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# 10EZ3.9 thru 10EZ100

## Silicon 10 WATT Zener Diodes

### Features

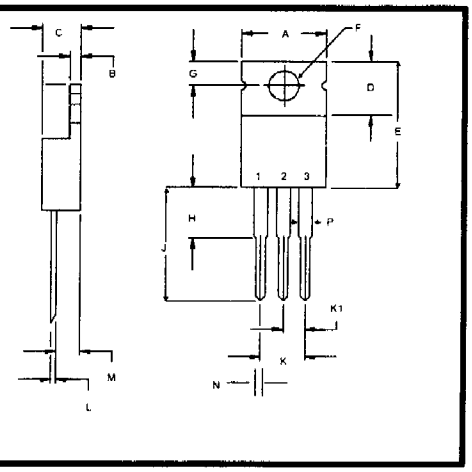
- Zener Voltage 3.9 to 100V
- Voltage Tolerances; ± 5%, ± 10% (See Note 1)
- Low profile cost effective TO-220 package

### Maximum Ratings

Junction and Storage Temperatures: - 65°C to + 175°C
DC Power Dissipation: 10 Watts
Power Derating: 200 mW/°C above 100°C base temperature (see figure 2)
Forward Voltage @ 2.0A: 1.5 Volts

### Mechanical Characteristics

| | |
|---|---|
| Case: | Industry Standard TO-220 |
| Finish: | All external surfaces are corrosion resistant and terminal solderable. |
| Weight: | 2.3 grams |
| Mounting Position: | Any |
| Thermal Resistance: | 5°C/W (Typical) junction to base. |
| Polarity: | Standard polarity is anode to base (pin 2) And pins 1 and 3 are cathode. Reverse polarity (cathode to base) is also available with R suffix. |



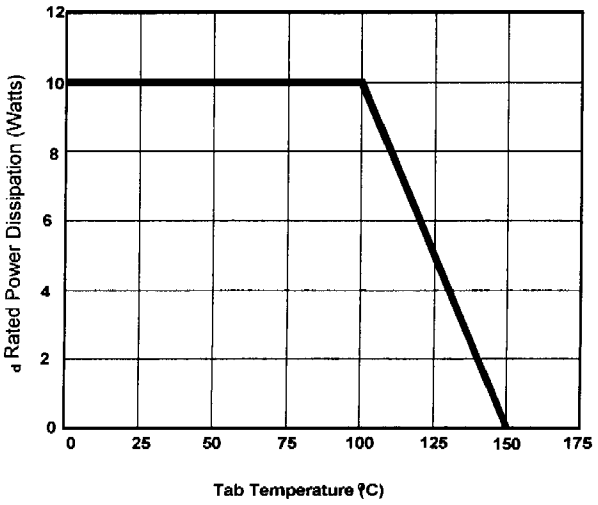




**Figure 2**
**Power Derating Curve**

| DIM | INCHES | | MILIMETER | | |
|---|---|---|---|---|---|
| | MIN | MAX | MIN | MAX | NOTES |
| A | .390 | .415 | 9.91 | 10.54 | |
| B | .045 | .055 | 1.14 | 1.40 | |
| C | .180 | .190 | 4.57 | 4.83 | |
| D | .245 | .260 | 6.22 | 6.60 | |
| E | .590 | .605 | 14.99 | 15.37 | |
| F | .139 | .147 | 3.53 | 3.73 | DIA. |
| G | .100 | .120 | 2.54 | 3.05 | |
| H | — | .250 | | 6.35 | |
| J | .540 | .570 | 13.72 | 14.48 | |
| K | .190 | .210 | 4.83 | 5.33 | |
| K1 | .090 | .110 | 2.29 | 2.79 | |
| L | .021 | .025 | 5.33 | 6.40 | |
| M | .080 | .115 | 2.03 | 2.92 | |
| N | .028 | .038 | .710 | .970 | |
| P | .045 | .055 | 1.14 | 1.40 | |

