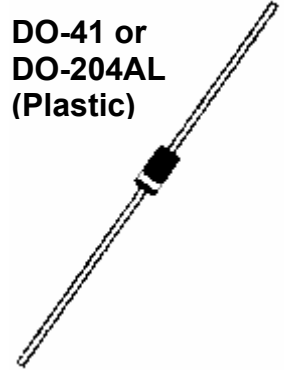


### DESCRIPTION

The 1EZ110D5 thru 1EZ200D5 series of axial-leaded 1.0 watt Zeners provides voltage regulation selections with 5% tolerances from 110 to 200 volts in a DO-41 plastic package size. Other Zener voltage tolerances are also available by changing the suffix number to the tolerance desired such as 1 and 2 for tighter tolerances or 10 for wider tolerance. These plastic encapsulated Zeners have moisture classification of Level 1 with no dry pack required and are also available in various military equivalent screening levels by adding a prefix identifier as also described in the Features section. They may be operated at high maximum dc currents or full power rating with adequate heat sinking. Microsemi also offers numerous other Zener products to meet higher and lower power applications.

### APPEARANCE

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



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

### FEATURES

- Higher voltages of 110 to 200 V extends the JEDEC registered 1N4728 thru 1N4664A (3.3 to 100 V)
- Standard voltage tolerances are plus/minus 5% with a "5" suffix and 10% with "10" suffix identification
- Tight tolerances available in plus or minus 2% or 1% with "2" or "1" suffix respectively
- 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 package equivalents available as SMBJ1EZ110D5 to SMBJ1EZ200D5 in the popular DO-214AA package, or SMBG1EZ110D5 to SMBG1EZ200D5 in the DO-215AA package
- RoHS Compliant devices available by adding "e3" suffix

### APPLICATIONS / BENEFITS

- Regulates voltage over a broad operating current and temperature range.
- Zener voltage selection from 110 to 200 V.
- Flexible axial-lead mounting terminals.
- Nonsensitive to ESD per MIL-STD-750 Method 1020
- Withstands surge stresses.
- High specified maximum current ( $I_{ZM}$ ) when adequately heat sunk.

### MAXIMUM RATINGS

- Power dissipation at 25°C: 1.0 watts (also see derating in Figure 1).
- Operating and Storage temperature: -65°C to +150°C.
- Thermal Resistance: 45°C/W junction to lead at 3/8 (10mm) lead length from body, or 105°C/W junction to ambient when mounted on FR4 PC board (1oz Cu) with 4 mm<sup>2</sup> copper pads and track width 1 mm, length 25 mm.
- Steady-State Power: 1.0 watt at  $T_L \leq 105^\circ\text{C}$  3/8 inch (10 mm) from body, or 1.0 watts at  $T_A \leq 45^\circ\text{C}$  when mounted on FR4 PC described for thermal resistance (also see Figure 1).
- Forward voltage @ 200 mA: 1.2 volts (maximum).
- Solder Temperatures: 260°C for 10 s (max).

### MECHANICAL AND PACKAGING

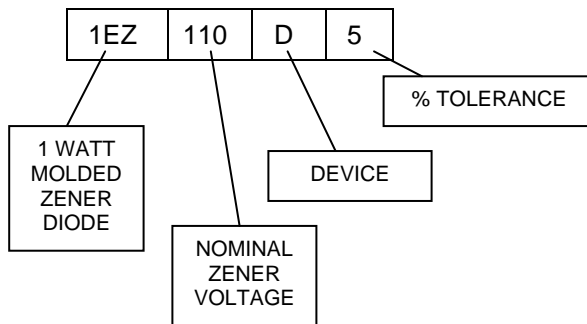
- CASE: Void-free transfer molded thermosetting epoxy body meeting UL94V-0
- FINISH: Tin-lead or RoHS Compliant annealed matte-Tin plating solderable per MIL-STD-750, method 2026
- POLARITY: Cathode indicated by band where diode is to be operated with the banded end positive with respect to the opposite end
- 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 @ 25°C**

