

# 1N5985B - 1N6025B

## Zener Diodes



### Absolute Maximum Ratings \* $T_A=25^{\circ}\text{C}$ unless otherwise noted

| Symbol         | Parameter                                                                 | Value       | Units                  |
|----------------|---------------------------------------------------------------------------|-------------|------------------------|
| $P_D$          | Power Dissipation<br>@ $T_L \leq 75^{\circ}\text{C}$ , Lead Length = 3/8" | 500         | mW                     |
|                | Derate above $75^{\circ}\text{C}$                                         | 4.0         | mW/ $^{\circ}\text{C}$ |
| $T_J, T_{STG}$ | Operating and Storage Temperature Range                                   | -65 to +200 | $^{\circ}\text{C}$     |

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

### Electrical Characteristics $T_A=25^{\circ}\text{C}$ unless otherwise noted

| Device  | $V_Z$ (V) @ $I_Z$ (Note 1) |      |       | Test Current<br>$I_Z$ (mA) | Zener Impedance               |                                                      | leakage Current |              | $I_{ZM}$ (mA)<br>(Note 2) |
|---------|----------------------------|------|-------|----------------------------|-------------------------------|------------------------------------------------------|-----------------|--------------|---------------------------|
|         | Min.                       | Typ. | Max.  |                            | $Z_Z$ @ $I_Z$<br>( $\Omega$ ) | $Z_{ZK}$ @ $I_{ZK} = 250\mu\text{A}$<br>( $\Omega$ ) | $I_R$<br>(mA)   | $V_R$<br>(V) |                           |
| 1N5985B | 2.58                       | 2.4  | 2.52  | 5                          | 100                           | 1800                                                 | 100             | 1            | 208                       |
| 1N5986B | 2.565                      | 2.7  | 2.835 | 5                          | 100                           | 1900                                                 | 75              | 1            | 185                       |
| 1N5987B | 2.85                       | 3    | 3.15  | 5                          | 95                            | 2000                                                 | 50              | 1            | 167                       |
| 1N5988B | 3.135                      | 3.3  | 3.465 | 5                          | 95                            | 2200                                                 | 25              | 1            | 152                       |
| 1N5989B | 3.42                       | 3.6  | 3.78  | 5                          | 90                            | 2300                                                 | 15              | 1            | 139                       |
| 1N5990B | 3.705                      | 3.9  | 4.095 | 5                          | 90                            | 2400                                                 | 10              | 1            | 128                       |
| 1N5991B | 4.085                      | 4.3  | 4.515 | 5                          | 88                            | 2500                                                 | 5               | 1            | 116                       |
| 1N5992B | 4.465                      | 4.7  | 4.935 | 5                          | 70                            | 2200                                                 | 3               | 1.5          | 106                       |
| 1N5993B | 4.845                      | 5.1  | 5.355 | 5                          | 50                            | 2050                                                 | 2               | 2            | 98                        |
| 1N5994B | 5.32                       | 5.6  | 5.88  | 5                          | 25                            | 1800                                                 | 2               | 3            | 89                        |
| 1N5995B | 5.89                       | 6.2  | 6.51  | 5                          | 10                            | 1300                                                 | 1               | 4            | 81                        |
| 1N5996B | 6.46                       | 6.8  | 7.14  | 5                          | 8                             | 750                                                  | 1               | 5.2          | 74                        |
| 1N5997B | 7.125                      | 7.5  | 7.875 | 5                          | 7                             | 600                                                  | 0.5             | 6            | 67                        |
| 1N5998B | 7.79                       | 8.2  | 8.61  | 5                          | 7                             | 600                                                  | 0.5             | 6.5          | 61                        |
| 1N5999B | 8.645                      | 9.1  | 9.555 | 5                          | 10                            | 600                                                  | 0.1             | 7            | 55                        |

