

# Zener Diodes

## 1N5221B - 1N5252B

### ABSOLUTE MAXIMUM RATINGS (Note 1)

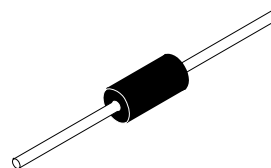
Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

| Symbol    | Parameter                                      | Value       | Unit                 |
|-----------|------------------------------------------------|-------------|----------------------|
| $P_D$     | Power Dissipation                              | 500         | mW                   |
|           | Derate above $50^\circ\text{C}$                | 4.0         | mW/ $^\circ\text{C}$ |
| $T_{STG}$ | Storage Temperature Range                      | -65 to +200 | $^\circ\text{C}$     |
| $T_J$     | Operating Junction Temperature Range           | -65 to +200 | $^\circ\text{C}$     |
|           | Lead Temperature (1/16 inch from case for 10s) | +230        | $^\circ\text{C}$     |

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

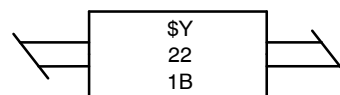
- These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

Non-recurrent square wave Pulse Width = 8.3 ms,  $T_A = 50^\circ\text{C}$ .



AXIAL LEAD  
CASE 017AG

### MARKING DIAGRAM



\$Y = Logo  
221B = Specific Device Code

### ORDERING INFORMATION

See detailed ordering and shipping information on page 3 of this data sheet.