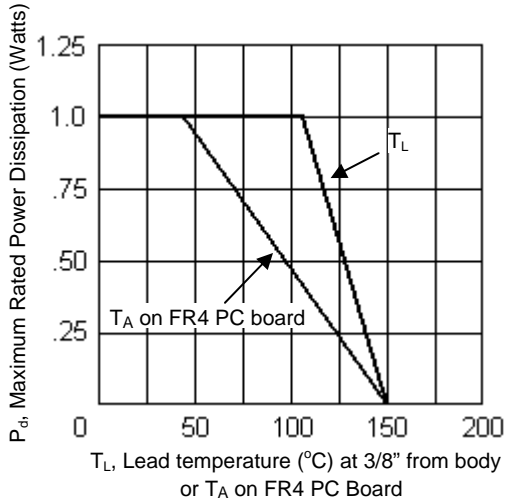
| MICROSEMI PART NUMBER (Note 1 and 5) | NOMINAL ZENER VOLTAGE (Note 2) |          | MAXIMUM ZENER IMPEDANCE (Note 3) |            |          | MAXIMUM REVERSE CURRENT |       | MAXIMUM ZENER CURRENT @ 100°C | TYPICAL TEMP. COEFF. OF ZENER VOLTAGE | MAXIMUM SURGE CURRENT (Note 4) |
|--------------------------------------|--------------------------------|----------|----------------------------------|------------|----------|-------------------------|-------|-------------------------------|---------------------------------------|--------------------------------|
|                                      | $V_Z$ @                        | $I_{ZT}$ | $Z_{ZT}$ @ $I_{ZT}$              | $Z_{ZK}$ @ | $I_{ZK}$ | $I_R$ @                 | $V_R$ | $I_{ZM}$                      | $\alpha_{V(BR)}$                      | $I_{ZSM}$                      |
|                                      | Volts                          | mA       | Ohms                             | Ohms       | mA       | $\mu A$                 | Volts | mA                            | %/°C                                  | Amps                           |
| 1EZ110D5                             | 110                            | 2.3      | 570                              | 5200       | 0.25     | 0.5                     | 83.6  | 8.3                           | +0.095                                | 0.15                           |
| 1EZ120D5                             | 120                            | 2.0      | 710                              | 5800       | 0.25     | 0.5                     | 91.2  | 8.0                           | +0.095                                | 0.14                           |
| 1EZ130D5                             | 130                            | 1.9      | 910                              | 6500       | 0.25     | 0.5                     | 98.8  | 6.9                           | +0.095                                | 0.13                           |
| 1EZ140D5                             | 140                            | 1.8      | 1100                             | 7000       | 0.25     | 0.5                     | 106.4 | 6.5                           | +0.095                                | 0.12                           |
| 1EZ150D5                             | 150                            | 1.7      | 1300                             | 7500       | 0.25     | 0.5                     | 114   | 5.7                           | +0.095                                | 0.12                           |
| 1EZ160D5                             | 160                            | 1.6      | 1400                             | 8000       | 0.25     | 0.5                     | 121.6 | 5.4                           | +0.095                                | 0.11                           |
| 1EZ170D5                             | 170                            | 1.5      | 1450                             | 8500       | 0.25     | 0.5                     | 130.4 | 5.2                           | +0.095                                | 0.10                           |
| 1EZ180D5                             | 180                            | 1.4      | 1500                             | 9000       | 0.25     | 0.5                     | 136.8 | 4.9                           | +0.095                                | 0.10                           |
| 1EZ190D5                             | 190                            | 1.3      | 1700                             | 9500       | 0.25     | 0.5                     | 144.8 | 4.7                           | +0.095                                | 0.10                           |
| 1EZ200D5                             | 200                            | 1.2      | 1900                             | 10000      | 0.25     | 0.5                     | 152   | 4.6                           | +0.100                                | 0.10                           |

**NOTES:**

- Suffix 5 indicates +/-5% tolerance. Suffix 10 indicates +/-10%, no suffix indicates +/-20%. Also Suffix 1 indicates +/-1% and suffix 2 indicates +/-2% on  $V_Z$  tolerance.
- Voltage measurements to be performed 90 seconds after application of dc current at  $T_A$  25°C (+8, -2°C). Test currents ( $I_{ZT}$ ) have been selected so that power dissipation is 0.25 watts at nominal voltages. This results in a typical junction temperature rise of 10°C.
- 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  $I_{ZK}$ .
- Maximum Surge Current  $I_{ZSM}$  is a non recurrent maximum peak reverse surge with a pulse width of 8.3 ms.
- Glass devices may be ordered by replacing E in the series type number with G.  
Example: 1GZ110D5



OUTLINE AND CIRCUIT



**FIGURE 1**  
POWER DERATING CURVE

PACKAGE DIMENSIONS