**Electrical Characteristics** (Continued)  $T_A=25^{\circ}\text{C}$  unless otherwise noted

| Device                                                                               | $V_Z$ (V) @ $I_Z$ (Note 1) |      |       | Test Current<br>$I_Z$ (mA) | Zener Impedance               |                                                      | leakage Current |              | $I_{ZM}$ (mA)<br>(Note 2) |
|--------------------------------------------------------------------------------------|----------------------------|------|-------|----------------------------|-------------------------------|------------------------------------------------------|-----------------|--------------|---------------------------|
|                                                                                      | Min.                       | Typ. | Max.  |                            | $Z_Z$ @ $I_Z$<br>( $\Omega$ ) | $Z_{ZK}$ @ $I_{ZK} = 250\mu\text{A}$<br>( $\Omega$ ) | $I_R$<br>(mA)   | $V_R$<br>(V) |                           |
| 1N6000B                                                                              | 9.5                        | 10   | 10.5  | 5                          | 15                            | 600                                                  | 0.1             | 8            | 50                        |
| 1N6001B                                                                              | 10.45                      | 11   | 11.55 | 5                          | 18                            | 600                                                  | 0.1             | 8.4          | 45                        |
| 1N6002B                                                                              | 11.4                       | 12   | 12.6  | 5                          | 22                            | 600                                                  | 0.1             | 9.1          | 42                        |
| 1N6003B                                                                              | 12.35                      | 13   | 13.65 | 5                          | 25                            | 600                                                  | 0.1             | 9.9          | 38                        |
| 1N6004B                                                                              | 14.25                      | 15   | 15.75 | 5                          | 32                            | 600                                                  | 0.1             | 11           | 33                        |
| 1N6005B                                                                              | 15.2                       | 16   | 16.8  | 5                          | 36                            | 600                                                  | 0.1             | 12           | 31                        |
| 1N6006B                                                                              | 17.1                       | 18   | 18.9  | 5                          | 42                            | 600                                                  | 0.1             | 14           | 28                        |
| 1N6007B                                                                              | 19                         | 20   | 21    | 5                          | 48                            | 600                                                  | 0.1             | 15           | 25                        |
| 1N6008B                                                                              | 20.9                       | 22   | 23.1  | 5                          | 55                            | 600                                                  | 0.1             | 17           | 23                        |
| 1N6009B                                                                              | 22.8                       | 24   | 25.2  | 5                          | 62                            | 600                                                  | 0.1             | 18           | 21                        |
| 1N6010B                                                                              | 25.65                      | 27   | 28.35 | 5                          | 70                            | 600                                                  | 0.1             | 21           | 19                        |
| 1N6011B                                                                              | 28.5                       | 30   | 31.5  | 5                          | 78                            | 600                                                  | 0.1             | 23           | 17                        |
| 1N6012B                                                                              | 31.35                      | 33   | 34.65 | 5                          | 88                            | 700                                                  | 0.1             | 25           | 15                        |
| 1N6013B                                                                              | 34.2                       | 36   | 37.8  | 5                          | 95                            | 700                                                  | 0.1             | 27           | 14                        |
| 1N6014B                                                                              | 37.05                      | 39   | 40.95 | 2                          | 130                           | 800                                                  | 0.1             | 30           | 13                        |
| 1N6015B                                                                              | 40.85                      | 43   | 45.15 | 2                          | 150                           | 900                                                  | 0.1             | 33           | 12                        |
| 1N6016B                                                                              | 44.65                      | 47   | 49.35 | 2                          | 170                           | 1000                                                 | 0.1             | 36           | 11                        |
| 1N6017B                                                                              | 48.45                      | 51   | 53.55 | 2                          | 180                           | 1300                                                 | 0.1             | 39           | 9.8                       |
| 1N6018B                                                                              | 53.2                       | 56   | 58.8  | 2                          | 200                           | 1400                                                 | 0.1             | 43           | 8.9                       |
| 1N6019B                                                                              | 58.9                       | 62   | 65.1  | 2                          | 225                           | 1400                                                 | 0.1             | 47           | 8                         |
| 1N6020B                                                                              | 64.6                       | 68   | 71.4  | 2                          | 240                           | 1600                                                 | 0.1             | 52           | 7.4                       |
| 1N6021B                                                                              | 71.25                      | 75   | 78.75 | 2                          | 265                           | 1700                                                 | 0.1             | 56           | 6.7                       |
| 1N6022B                                                                              | 77.9                       | 82   | 86.1  | 2                          | 280                           | 2000                                                 | 0.1             | 62           | 6.1                       |
| 1N6023B                                                                              | 86.45                      | 91   | 95.55 | 2                          | 300                           | 2300                                                 | 0.1             | 69           | 5.5                       |
| 1N6024B                                                                              | 95                         | 100  | 105   | 1                          | 500                           | 2600                                                 | 0.1             | 76           | 5                         |
| 1N6025B                                                                              | 104.5                      | 110  | 115.5 | 1                          | 650                           | 3000                                                 | 0.1             | 84           | 4.5                       |
| <b><math>V_F</math> Forward Voltage = 1.2V Max @ <math>I_F = 200\text{mA}</math></b> |                            |      |       |                            |                               |                                                      |                 |              |                           |

