

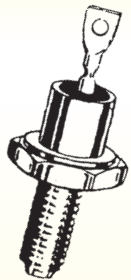


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**1N2970 – 1N3015**

## 10 WATTS ZENER DIODES



### ZENER DIODES

Available with anode-to-case and cathode-to-case connections (standard and reverse polarity, i.e., 1N2970 and 1N2970R).

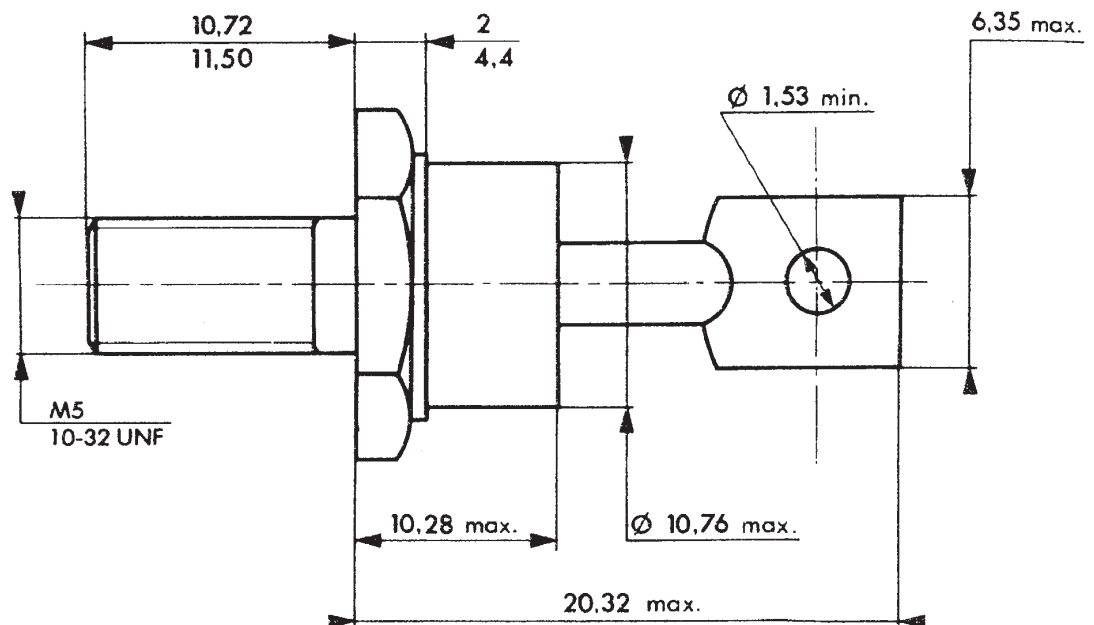
The type numbers shown have standard tolerance of +20% on the nominal zener voltage. Add suffix "A" for +10% units or "B" for +5% units.

### MAXIMUM RATINGS:

Junction and Storage  
Temperature: -65°C to + 175°C

DC Power Dissipation: 10 Watts  
(Derate 83.3 mW/°C above  
55°C)

**D04**



- Standard polarity is anode-to-case
- Reverse polarity with cathode-to-case by designating R suffix in part number.



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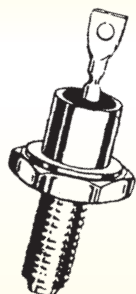


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**1N2970 – 1N3015**

## 10 WATTS ZENER DIODES



- Standard voltage tolerance are +/-5% with B suffix, +/-10% with an A suffix, and +/-20% with no suffix.
- Standard polarity is anode-to-case.
- Reverse polarity with cathode-to-case by designating R suffix in part number.

**ELECTRICAL CHARACTERISTICS** ( $T_C = 25^\circ\text{C}$  unless otherwise specified,  $V_F = 1.5\text{ V max @ } I_F = 2\text{ amp}$  on all types.)

