

## Zeners 1N957B - 1N991B

Zeners 1N957B - 1N991B

### Absolute Maximum Ratings \* T<sub>A</sub> = 25°C unless otherwise noted

| Symbol                            | Parameter                                            | Value       | Units |
|-----------------------------------|------------------------------------------------------|-------------|-------|
| P <sub>D</sub>                    | Power Dissipation<br>@ TL ≤ 75°C, Lead Length = 3/8" | 500         | mW    |
|                                   | Derate above 75°C                                    | 4.0         | mW/°C |
| T <sub>J</sub> , T <sub>STG</sub> | Operating and Storage Temperature Range              | -65 to +200 | °C    |

\* These ratings are limiting values above which the serviceability of the diode may be impaired.

Tolerance = 5%



### Electrical Characteristics T<sub>A</sub> = 25°C unless otherwise noted

| Device | V <sub>Z</sub> (Volts) (Note 1) |      |       |                          | Z <sub>Z</sub> (Ω) (Note 2)     |                                   |      | I <sub>R</sub> @ V <sub>R</sub> |       | I <sub>ZM</sub> (mA)<br>(Note 3) |
|--------|---------------------------------|------|-------|--------------------------|---------------------------------|-----------------------------------|------|---------------------------------|-------|----------------------------------|
|        | Min.                            | Typ. | Max.  | @ I <sub>Z</sub><br>(mA) | Z <sub>Z</sub> @ I <sub>Z</sub> | Z <sub>ZK</sub> @ I <sub>ZK</sub> |      | μA                              | Volts |                                  |
|        |                                 |      |       |                          |                                 | Ω                                 | mA   |                                 |       |                                  |
| 1N957B | 6.46                            | 6.8  | 7.14  | 18.5                     | 4.5                             | 700                               | 1.0  | 150                             | 5.2   | 47                               |
| 1N958B | 7.125                           | 7.5  | 7.875 | 16.5                     | 5.5                             | 700                               | 0.5  | 75                              | 5.7   | 42                               |
| 1N959B | 7.79                            | 8.2  | 8.61  | 15                       | 6.5                             | 700                               | 0.5  | 50                              | 6.2   | 38                               |
| 1N960B | 8.645                           | 9.1  | 9.555 | 14                       | 7.5                             | 700                               | 0.5  | 25                              | 6.9   | 35                               |
| 1N961B | 9.5                             | 10   | 10.5  | 12.5                     | 8.5                             | 700                               | 0.25 | 10                              | 7.6   | 32                               |
| 1N962B | 10.45                           | 11   | 11.55 | 11.5                     | 9.5                             | 700                               | 0.25 | 5                               | 8.4   | 28                               |
| 1N963B | 11.4                            | 12   | 12.6  | 10.5                     | 11.5                            | 700                               | 0.25 | 5                               | 9.1   | 26                               |
| 1N964B | 12.35                           | 13   | 13.65 | 9.5                      | 13                              | 700                               | 0.25 | 5                               | 9.9   | 24                               |
| 1N965B | 14.25                           | 15   | 15.75 | 8.5                      | 16                              | 700                               | 0.25 | 5                               | 11.4  | 21                               |
| 1N966B | 15.2                            | 16   | 16.8  | 7.8                      | 17                              | 700                               | 0.25 | 5                               | 12.2  | 19                               |
| 1N967B | 17.1                            | 18   | 18.9  | 7.0                      | 21                              | 750                               | 0.25 | 5                               | 13.7  | 17                               |
| 1N968B | 19                              | 20   | 21    | 6.2                      | 25                              | 750                               | 0.25 | 5                               | 15.2  | 15                               |
| 1N969B | 20.9                            | 22   | 23.1  | 5.6                      | 29                              | 750                               | 0.25 | 5                               | 16.7  | 14                               |
| 1N970B | 22.8                            | 24   | 25.2  | 5.2                      | 33                              | 750                               | 0.25 | 5                               | 18.2  | 13                               |
| 1N971B | 25.652                          | 27   | 28.35 | 4.6                      | 41                              | 750                               | 0.25 | 5                               | 20.6  | 11                               |
| 1N972B | 8.5                             | 30   | 31.5  | 4.2                      | 49                              | 1000                              | 0.25 | 5                               | 22.8  | 10                               |
| 1N973B | 31.35                           | 33   | 34.65 | 3.8                      | 58                              | 1000                              | 0.25 | 5                               | 25.1  | 9.2                              |
| 1N974B | 34.2                            | 36   | 37.8  | 3.4                      | 70                              | 1000                              | 0.25 | 5                               | 27.4  | 8.5                              |
| 1N975B | 37.05                           | 39   | 40.95 | 3.2                      | 80                              | 1000                              | 0.25 | 5                               | 29.7  | 7.8                              |
| 1N976B | 40.85                           | 43   | 45.15 | 3.0                      | 93                              | 1500                              | 0.25 | 5                               | 32.7  | 7.0                              |
| 1N977B | 44.65                           | 47   | 49.35 | 2.7                      | 105                             | 1500                              | 0.25 | 5                               | 35.8  | 6.4                              |
| 1N978B | 48.45                           | 51   | 53.55 | 2.5                      | 125                             | 1500                              | 0.25 | 5                               | 38.8  | 5.9                              |
| 1N979B | 53.2                            | 56   | 58.8  | 2.2                      | 150                             | 2000                              | 0.25 | 5                               | 42.6  | 5.4                              |
| 1N980B | 58.9                            | 62   | 65.1  | 2.0                      | 185                             | 2000                              | 0.25 | 5                               | 47.1  | 4.9                              |
| 1N981B | 64.6                            | 68   | 71.4  | 1.8                      | 230                             | 2000                              | 0.25 | 5                               | 51.7  | 4.5                              |

