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## 1N5223B thru 1N5271B Zener Diode, 1/2 Watt ±5% Tolerance

### Features:

- Zener Voltage 2.7 to 100V
- DO35 Package

### Absolute Maximum Ratings: ( $T_A = +25^\circ\text{C}$ unless otherwise specified)

Operating Junction Temperature Range,  $T_{opr}$  .....  $-65^\circ$  to  $+200^\circ\text{C}$   
Storage Temperature Range,  $T_{stg}$  .....  $-65^\circ$  to  $+200^\circ\text{C}$   
DC Power Dissipation,  $P_D$  ..... 500mW  
Derate Above  $75^\circ\text{C}$  .....  $4.0\text{mW}/^\circ\text{C}$   
Forward Voltage ( $I_F = 200\text{mA}$ ),  $V_F$  ..... 1.1V

### Electrical Characteristics: ( $T_C = +25^\circ\text{C}$ , unless otherwise specified)

| Device Number | Nominal Zener Voltage<br>$V_Z @ I_{ZT}$<br>(Note 1) | Zener Test Current<br>( $I_{ZT}$ ) | Maximum Dynamic Impedance (Note 3) |                                    | Maximum Leakage Current<br>$I_R @ V_R$ |       | Typical Temperature Coefficient<br>(Note 2)<br>$\alpha_{VZ}$ |
|---------------|-----------------------------------------------------|------------------------------------|------------------------------------|------------------------------------|----------------------------------------|-------|--------------------------------------------------------------|
|               |                                                     |                                    | $Z_{ZT} @ I_{ZT}$                  | $Z_{ZK} @ 0.25\text{mA } (I_{ZK})$ |                                        |       |                                                              |
|               | Volts                                               | mA                                 | Ohms                               | Ohms                               | $\mu\text{A}$                          | Volts | %/ $^\circ\text{C}$                                          |
| 1N5223B       | 2.7                                                 | 20                                 | 30                                 | 1300                               | 75                                     | 1.0   | -0.080                                                       |
| 1N5225B       | 3.0                                                 | 20                                 | 29                                 | 1600                               | 50                                     | 1.0   | -0.075                                                       |
| 1N5226B       | 3.3                                                 | 20                                 | 28                                 | 1600                               | 25                                     | 1.0   | -0.070                                                       |
| 1N5227B       | 3.6                                                 | 20                                 | 24                                 | 1700                               | 15                                     | 1.0   | -0.065                                                       |
| 1N5228B       | 3.9                                                 | 20                                 | 23                                 | 1900                               | 10                                     | 1.0   | -0.060                                                       |
| 1N5229B       | 4.3                                                 | 20                                 | 22                                 | 2000                               | 5                                      | 1.0   | $\pm 0.055$                                                  |
| 1N5230B       | 4.7                                                 | 20                                 | 19                                 | 1900                               | 5                                      | 2.0   | $\pm 0.030$                                                  |

Note 1. Nominal zener voltage is measured with the device junction in thermal equilibrium at the lead temperature of  $30^\circ\text{C} \pm 1^\circ\text{C}$  and 3/8" lead length.

Note 2. Test conditions for temperature coefficient are as follows:

a.  $I_{ZT} = 7.5\text{mA}$ ,  $T_1 = +25^\circ\text{C}$ ,  $T_2 = +125^\circ\text{C}$  (1N5223B thru 1N5242B)

b.  $I_{ZT} = \text{Rated } I_{ZT}$ ,  $T_1 = +25^\circ\text{C}$ ,  $T_2 = +125^\circ\text{C}$  (1N5243B thru 1N5271B)

Device to be temperature stabilized with current applied prior to reading breakdown voltage at the specified ambient temperature.

Note 3.  $Z_{ZT}$  and  $Z_{ZK}$  are measured by dividing the AC voltage drop across the device by the AC current applied. The specific limits are for  $I_Z(\text{AC}) = 0.1 I_Z(\text{DC})$  with the AC frequency = 60Hz.