# 1N5221B – 1N5252B

**ELECTRICAL CHARACTERISTICS** Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

| Device                                                                           | $V_Z$ (V) @ $I_Z$ (Note 2) |      |        | $Z_Z$ ( $\Omega$ ) @ $I_Z$ (mA) |     | $Z_{ZK}$ ( $\Omega$ ) @ $I_{ZK}$ (mA) |      | $I_R$ ( $\mu\text{A}$ ) @ $V_R$ (V) |      | $T_C$ (%/ $^\circ\text{C}$ ) |
|----------------------------------------------------------------------------------|----------------------------|------|--------|---------------------------------|-----|---------------------------------------|------|-------------------------------------|------|------------------------------|
|                                                                                  | Min.                       | Typ. | Max.   |                                 |     |                                       |      |                                     |      |                              |
| 1N5221B                                                                          | 2.280                      | 2.4  | 2.52   | 30                              | 20  | 1,200                                 | 0.25 | 100                                 | 1.0  | -0.085                       |
| 1N5222B                                                                          | 2.375                      | 2.5  | 2.625  | 30                              | 20  | 1,250                                 | 0.25 | 100                                 | 1.0  | -0.085                       |
| 1N5223B                                                                          | 2.565                      | 2.7  | 2.835  | 30                              | 20  | 1,300                                 | 0.25 | 75                                  | 1.0  | -0.080                       |
| 1N5225B                                                                          | 2.850                      | 3.0  | 3.150  | 29                              | 20  | 1,600                                 | 0.25 | 50                                  | 1.0  | -0.075                       |
| 1N5226B                                                                          | 3.135                      | 3.3  | 3.465  | 28                              | 20  | 1,600                                 | 0.25 | 25                                  | 1.0  | -0.070                       |
| 1N5227B                                                                          | 3.420                      | 3.6  | 3.780  | 24                              | 20  | 1,700                                 | 0.25 | 15                                  | 1.0  | -0.065                       |
| 1N5228B                                                                          | 3.705                      | 3.9  | 4.095  | 23                              | 20  | 1,900                                 | 0.25 | 10                                  | 1.0  | -0.060                       |
| 1N5229B                                                                          | 4.085                      | 4.3  | 4.515  | 22                              | 20  | 2,000                                 | 0.25 | 5.0                                 | 1.0  | $\pm 0.055$                  |
| 1N5230B                                                                          | 4.465                      | 4.7  | 4.935  | 19                              | 20  | 1,900                                 | 0.25 | 5.0                                 | 2.0  | $\pm 0.030$                  |
| 1N5231B                                                                          | 4.845                      | 5.1  | 5.355  | 17                              | 20  | 1,600                                 | 0.25 | 5.0                                 | 2.0  | $\pm 0.030$                  |
| 1N5232B                                                                          | 5.320                      | 5.6  | 5.880  | 11                              | 20  | 1,600                                 | 0.25 | 5.0                                 | 3.0  | 0.038                        |
| 1N5233B                                                                          | 5.700                      | 6.0  | 6.300  | 7                               | 20  | 1,600                                 | 0.25 | 5.0                                 | 3.5  | 0.038                        |
| 1N5234B                                                                          | 5.890                      | 6.2  | 6.510  | 7                               | 20  | 1,000                                 | 0.25 | 5.0                                 | 4.0  | 0.045                        |
| 1N5235B                                                                          | 6.460                      | 6.8  | 7.140  | 5                               | 20  | 750                                   | 0.25 | 3.0                                 | 5.0  | 0.050                        |
| 1N5236B                                                                          | 7.125                      | 7.5  | 7.875  | 6                               | 20  | 500                                   | 0.25 | 3.0                                 | 6.0  | 0.058                        |
| 1N5237B                                                                          | 7.790                      | 8.2  | 8.610  | 8                               | 20  | 500                                   | 0.25 | 3.0                                 | 6.5  | 0.062                        |
| 1N5238B                                                                          | 8.265                      | 8.7  | 9.135  | 8                               | 20  | 600                                   | 0.25 | 3.0                                 | 6.5  | 0.065                        |
| 1N5239B                                                                          | 8.645                      | 9.1  | 9.555  | 10                              | 20  | 600                                   | 0.25 | 3.0                                 | 7.0  | 0.068                        |
| 1N5240B                                                                          | 9.500                      | 10.0 | 10.500 | 17                              | 20  | 600                                   | 0.25 | 3.0                                 | 8.0  | 0.075                        |
| 1N5241B                                                                          | 10.450                     | 11.0 | 11.550 | 22                              | 20  | 600                                   | 0.25 | 2.0                                 | 8.4  | 0.076                        |
| 1N5242B                                                                          | 11.400                     | 12.0 | 12.600 | 30                              | 20  | 600                                   | 0.25 | 1.0                                 | 9.1  | 0.077                        |
| 1N5243B                                                                          | 12.350                     | 13.0 | 13.650 | 13                              | 9.5 | 600                                   | 0.25 | 0.5                                 | 9.9  | 0.079                        |
| 1N5244B                                                                          | 13.300                     | 14.0 | 14.700 | 15                              | 9.0 | 600                                   | 0.25 | 0.1                                 | 10.0 | 0.080                        |
| 1N5245B                                                                          | 14.250                     | 15.0 | 15.750 | 16                              | 8.5 | 600                                   | 0.25 | 0.1                                 | 11.0 | 0.082                        |
| 1N5246B                                                                          | 15.200                     | 16.0 | 16.800 | 17                              | 7.8 | 600                                   | 0.25 | 0.1                                 | 12.0 | 0.083                        |
| 1N5247B                                                                          | 16.150                     | 17.0 | 17.850 | 19                              | 7.4 | 600                                   | 0.25 | 0.1                                 | 13.0 | 0.084                        |
| 1N5248B                                                                          | 17.100                     | 18.0 | 18.900 | 21                              | 7.0 | 600                                   | 0.25 | 0.1                                 | 14.0 | 0.085                        |
| 1N5249B                                                                          | 18.050                     | 19.0 | 19.950 | 23                              | 6.6 | 600                                   | 0.25 | 0.1                                 | 14.0 | 0.085                        |
| 1N5250B                                                                          | 19.000                     | 20.0 | 21.000 | 25                              | 6.2 | 600                                   | 0.25 | 0.1                                 | 15.0 | 0.086                        |
| 1N5251B                                                                          | 20.900                     | 22.0 | 23.100 | 29                              | 5.6 | 600                                   | 0.25 | 0.1                                 | 17.0 | 0.087                        |
| 1N5252B                                                                          | 22.800                     | 24.0 | 25.200 | 33                              | 5.2 | 600                                   | 0.25 | 0.1                                 | 18.0 | 0.088                        |
| <b><math>V_F</math> Forward Voltage = 1.2 V Max. @ <math>I_F = 200</math> mA</b> |                            |      |        |                                 |     |                                       |      |                                     |      |                              |

2. Zener Voltage ( $V_Z$ ). The zener voltage is measured with the device junction in the thermal equilibrium at the lead temperature ( $T_L$ ) at  $30^\circ\text{C} \pm 1^\circ\text{C}$  and 3/8" lead length.