## Electrical Characteristics (Continued) T<sub>A</sub>=25°C unless otherwise noted

| Device | V <sub>Z</sub> (Volts) (Note 1) |      |       |                  | Z <sub>Z</sub> (Ω) (Note 2)     |                                   |      | I <sub>R</sub> @ V <sub>R</sub> |       | I <sub>ZM</sub> (mA)<br>(Note 3) |
|--------|---------------------------------|------|-------|------------------|---------------------------------|-----------------------------------|------|---------------------------------|-------|----------------------------------|
|        | Min.                            | Typ. | Max.  | @ I <sub>Z</sub> | Z <sub>Z</sub> @ I <sub>Z</sub> | Z <sub>ZK</sub> @ I <sub>ZK</sub> |      | μA                              | Volts |                                  |
|        |                                 |      |       |                  |                                 | Ω                                 | mA   |                                 |       |                                  |
| 1N982B | 71.25                           | 75   | 78.75 | 1.7              | 270                             | 2000                              | 0.25 | 5                               | 56.0  | 4.1                              |
| 1N983B | 77.9                            | 82   | 86.1  | 1.5              | 330                             | 3000                              | 0.25 | 5                               | 62.2  | 3.7                              |
| 1N984B | 86.45                           | 91   | 95.55 | 1.4              | 400                             | 3000                              | 0.25 | 5                               | 69.2  | 3.3                              |
| 1N985B | 95                              | 100  | 105   | 1.3              | 500                             | 3000                              | 0.25 | 5                               | 76.0  | 3.0                              |
| 1N986B | 104.5                           | 110  | 115.5 | 1.1              | 750                             | 4000                              | 0.25 | 5                               | 83.6  | 2.7                              |
| 1N987B | 114                             | 120  | 126   | 1.0              | 900                             | 4500                              | 0.25 | 5                               | 91.2  | 2.5                              |
| 1N988B | 123.5                           | 130  | 136.5 | 0.95             | 1100                            | 5000                              | 0.25 | 5                               | 98.8  | 2.3                              |
| 1N989B | 142.5                           | 150  | 157.5 | 0.85             | 1500                            | 6000                              | 0.25 | 5                               | 114   | 2.0                              |
| 1N990B | 152                             | 160  | 168   | 0.80             | 1700                            | 6500                              | 0.25 | 5                               | 121.6 | 1.9                              |
| 1N991B | 171                             | 180  | 189   | 0.68             | 2200                            | 7100                              | 0.25 | 5                               | 136.8 | 1.7                              |

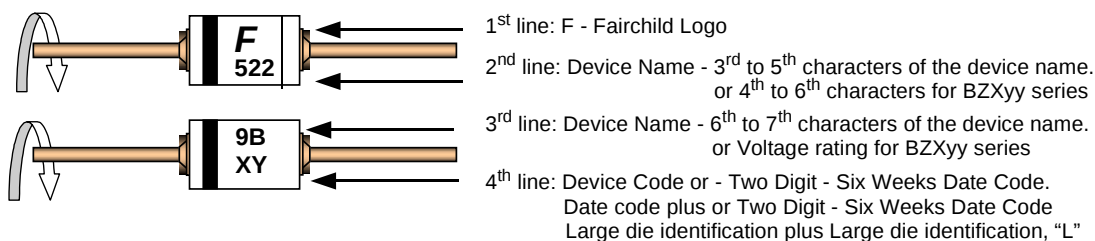
### Notes:

- Zener Voltage (V<sub>Z</sub>) Measurement  
Nominal zener voltage is measured with the device junction in the thermal equilibrium at the lead temperature (T<sub>L</sub>) at 30°C ± 1°C and 3/8" lead length.
- Zener Impedance (Z<sub>Z</sub>) Derivation  
Z<sub>ZT</sub> and Z<sub>ZK</sub> are measured by dividing the ac voltage drop across the device by the ac current applied. The specified limits are for I<sub>Z(ac)</sub> = 0.1 I<sub>Z(dc)</sub> with the ac frequency = 60Hz.
- Maximum Zener Current Ratings (I<sub>ZM</sub>)  
The maximum current handling capability on a worst case basis is limited by the actual zener voltage at the operation point and the power derating curve.