**Electrical Characteristics (Cont'd):** ( $T_C = +25^{\circ}\text{C}$ , unless otherwise specified)

| Device<br>Numbe | Nominal<br>Zener Voltage<br>$V_Z @ I_{ZT}$<br>(Note 1) | Zener<br>Test<br>Current<br>( $I_{ZT}$ ) | Maximum Dynamic<br>Impedance (Note 3) |                                    | Maximum<br>Leakage<br>Current<br>$I_R @ V_R$ |       | Typical<br>Temperature<br>Coefficient<br>(Note 2)<br>$\alpha_{VZ}$ |
|-----------------|--------------------------------------------------------|------------------------------------------|---------------------------------------|------------------------------------|----------------------------------------------|-------|--------------------------------------------------------------------|
|                 |                                                        |                                          | $Z_{ZT} @ I_{ZT}$                     | $Z_{ZK} @ 0.25\text{mA } (I_{ZK})$ |                                              |       |                                                                    |
|                 | Volts                                                  | mA                                       | Ohms                                  | Ohms                               | $\mu\text{A}$                                | Volts | %/ $^{\circ}\text{C}$                                              |
| 1N5231B         | 5.1                                                    | 20                                       | 17                                    | 1600                               | 5                                            | 2.0   | $\pm 0.030$                                                        |
| 1N5232B         | 5.6                                                    | 20                                       | 11                                    | 1600                               | 5                                            | 3.0   | +0.038                                                             |
| 1N5233B         | 6.0                                                    | 20                                       | 7                                     | 1600                               | 5                                            | 3.5   | +0.038                                                             |
| 1N5234B         | 6.2                                                    | 20                                       | 7                                     | 1000                               | 5                                            | 4.0   | 0.045                                                              |
| 1N5235B         | 6.8                                                    | 20                                       | 5                                     | 750                                | 3                                            | 5.0   | 0.050                                                              |
| 1N5236B         | 7.5                                                    | 20                                       | 6                                     | 500                                | 3                                            | 6.0   | 0.058                                                              |
| 1N5237B         | 8.2                                                    | 20                                       | 8                                     | 500                                | 3                                            | 6.5   | 0.062                                                              |
| 1B5238B         | 8.7                                                    | 20                                       | 8                                     | 600                                | 3                                            | 6.5   | 0.065                                                              |
| 1N5239B         | 9.1                                                    | 20                                       | 10                                    | 600                                | 3                                            | 7.0   | 0.068                                                              |
| 1N5240B         | 10                                                     | 20                                       | 17                                    | 600                                | 3                                            | 8.0   | 0.075                                                              |
| 1N5241B         | 11                                                     | 20                                       | 22                                    | 600                                | 2                                            | 8.4   | 0.076                                                              |
| 1N5242B         | 12                                                     | 20                                       | 30                                    | 600                                | 1                                            | 9.1   | 0.077                                                              |
| 1N5243B         | 13                                                     | 9.5                                      | 13                                    | 600                                | 0.5                                          | 9.9   | 0.079                                                              |
| 1N5244B         | 14                                                     | 9.0                                      | 15                                    | 600                                | 0.1                                          | 10    | 0.082                                                              |
| 1N5245B         | 15                                                     | 8.5                                      | 16                                    | 600                                | 0.1                                          | 11    | 0.082                                                              |
| 1N5246B         | 16                                                     | 7.8                                      | 17                                    | 600                                | 0.1                                          | 12    | 0.083                                                              |
| 1N5247B         | 17                                                     | 7.4                                      | 19                                    | 600                                | 0.1                                          | 13    | 0.084                                                              |
| 1N5248B         | 18                                                     | 7.0                                      | 21                                    | 600                                | 0.1                                          | 14    | 0.085                                                              |
| 1N5249B         | 19                                                     | 6.6                                      | 23                                    | 600                                | 0.1                                          | 14    | 0.086                                                              |
| 1N5250B         | 20                                                     | 6.2                                      | 25                                    | 600                                | 0.1                                          | 15    | 0.086                                                              |
| 1N5251B         | 22                                                     | 5.6                                      | 29                                    | 600                                | 0.1                                          | 17    | 0.087                                                              |
| 1N5252B         | 24                                                     | 5.2                                      | 33                                    | 600                                | 0.1                                          | 18    | 0.088                                                              |
| 1N5253B         | 25                                                     | 5.0                                      | 35                                    | 600                                | 0.1                                          | 19    | 0.089                                                              |

Note 1. Nominal zener voltage is measured with the device junction in thermal equilibrium at the lead temperature of  $30^{\circ}\text{C} \pm 1^{\circ}\text{C}$  and 3/8" lead length.