**Notes:**1. Zener Voltage ( $V_Z$ )

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

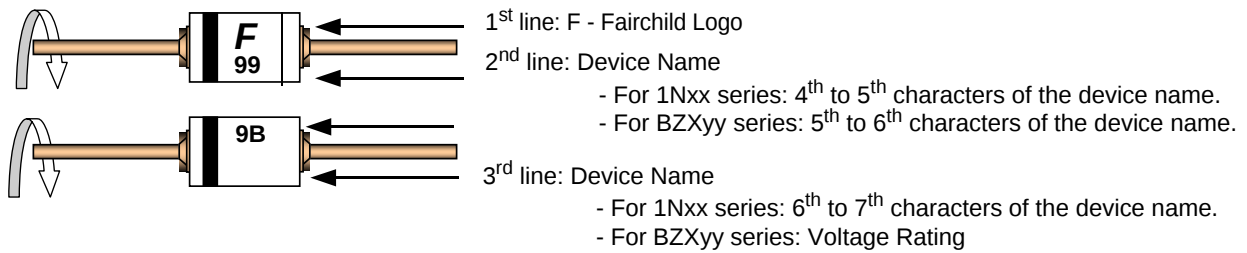
2. Maximum Zener Current Ratings ( $I_{ZM}$ )

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**

| <b>Device</b> | <b>Line 1</b> | <b>Line 2</b> | <b>Line 3</b> |
|---------------|---------------|---------------|---------------|
| 1N5985B       | LOGO          | 98            | 5B            |
| 1N5986B       | LOGO          | 98            | 6B            |
| 1N5987B       | LOGO          | 98            | 7B            |
| 1N5988B       | LOGO          | 98            | 8B            |
| 1N5989B       | LOGO          | 98            | 9B            |
| 1N5990B       | LOGO          | 99            | 0B            |
| 1N5991B       | LOGO          | 99            | 1B            |
| 1N5992B       | LOGO          | 99            | 2B            |
| 1N5993B       | LOGO          | 99            | 3B            |
| 1N5994B       | LOGO          | 99            | 4B            |
| 1N5995B       | LOGO          | 99            | 5B            |
| 1N5996B       | LOGO          | 99            | 6B            |
| 1N5997B       | LOGO          | 99            | 7B            |
| 1N5998B       | LOGO          | 99            | 8B            |
| 1N5999B       | LOGO          | 99            | 9B            |
| 1N6000B       | LOGO          | 00            | 0B            |
| 1N6001B       | LOGO          | 00            | 1B            |
| 1N6002B       | LOGO          | 00            | 2B            |
| 1N6003B       | LOGO          | 00            | 3B            |
| 1N6004B       | LOGO          | 00            | 4B            |
| 1N6005B       | LOGO          | 00            | 5B            |
| 1N6006B       | LOGO          | 00            | 6B            |
| 1N6007B       | LOGO          | 00            | 7B            |
| 1N6008B       | LOGO          | 00            | 8B            |
| 1N6009B       | LOGO          | 00            | 9B            |
| 1N6010B       | LOGO          | 01            | 0B            |
| 1N6011B       | LOGO          | 01            | 1B            |
| 1N6012B       | LOGO          | 01            | 2B            |
| 1N6013B       | LOGO          | 01            | 3B            |
| 1N6014B       | LOGO          | 01            | 4B            |
| 1N6015B       | LOGO          | 01            | 5B            |
| 1N6016B       | LOGO          | 01            | 6B            |
| 1N6017B       | LOGO          | 01            | 7B            |
| 1N6018B       | LOGO          | 01            | 8B            |
| 1N6019B       | LOGO          | 01            | 9B            |
| 1N6020B       | LOGO          | 02            | 0B            |
| 1N6021B       | LOGO          | 02            | 1B            |
| 1N6022B       | LOGO          | 02            | 2B            |
| 1N6023B       | LOGO          | 02            | 3B            |
| 1N6024B       | LOGO          | 02            | 4B            |
| 1N6025B       | LOGO          | 02            | 5B            |