# 1N5221B – 1N5252B

## TOP MARKING AND ORDERING INFORMATION

| Device    | Top Marking |        |        | Package                                 | Shipping <sup>†</sup> |
|-----------|-------------|--------|--------|-----------------------------------------|-----------------------|
|           | Line 1      | Line 2 | Line 3 |                                         |                       |
| 1N5221B   | LOGO        | 22     | 1B     | Axial Lead<br>(Pb – Free / Halide Free) | 5000 / Bulk Bag       |
| 1N5222B   |             |        | 2B     |                                         | 5000 / Bulk Bag       |
| 1N5223B   |             |        | 3B     |                                         | 5000 / Bulk Bag       |
| 1N5225B   |             |        | 5B     |                                         | 5000 / Bulk Bag       |
| 1N5226B   |             |        | 6B     |                                         | 5000 / Bulk Bag       |
| 1N5226BTR |             |        |        |                                         | 5000 / Tape and Reel  |
| 1N5227B   |             |        | 7B     |                                         | 5000 / Bulk Bag       |
| 1N5227BTR |             |        |        |                                         | 5000 / Tape and Reel  |
| 1N5228B   |             |        | 8B     |                                         | 5000 / Bulk Bag       |
| 1N5228BTR |             |        |        |                                         | 5000 / Tape and Reel  |
| 1N5229B   |             |        | 9B     |                                         | 5000 / Bulk Bag       |
| 1N5229BTR |             |        |        |                                         | 5000 / Tape and Reel  |
| 1N5230B   |             | 23     | 0B     |                                         | 5000 / Bulk Bag       |
| 1N5230BTR |             |        |        |                                         | 5000 / Tape and Reel  |
| 1N5231B   |             |        | 1B     |                                         | 5000 / Bulk Bag       |
| 1N5231BTR |             |        |        |                                         | 5000 / Tape and Reel  |
| 1N5232B   |             |        | 2B     |                                         | 5000 / Bulk Bag       |
| 1N5232BTR |             |        |        |                                         | 5000 / Tape and Reel  |
| 1N5233B   |             |        | 3B     |                                         | 5000 / Bulk Bag       |
| 1N5233BTR |             |        |        |                                         | 5000 / Tape and Reel  |
| 1N5234B   |             |        | 4B     |                                         | 5000 / Bulk Bag       |
| 1N5234BTR |             |        |        |                                         | 5000 / Tape and Reel  |
| 1N5235B   |             |        | 5B     |                                         | 5000 / Bulk Bag       |
| 1N5235BTR |             |        |        |                                         | 5000 / Tape and Reel  |
| 1N5236B   |             |        | 6B     |                                         | 5000 / Bulk Bag       |
| 1N5236BTR |             |        |        |                                         | 5000 / Tape and Reel  |
| 1N5237B   |             |        | 7B     |                                         | 5000 / Bulk Bag       |
| 1N5237BTR |             |        |        |                                         | 5000 / Tape and Reel  |
| 1N5238B   |             |        | 8B     |                                         | 5000 / Bulk Bag       |
| 1N5239B   |             |        | 9B     |                                         | 5000 / Bulk Bag       |
| 1N5239BTR |             |        |        |                                         | 5000 / Tape and Reel  |
| 1N5240B   |             | 24     | 0B     |                                         | 5000 / Bulk Bag       |
| 1N5240BTR |             |        |        |                                         | 5000 / Tape and Reel  |
| 1N5241B   |             |        | 1B     |                                         | 5000 / Bulk Bag       |
| 1N5241BTR |             |        |        |                                         | 5000 / Tape and Reel  |
| 1N5242B   |             |        | 2B     |                                         | 5000 / Bulk Bag       |
| 1N5242BTR |             |        |        |                                         | 5000 / Tape and Reel  |
| 1N5243B   |             |        | 3B     |                                         | 5000 / Bulk Bag       |
| 1N5243BTR |             |        |        |                                         | 5000 / Tape and Reel  |