Note 2. Test conditions for temperature coefficient are as follows:

a.  $I_{ZT} = 7.5\text{mA}$ ,  $T_1 = +25^{\circ}\text{C}$ ,  $T_2 = +125^{\circ}\text{C}$  (1N5223B thru 1N5242B)

b.  $I_{ZT} = \text{Rated } I_{ZT}$ ,  $T_1 = +25^{\circ}\text{C}$ ,  $T_2 = +125^{\circ}\text{C}$  (1N5243B thru 1N5271B)

Device to be temperature stabilized with current applied prior to reading breakdown voltage at the specified ambient temperature.

Note 3.  $Z_{ZT}$  and  $Z_{ZK}$  are measured by dividing the AC voltage drop across the device by the AC current applied. The specific limits are for  $I_Z(\text{AC}) = 0.1 I_Z(\text{DC})$  with the AC frequency = 60Hz.

**Electrical Characteristics (Cont'd):** ( $T_C = +25^\circ\text{C}$ , unless otherwise specified)

| Device<br>Numbe | Nominal<br>Zener Voltage<br>$V_Z @ I_{ZT}$<br>(Note 1) | Zener<br>Test<br>Current<br>( $I_{ZT}$ ) | Maximum Dynamic<br>Impedance (Note 3) |                                    | Maximum<br>Leakage<br>Current<br>$I_R @ V_R$ |       | Typical<br>Temperature<br>Coefficient<br>(Note 2)<br>$\alpha_{VZ}$ |
|-----------------|--------------------------------------------------------|------------------------------------------|---------------------------------------|------------------------------------|----------------------------------------------|-------|--------------------------------------------------------------------|
|                 |                                                        |                                          | $Z_{ZT} @ I_{ZT}$                     | $Z_{ZK} @ 0.25\text{mA } (I_{ZK})$ |                                              |       |                                                                    |
|                 | Volts                                                  | mA                                       | Ohms                                  | Ohms                               | $\mu\text{A}$                                | Volts | %/ $^\circ\text{C}$                                                |
| 1N5254B         | 27                                                     | 4.6                                      | 41                                    | 600                                | 0.1                                          | 21    | 0.090                                                              |
| 1N5255B         | 28                                                     | 4.5                                      | 44                                    | 600                                | 0.1                                          | 21    | 0.091                                                              |
| 1N5256B         | 30                                                     | 4.2                                      | 49                                    | 600                                | 0.1                                          | 23    | 0.091                                                              |
| 1N5257B         | 33                                                     | 3.8                                      | 58                                    | 700                                | 0.1                                          | 25    | 0.092                                                              |
| 1N5258B         | 36                                                     | 3.4                                      | 70                                    | 700                                | 0.1                                          | 27    | 0.093                                                              |
| 1N5259B         | 39                                                     | 3.2                                      | 80                                    | 800                                | 0.1                                          | 30    | 0.094                                                              |
| 1N5260B         | 43                                                     | 3.0                                      | 93                                    | 900                                | 0.1                                          | 33    | 0.095                                                              |
| 1N5261B         | 47                                                     | 2.7                                      | 105                                   | 1000                               | 0.1                                          | 36    | 0.095                                                              |
| 1N5262B         | 51                                                     | 2.5                                      | 125                                   | 1100                               | 0.1                                          | 39    | 0.096                                                              |
| 1N5263B         | 56                                                     | 2.2                                      | 150                                   | 1300                               | 0.1                                          | 43    | 0.096                                                              |
| 1N5266B         | 68                                                     | 1.8                                      | 230                                   | 1600                               | 0.1                                          | 52    | 0.097                                                              |
| 1N5267B         | 75                                                     | 1.7                                      | 270                                   | 1700                               | 0.1                                          | 56    | 0.098                                                              |
| 1N5270B         | 91                                                     | 1.4                                      | 400                                   | 2300                               | 0.1                                          | 69    | 0.099                                                              |
| 1N5271B         | 100                                                    | 1.3                                      | 500                                   | 2600                               | 0.1                                          | 76    | 0.110                                                              |

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