## Top Mark Information (Continued)



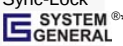
## General Requirements:

- 1.0 Cathod Band
- 2.0 First Line: F - Fairchild Logo
- 3.0 Second Line: Device name - For 1Nxx series: 4<sup>th</sup> to 5<sup>th</sup> characters of the device name.  
For BZXyy series: 5<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 Devices shall be marked as required in the device specification (PID or FSC Test Spec).
- 6.0 Maximum no. of marking lines: 3
- 7.0 Maximum no. of digits per line: 2
- 8.0 FSC logo must be 20 % taller than the alphanumeric marking and should occupy the 2 characters of the specified line.
- 9.0 Marking Font: Arial (Except FSC Logo)
- 10.0 First character of each marking line must be aligned vertically



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| CorePLUS™                                                                                    | Green FPS™ e-Series™                                                                       | QFET®                                                                                                                   | TinyBuck™                                                                                   |
| CorePOWER™                                                                                   | Gmax™                                                                                      | QS™                                                                                                                     | TinyCalc™                                                                                   |
| CROSSVOLT™                                                                                   | GTO™                                                                                       | Quiet Series™                                                                                                           | TinyLogic®                                                                                  |
| CTL™                                                                                         | IntelliMAX™                                                                                | RapidConfigure™                                                                                                         | TINYOPTO™                                                                                   |
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| DEUXPEED®                                                                                    | MegaBuck™                                                                                  | SignalWise™                                                                                                             | TinyPWM™                                                                                    |
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| EfficientMax™                                                                                | MicroPak™                                                                                  | SPM®                                                                                                                    | TRUECURRENT™*                                                                               |
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| Fairchild Semiconductor®                                                                     | MillerDrive™                                                                               | SuperFET™                                                                                                               |  SerDes® |
| FACT Quiet Series™                                                                           | MotionMax™                                                                                 | SuperSOT™-3                                                                                                             | UHC®                                                                                        |
| FACT®                                                                                        | Motion-SPM™                                                                                | SuperSOT™-6                                                                                                             | Ultra FRFET™                                                                                |
| FAST®                                                                                        | OptoHiT™                                                                                   | SuperSOT™-8                                                                                                             | UniFET™                                                                                     |
| FastvCore™                                                                                   | OPTOLOGIC®                                                                                 | SupreMOS™                                                                                                               | VCX™                                                                                        |
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| F-PFS™                                                                                       |                                                                                            |                                                                                                                         |                                                                                             |

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### Definition of Terms

| Datasheet Identification | Product Status        | Definition                                                                                                                                                                                          |
|--------------------------|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
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| Preliminary              | First Production      | Datasheet contains preliminary data; supplementary data will be published at a later date. Fairchild Semiconductor reserves the right to make changes at any time without notice to improve design. |
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Rev. 147