## Top Mark Information

| Device | Line 1 | Line 2 | Line 3 | Line 4 |
|--------|--------|--------|--------|--------|
| 1N957B | LOGO   | 957    | B      | XY     |
| 1N958B | LOGO   | 958    | B      | XY     |
| 1N959B | LOGO   | 959    | B      | XY     |
| 1N960B | LOGO   | 960    | B      | XY     |
| 1N961B | LOGO   | 961    | B      | XY     |
| 1N962B | LOGO   | 962    | B      | XY     |
| 1N963B | LOGO   | 963    | B      | XY     |
| 1N964B | LOGO   | 964    | B      | XY     |
| 1N965B | LOGO   | 965    | B      | XY     |
| 1N966B | LOGO   | 966    | B      | XY     |
| 1N967B | LOGO   | 967    | B      | XY     |
| 1N968B | LOGO   | 968    | B      | XY     |
| 1N969B | LOGO   | 969    | B      | XY     |
| 1N970B | LOGO   | 970    | B      | XY     |
| 1N971B | LOGO   | 971    | B      | XY     |
| 1N972B | LOGO   | 972    | B      | XY     |
| 1N973B | LOGO   | 973    | B      | XY     |
| 1N974B | LOGO   | 974    | B      | XY     |
| 1N975B | LOGO   | 975    | B      | XY     |
| 1N976B | LOGO   | 976    | B      | XY     |
| 1N977B | LOGO   | 977    | B      | XY     |
| 1N978B | LOGO   | 978    | B      | XY     |
| 1N979B | LOGO   | 979    | B      | XY     |
| 1N980B | LOGO   | 980    | B      | XY     |
| 1N981B | LOGO   | 981    | B      | XY     |
| 1N982B | LOGO   | 982    | B      | XY     |
| 1N983B | LOGO   | 983    | B      | XY     |
| 1N984B | LOGO   | 984    | B      | XY     |
| 1N985B | LOGO   | 985    | B      | XY     |
| 1N986B | LOGO   | 986    | B      | XY     |
| 1N987B | LOGO   | 987    | B      | XY     |
| 1N988B | LOGO   | 988    | B      | XY     |
| 1N989B | LOGO   | 989    | B      | XY     |
| 1N990B | LOGO   | 990    | B      | XY     |
| 1N991B | LOGO   | 991    | B      | XY     |

## Top Mark Information (Continued)



## General Requirements:

1.0 Cathod Band

2.0 First Line: F - Fairchild Logo

3.0 Second Line: Device name - For 1Nxx series: 3<sup>rd</sup> to 5<sup>th</sup> characters of the device name.  
For BZxx series: 4<sup>th</sup> to 6<sup>th</sup> characters of the device name.

4.0 Third Line: Device name - For 1Nxx series: 6<sup>th</sup> to 7<sup>th</sup> characters of the device name.  
For BZXyy series: Voltage rating

5.0 Fourth Line: XY or XYL - Two Digit - Six Weeks Date Code  
Where: X represents the last digit of the calendar year  
Y represents the Six weeks numeric code  
L represents the Large die identification

6.0 Devices shall be marked as required in the device specification (PID or FSC Test Spec).

7.0 Maximum no. of marking lines: 4

8.0 Maximum no. of digits per line: 3

9.0 FSC logo must be 20 % taller than the alphanumeric marking and should occupy the 2 characters of the specified line.

10.0 Marking Font: Arial (Except FSC Logo)

11.0 First character of each marking line must be aligned vertically

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| Bottomless™                          | FASTr™              | LittleFET™         | Power247™           | SuperFET™       |
| CoolFET™                             | FPS™                | MICROCOUPLER™      | PowerSaver™         | SuperSOT™-3     |
| CROSSVOLT™                           | FRFET™              | MicroFET™          | PowerTrench®        | SuperSOT™-6     |
| DOME™                                | GlobalOptoisolator™ | MicroPak™          | QFET®               | SuperSOT™-8     |
| EcoSPARK™                            | GTO™                | MICROWIRE™         | QS™                 | SyncFET™        |
| E <sup>2</sup> CMOS™                 | HiSec™              | MSX™               | QT Optoelectronics™ | TinyLogic®      |
| EnSigna™                             | I <sup>2</sup> C™   | MSXPro™            | Quiet Series™       | TINYOPTO™       |
| FACT™                                | i-Lo™               | OCX™               | RapidConfigure™     | TruTranslation™ |
| Across the board. Around the world.™ | OCXPro™             | RapidConnect™      | UHC™                |                 |
| The Power Franchise®                 | OPTOLOGIC®          | SILENT SWITCHER®   | UltraFET®           |                 |
| Programmable Active Droop™           | OPTOPLANAR™         | SMART START™       | VCX™                |                 |

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2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

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