

# Central<sup>TM</sup> Semiconductor Corp.

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Manufacturers of World Class Discrete Semiconductors

1N2970B THRU 1N3015B

10W ZENER DIODE  
6.8 VOLTS TO 200 VOLTS  
5% TOLERANCE

DO-4 CASE

## DESCRIPTION

The Central Semiconductor Corp. 1N2970B Series types are Silicon Zener diodes, manufactured in a hermetically sealed metal case, designed for high reliability industrial application. Also available in reverse polarity connection (must add an "R" suffix in part number – ex. 1N2970RB).

## ITEM

Power Dissipation (@  $T_C=55^\circ\text{C}$ )  
Operating and Storage Temperature

## SYMBOL

$P_D$   
 $T_J, T_{STG}$

## ABSOLUTE MAXIMUM RATINGS

10  
-65 TO +175

## UNIT

W  
 $^\circ\text{C}$

## ELECTRICAL CHARACTERISTICS ( $T_C=25^\circ\text{C}$ ), $V_F=1.5\text{V MAX @ } I_F=2\text{A FOR ALL TYPES}$

| TYPE    | Zener Voltage<br>V <sub>Z</sub> @ I <sub>ZT</sub> |       |       | Test Current    | Maximum Reverse Leakage Current |       | Maximum Zener Impedance          |                                   |     | Maximum DC Zener Current |
|---------|---------------------------------------------------|-------|-------|-----------------|---------------------------------|-------|----------------------------------|-----------------------------------|-----|--------------------------|
|         | MIN                                               | NOM   | MAX   | I <sub>ZT</sub> | I <sub>R</sub> @ V <sub>R</sub> |       | Z <sub>ZT</sub> @I <sub>ZT</sub> | Z <sub>ZK</sub> @ I <sub>ZK</sub> |     |                          |
|         | Volts                                             | Volts | Volts | mA              | μA                              | Volts | Ω                                | Ω                                 | mA  |                          |
| 1N2970B | 6.460                                             | 6.8   | 7.140 | 370             | 150                             | 5.2   | 1.2                              | 500                               | 1.0 |                          |
| 1N2971B | 7.125                                             | 7.5   | 7.875 | 335             | 75                              | 5.7   | 1.3                              | 250                               | 1.0 |                          |
| 1N2972B | 7.790                                             | 8.2   | 8.610 | 305             | 50                              | 6.2   | 1.5                              | 250                               | 1.0 |                          |
| 1N2973B | 8.645                                             | 9.1   | 9.555 | 275             | 25                              | 6.9   | 2.0                              | 250                               | 1.0 |                          |
| 1N2974B | 9.500                                             | 10    | 10.50 | 250             | 10                              | 7.6   | 3.0                              | 250                               | 1.0 |                          |
| 1N2975B | 10.45                                             | 11    | 11.55 | 230             | 5.0                             | 8.4   | 3.0                              | 250                               | 1.0 |                          |
| 1N2976B | 11.40                                             | 12    | 12.60 | 210             | 5.0                             | 9.1   | 3.0                              | 250                               | 1.0 |                          |
| 1N2977B | 12.35                                             | 13    | 13.65 | 190             | 5.0                             | 9.9   | 3.0                              | 250                               | 1.0 |                          |
| 1N2978B | 13.30                                             | 14    | 14.70 | 180             | 5.0                             | 10.6  | 3.0                              | 250                               | 1.0 |                          |
| 1N2979B | 14.25                                             | 15    | 15.75 | 170             | 5.0                             | 11.4  | 3.0                              | 250                               | 1.0 |                          |
| 1N2980B | 15.20                                             | 16    | 16.80 | 155             | 5.0                             | 12.2  | 4.0                              | 250                               | 1.0 |                          |
| 1N2981B | 16.15                                             | 17    | 17.85 | 145             | 5.0                             | 13.0  | 4.0                              | 250                               | 1.0 |                          |
| 1N2982B | 17.10                                             | 18    | 18.90 | 140             | 5.0                             | 13.7  | 4.0                              | 250                               | 1.0 |                          |
| 1N2983B | 18.05                                             | 19    | 19.95 | 130             | 5.0                             | 14.4  | 4.0                              | 250                               | 1.0 |                          |
| 1N2984B | 19.00                                             | 20    | 21.00 | 125             | 5.0                             | 15.2  | 4.0                              | 250                               | 1.0 |                          |
| 1N2985B | 20.90                                             | 22    | 23.10 | 115             | 5.0                             | 16.7  | 5.0                              | 250                               | 1.0 |                          |
| 1N2986B | 22.80                                             | 24    | 25.20 | 105             | 5.0                             | 18.2  | 5.0                              | 250                               | 1.0 |                          |
| 1N2987B | 23.75                                             | 25    | 26.25 | 100             | 5.0                             | 18.2  | 6.0                              | 250                               | 1.0 |                          |
| 1N2988B | 25.65                                             | 27    | 28.35 | 95              | 5.0                             | 20.6  | 7.0                              | 250                               | 1.0 |                          |
| 1N2989B | 28.50                                             | 30    | 31.50 | 85              | 5.0                             | 22.8  | 8.0                              | 300                               | 1.0 |                          |
| 1N2990B | 31.35                                             | 33    | 34.65 | 75              | 5.0                             | 25.1  | 9.0                              | 300                               | 1.0 |                          |
| 1N2991B | 34.20                                             | 36    | 37.80 | 70              | 5.0                             | 27.4  | 10                               | 300                               | 1.0 |                          |
| 1N2992B | 37.05                                             | 39    | 40.95 | 65              | 5.0                             | 29.7  | 11                               | 300                               | 1.0 |                          |