| Type Number | Nominal Zener Voltage $V_Z @ I_{ZT}$ Volts | Test Current ( $I_{ZT}$ ) mA | Max Zener Impedance    |                        |             | Max DC Zener Current ( $I_{ZM}$ ) mA | Max Reverse Current*        |          |          |
|-------------|--------------------------------------------|------------------------------|------------------------|------------------------|-------------|--------------------------------------|-----------------------------|----------|----------|
|             |                                            |                              | $Z_{ZT} @ I_{ZT}$ Ohms | $Z_{ZK} @ I_{ZT}$ Ohms | $I_{ZT}$ mA |                                      | $I_R$ Max ( $\mu\text{A}$ ) | $V_{R1}$ | $V_{R2}$ |
| 1N2970      | 6.8                                        | 370                          | 1.2                    | 500                    | 1.0         | 1,320                                | 150                         | 5.2      | 4.9      |
| 1N2971      | 7.5                                        | 335                          | 1.3                    | 250                    | 1.0         | 1,180                                | 75                          | 5.7      | 5.4      |
| 1N2972      | 8.2                                        | 305                          | 1.5                    | 250                    | 1.0         | 1,040                                | 50                          | 6.2      | 5.9      |
| 1N2973      | 9.1                                        | 275                          | 2.0                    | 250                    | 1.0         | 960                                  | 25                          | 6.9      | 6.6      |
| 1N2974      | 10                                         | 250                          | 3                      | 250                    | 1.0         | 880                                  | 10                          | 7.6      | 7.2      |
| 1N2975      | 11                                         | 230                          | 3                      | 250                    | 1.0         | 780                                  | 5                           | 8.4      | 8.0      |
| 1N2976      | 12                                         | 210                          | 3                      | 250                    | 1.0         | 720                                  | 5                           | 9.1      | 8.6      |
| 1N2977      | 13                                         | 190                          | 3                      | 250                    | 1.0         | 660                                  | 5                           | 9.9      | 9.4      |
| 1N2978      | 14                                         | 180                          | 3                      | 250                    | 1.0         | 600                                  | 5                           | 10.6     | 10.1     |
| 1N2979      | 15                                         | 170                          | 3                      | 250                    | 1.0         | 560                                  | 5                           | 11.4     | 10.8     |
| 1N2980      | 16                                         | 155                          | 4                      | 250                    | 1.0         | 530                                  | 5                           | 12.2     | 11.5     |
| 1N2982      | 18                                         | 140                          | 4                      | 250                    | 1.0         | 460                                  | 5                           | 13.7     | 13.0     |
| 1N2983      | 19                                         | 130                          | 4                      | 250                    | 1.0         | 440                                  | 5                           | 14.4     | 13.7     |
| 1N2984      | 20                                         | 125                          | 4                      | 250                    | 1.0         | 420                                  | 5                           | 15.2     | 14.4     |
| 1N2985      | 22                                         | 115                          | 5                      | 250                    | 1.0         | 380                                  | 5                           | 16.7     | 15.8     |
| 1N2986      | 24                                         | 105                          | 5                      | 250                    | 1.0         | 350                                  | 5                           | 18.2     | 17.3     |
| 1N2988      | 27                                         | 95                           | 7                      | 250                    | 1.0         | 300                                  | 5                           | 20.6     | 19.4     |
| 1N2989      | 30                                         | 85                           | 8                      | 300                    | 1.0         | 280                                  | 5                           | 22.8     | 21.6     |
| 1N2990      | 33                                         | 75                           | 9                      | 300                    | 1.0         | 260                                  | 5                           | 25.1     | 23.8     |
| 1N2991      | 36                                         | 70                           | 10                     | 300                    | 1.0         | 230                                  | 5                           | 27.4     | 25.9     |
| 1N2992      | 39                                         | 65                           | 11                     | 300                    | 1.0         | 210                                  | 5                           | 29.7     | 28.1     |
| 1N2993      | 43                                         | 60                           | 12                     | 400                    | 1.0         | 195                                  | 5                           | 32.7     | 31.0     |
| 1N2995      | 47                                         | 55                           | 14                     | 400                    | 1.0         | 175                                  | 5                           | 35.8     | 33.8     |
| 1N2996      | 50                                         | 50                           | 15                     | 500                    | 1.0         | 165                                  | 5                           | 38.0     | 36.0     |
| 1N2997      | 51                                         | 50                           | 15                     | 500                    | 1.0         | 163                                  | 5                           | 38.8     | 36.7     |
| 1N2998      | 52                                         | 50                           | 15                     | 500                    | 1.0         | 160                                  | 5                           | 39.5     | 37.4     |
| 1N2999      | 56                                         | 45                           | 16                     | 500                    | 1.0         | 150                                  | 5                           | 42.6     | 40.3     |
| 1N3000      | 62                                         | 40                           | 17                     | 600                    | 1.0         | 130                                  | 5                           | 47.1     | 44.6     |
| 1N3001      | 68                                         | 37                           | 18                     | 600                    | 1.0         | 120                                  | 5                           | 51.7     | 49.0     |
| 1N3002      | 75                                         | 33                           | 22                     | 600                    | 1.0         | 110                                  | 5                           | 56.0     | 54.0     |
| 1N3003      | 82                                         | 30                           | 25                     | 700                    | 1.0         | 100                                  | 5                           | 62.2     | 59.0     |
| 1N3004      | 91                                         | 28                           | 35                     | 800                    | 1.0         | 85                                   | 5                           | 69.2     | 65.5     |
| 1N3005      | 100                                        | 25                           | 40                     | 900                    | 1.0         | 80                                   | 5                           | 76.0     | 72.0     |
| 1N3006      | 105                                        | 25                           | 45                     | 1,000                  | 1.0         | 75                                   | 5                           | 79.8     | 75.6     |
| 1N3007      | 110                                        | 23                           | 55                     | 1,100                  | 1.0         | 72                                   | 5                           | 83.6     | 79.2     |
| 1N3008      | 120                                        | 20                           | 75                     | 1,200                  | 1.0         | 67                                   | 5                           | 91.2     | 86.4     |
| 1N3009      | 130                                        | 19                           | 100                    | 1,300                  | 1.0         | 62                                   | 5                           | 98.8     | 93.6     |
| 1N3010      | 140                                        | 18                           | 125                    | 1,400                  | 1.0         | 58                                   | 5                           | 106.4    | 100.8    |
| 1N3011      | 150                                        | 17                           | 175                    | 1,500                  | 1.0         | 54                                   | 5                           | 114.0    | 108.0    |
| 1N3012      | 160                                        | 16                           | 200                    | 1,600                  | 1.0         | 50                                   | 5                           | 121.6    | 115.2    |
| 1N3014      | 180                                        | 14                           | 250                    | 1,850                  | 1.0         | 45                                   | 5                           | 136.8    | 129.6    |
| 1N3015      | 200                                        | 12                           | 300                    | 2,000                  | 1.0         | 40                                   | 5                           | 152.0    | 144.0    |

\* $V_{R1}$  - Test Voltage for 5% Tolerance Device.  $V_{R2}$  - Test Voltage for 10% Tolerance Device. No Leakage Specified as 20% Tolerance Device.



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