| | Nominal Zener Voltage $V_Z$ @ $I_{ZT}$ Volts (Note 2) | Zener Test Current ($I_{ZT}$) mA | Max. Dynamic Impedance (Note 3) | | Max DC Zener Current ($I_{ZM}$) @ 75°C Base Temp. (Note 4) mA | Typical Temperature Coefficient $\alpha_{VZ}$ %/°C | Max** Leakage Current $I_R$ @ $V_R$ | |
|---|---|---|---|---|---|---|---|---|
| | | | $Z_{ZT}$ @ $I_{ZT}$ OCHMS | $Z_{ZK}$ @ 1mA ($I_{ZK}$) OHMS | | | μA | Volts |
| 10EZ3.9 | 3.9 | 640 | 2.0 | 400 | 2380 | —.046 | 100 | 0.5 |
| 10EZ4.3 | 4.3 | 580 | 1.5 | 400 | 2130 | —.033 | 100 | 0.5 |
| 10EZ4.7 | 4.7 | 530 | 1.2 | 500 | 1940 | —.015 | 80 | 1.0 |
| 10EZ5.1 | 5.1 | 490 | 1.1 | 550 | 1780 | ±.010 | 10 | 1.0 |
| 10EZ5.6 | 5.6 | 445 | 1.0 | 600 | 1620 | +.030 | 10 | 1.0 |
| 10EZ6.2 | 6.2 | 405 | 1.1 | 750 | 1460 | +.049 | 10 | 2.0 |
| 10EZ6.8 | 6.8 | 370 | 1.2 | 500 | 1320 | .040 | 150 | 5.2 |
| 10EZ7.5 | 7.5 | 335 | 1.3 | 250 | 1180 | .045 | 100 | 5.7 |
| 10EZ8.2 | 8.2 | 305 | 1.5 | 250 | 1040 | .048 | 50 | 5.2 |
| 10EZ9.1 | 9.1 | 275 | 2.0 | 250 | 960 | .051 | 25 | 6.9 |
| 10EZ10 | 10 | 250 | 3 | 250 | 860 | .055 | 25 | 7.6 |
| 10EZ11 | 11 | 230 | 3 | 250 | 780 | .060 | 10 | 8.4 |
| 10EZ12 | 12 | 210 | 3 | 250 | 720 | .065 | 10 | 9.1 |
| 10EZ13 | 13 | 190 | 3 | 250 | 660 | .065 | 10 | 9.9 |
| 10EZ14 | 14 | 180 | 3 | 250 | 600 | .070 | 10 | 10.5 |
| 10EZ15 | 15 | 170 | 3 | 250 | 560 | .070 | 10 | 11.4 |
| 10EZ16 | 16 | 155 | 4 | 250 | 530 | .070 | 10 | 12.2 |
| 10EZ17 | 17 | 145 | 4 | 250 | 500 | .075 | 10 | 13.0 |
| 10EZ18 | 18 | 140 | 4 | 250 | 460 | .075 | 10 | 13.7 |
| 10EZ19 | 19 | 130 | 4 | 250 | 440 | .075 | 10 | 14.0 |
| 10EZ20 | 20 | 125 | 4 | 250 | 420 | .075 | 10 | 15.2 |
| 10EZ22 | 22 | 115 | 5 | 250 | 380 | .080 | 10 | 16.7 |
| 10EZ24 | 24 | 105 | 5 | 250 | 350 | .080 | 10 | 18.2 |
| 10EZ25 | 25 | 100 | 6 | 250 | 310 | .080 | 10 | 18.2 |
| 10EZ27 | 27 | 95 | 7 | 250 | 300 | .085 | 10 | 20.6 |
| 10EZ30 | 30 | 85 | 8 | 300 | 280 | .085 | 10 | 22.8 |
| 10EZ33 | 33 | 75 | 9 | 300 | 260 | .085 | 10 | 25.1 |
| 10EZ36 | 36 | 70 | 10 | 300 | 230 | .085 | 10 | 27.4 |
| 10EZ39 | 39 | 65 | 11 | 300 | 210 | .090 | 10 | 29.7 |
| 10EZ43 | 43 | 60 | 12 | 400 | 195 | .090 | 10 | 32.7 |
| 10EZ45 | 45 | 55 | 13 | 400 | 185 | .090 | 10 | 33.0 |
| 10EZ47 | 47 | 55 | 14 | 400 | 175 | .090 | 10 | 35.8 |
| 10EZ50 | 50 | 50 | 15 | 500 | 165 | .090 | 10 | 36.0 |
| 10EZ51 | 51 | 50 | 15 | 500 | 160 | .090 | 10 | 38.8 |
| 10EZ52 | 52 | 50 | 15 | 500 | 160 | .090 | 10 | 39.0 |
| 10EZ56 | 56 | 45 | 16 | 500 | 150 | .090 | 10 | 42.6 |
| 10EZ62 | 62 | 40 | 17 | 600 | 130 | .090 | 10 | 47.1 |
| 10EZ68 | 68 | 37 | 18 | 600 | 120 | .090 | 10 | 51.7 |
| 10EZ75 | 75 | 33 | 22 | 600 | 110 | .090 | 10 | 56.0 |
| 10EZ82 | 82 | 30 | 25 | 700 | 100 | .090 | 10 | 62.2 |
| 10EZ91 | 91 | 28 | 35 | 800 | 85 | .090 | 10 | 69.2 |
| 10EZ100 | 100 | 25 | 40 | 900 | 80 | .090 | 10 | 76.0 |

NOTE 1. 10EZ3.9 – 10EZ100A series: suffix A indicates ± 5% tolerance, no suffix indicates ± 10% tolerance. If tighter tolerance is required, consult factory.

NOTE 2. The electrical characteristics are measured after allowing the device to stabilize for 90 seconds with 30°C base temperature. Voltage change with other current values are described in Micronote 202.

NOTE 3. The zener impedence ($Z_{ZT}$) is derived from the 60 Hz ac voltage, which 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 $I_{ZK}$. Dynamic impedance variations with other current values are described in Micronote 202.

NOTE 4. These values of $I_{ZM}$ may be exceeded in the case of individual diodes. The values shown are calculated for the worst case which is at the high voltage end of its tolerance range (for ± 5%). Allowance has also been made for the rise in zener voltage above Vzt, which results from zener impedance and the increase in junction temperature as power dissipation approaches 10 watts.