**ELECTRICAL CHARACTERISTICS ( $T_C=25^\circ\text{C}$ ),  $V_F=1.5\text{V MAX @ } I_F=2\text{A}$  FOR ALL TYPES**

| TYPE    | Zener Voltage<br>$V_Z @ I_{ZT}$ |       |        | Test Current | Maximum Reverse Leakage Current |         | Maximum Zener Impedance |          |            | Maximum DC Zener Current |
|---------|---------------------------------|-------|--------|--------------|---------------------------------|---------|-------------------------|----------|------------|--------------------------|
|         | MIN                             | NOM   | MAX    | $I_{ZT}$     | $I_R$                           | @ $V_R$ | $Z_{ZT}@I_{ZT}$         | $Z_{ZK}$ | @ $I_{ZK}$ | $I_{ZM}$                 |
|         | Volts                           | Volts | Volts  | mA           | $\mu\text{A}$                   | Volts   | $\Omega$                | $\Omega$ | mA         | mA                       |
| 1N2993B | 40.85                           | 43    | 45.15  | 60           | 5.0                             | 32.7    | 12                      | 400      | 1.0        | 195                      |
| 1N2994B | 42.75                           | 45    | 47.25  | 55           | 5.0                             | 33.0    | 13                      | 400      | 1.0        | 185                      |
| 1N2995B | 44.65                           | 47    | 49.35  | 55           | 5.0                             | 35.8    | 14                      | 400      | 1.0        | 175                      |
| 1N2996B | 47.50                           | 50    | 52.50  | 50           | 5.0                             | 38.0    | 15                      | 500      | 1.0        | 165                      |
| 1N2997B | 48.45                           | 51    | 53.55  | 50           | 5.0                             | 38.8    | 15                      | 500      | 1.0        | 163                      |
| 1N2998B | 49.40                           | 52    | 54.60  | 50           | 5.0                             | 39.5    | 15                      | 500      | 1.0        | 160                      |
| 1N2999B | 53.20                           | 56    | 58.80  | 45           | 5.0                             | 42.6    | 16                      | 500      | 1.0        | 150                      |
| 1N3000B | 58.90                           | 62    | 65.10  | 40           | 5.0                             | 47.1    | 17                      | 600      | 1.0        | 130                      |
| 1N3001B | 64.60                           | 68    | 71.40  | 37           | 5.0                             | 51.7    | 18                      | 600      | 1.0        | 120                      |
| 1N3002B | 71.25                           | 75    | 78.75  | 33           | 5.0                             | 56.0    | 22                      | 600      | 1.0        | 110                      |
| 1N3003B | 77.90                           | 82    | 86.10  | 30           | 5.0                             | 62.2    | 25                      | 700      | 1.0        | 100                      |
| 1N3004B | 86.00                           | 91    | 95.55  | 28           | 5.0                             | 69.2    | 35                      | 800      | 1.0        | 85                       |
| 1N3005B | 95.00                           | 100   | 105.00 | 25           | 5.0                             | 76.0    | 40                      | 900      | 1.0        | 80                       |
| 1N3006B | 99.75                           | 105   | 110.25 | 25           | 5.0                             | 79.8    | 45                      | 1,000    | 1.0        | 75                       |
| 1N3007B | 104.50                          | 110   | 115.50 | 23           | 5.0                             | 83.6    | 55                      | 1,100    | 1.0        | 72                       |
| 1N3008B | 114.00                          | 120   | 126.00 | 20           | 5.0                             | 91.2    | 75                      | 1,200    | 1.0        | 67                       |
| 1N3009B | 123.50                          | 130   | 136.50 | 19           | 5.0                             | 98.8    | 100                     | 1,300    | 1.0        | 62                       |
| 1N3010B | 133.00                          | 140   | 147.00 | 18           | 5.0                             | 106.4   | 125                     | 1,400    | 1.0        | 58                       |
| 1N3011B | 142.50                          | 150   | 157.50 | 17           | 5.0                             | 114.0   | 175                     | 1,500    | 1.0        | 54                       |
| 1N3012B | 152.00                          | 160   | 168.00 | 16           | 5.0                             | 121.6   | 200                     | 1,600    | 1.0        | 50                       |
| 1N3013B | 166.25                          | 175   | 183.75 | 14           | 5.0                             | 135.0   | 250                     | 1,750    | 1.0        | 46                       |
| 1N3014B | 171.00                          | 180   | 189.00 | 14           | 5.0                             | 136.8   | 260                     | 1,850    | 1.0        | 45                       |
| 1N3015B | 190.00                          | 200   | 210.00 | 12           | 5.0                             | 152.0   | 300                     | 2,000    | 1.0        | 40                       |

**DO-4 CASE- MECHANICAL DRAWING**