# 1N5221B – 1N5252B

## TOP MARKING AND ORDERING INFORMATION (continued)

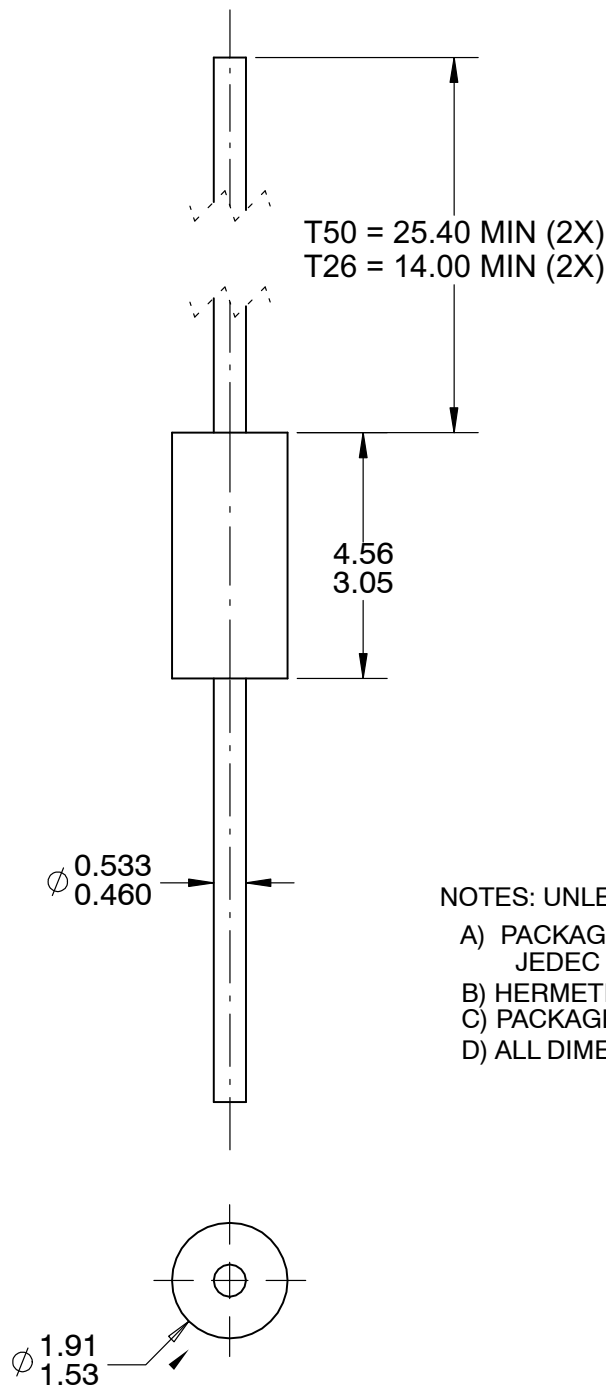
| Device    | Top Marking |        |        | Package                                 | Shipping <sup>†</sup> |
|-----------|-------------|--------|--------|-----------------------------------------|-----------------------|
|           | Line 1      | Line 2 | Line 3 |                                         |                       |
| 1N5244B   | LOGO        | 24     | 4B     | Axial Lead<br>(Pb – Free / Halide Free) | 5000 / Bulk Bag       |
| 1N5244BTR |             |        |        |                                         | 5000 / Tape and Reel  |
| 1N5245B   |             |        | 5B     |                                         | 5000 / Bulk Bag       |
| 1N5245BTR |             |        |        |                                         | 5000 / Tape and Reel  |
| 1N5246B   |             |        | 6B     |                                         | 5000 / Bulk Bag       |
| 1N5246BTR |             |        |        |                                         | 5000 / Tape and Reel  |
| 1N5247B   |             |        | 7B     |                                         | 5000 / Bulk Bag       |
| 1N5247BTR |             |        |        |                                         | 5000 / Tape and Reel  |
| 1N5248B   |             |        | 8B     |                                         | 5000 / Bulk Bag       |
| 1N5248BTR |             |        |        |                                         | 5000 / Tape and Reel  |
| 1N5249BTR |             |        | 9B     |                                         | 5000 / Tape and Reel  |
| 1N5250B   |             | 25     | 0B     |                                         | 5000 / Bulk Bag       |
| 1N5250BTR |             |        |        |                                         | 5000 / Tape and Reel  |
| 1N5251B   |             |        | 1B     |                                         | 5000 / Bulk Bag       |
| 1N5251BTR |             |        |        |                                         | 5000 / Tape and Reel  |
| 1N5252B   |             |        | 2B     |                                         | 5000 / Bulk Bag       |
| 1N5252BTR |             |        |        |                                         | 5000 / Tape and Reel  |

<sup>†</sup>For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.



**AXIAL LEAD**  
**CASE 017AG**  
**ISSUE O**

DATE 31 AUG 2016



**NOTES: UNLESS OTHERWISE SPECIFIED**

- A) PACKAGE STANDARD REFERENCE:  
JEDEC DO-204, VARIATION AH.
- B) HERMETICALLY SEALED GLASS PACKAGE.
- C) PACKAGE WEIGHT IS 0.137 GRAM.
- D) ALL DIMENSIONS ARE IN MILLIMETERS.

|                         |                    |                                                                                                                                                                                     |
|-------------------------|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
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