACKAGE DIMENSIONS

All dimensions in: INCH mm