

## BZX85C3V3 - BZX85C56 Zener Diodes

Tolerance = 5%



**DO-41 Glass Case**

COLOR BAND DENOTES CATHODE

### Absolute Maximum Ratings

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only. Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

| Symbol         | Parameter                                                                            | Value       | Units                |
|----------------|--------------------------------------------------------------------------------------|-------------|----------------------|
| $P_D$          | Power Dissipation @ $T_A = 25^\circ\text{C}$                                         | 1.0         | W                    |
|                | Power Dissipation @ $T_L = 25^\circ\text{C}$ at 4 mm distance from the glass package | 1.3         |                      |
|                | Derate above $50^\circ\text{C}$                                                      | 6.67        | mW/ $^\circ\text{C}$ |
| $T_J, T_{STG}$ | Operating and Storage Temperature Range                                              | -65 to +200 | $^\circ\text{C}$     |

## Electrical Characteristics

Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

| Device                                                                          | Zener Voltage <sup>(1)</sup> |      |       | Zener Impedance |                   |      | Leakage Current    |       |
|---------------------------------------------------------------------------------|------------------------------|------|-------|-----------------|-------------------|------|--------------------|-------|
|                                                                                 | $V_Z$ (V)                    |      | $I_Z$ | $Z_Z @ I_Z$     | $Z_{ZK} @ I_{ZK}$ |      | $I_R @ V_R$        |       |
|                                                                                 | Min.                         | Max. | mA    | ( $\Omega$ )    | ( $\Omega$ )      | (mA) | $\mu\text{A Max.}$ | Volts |
| BZX85C3V3                                                                       | 3.1                          | 3.5  | 80    | 20              | 400               | 1    | 60                 | 1     |
| BZX85C3V6                                                                       | 3.4                          | 3.8  | 60    | 15              | 500               | 1    | 30                 | 1     |
| BZX85C3V9                                                                       | 3.7                          | 4.1  | 60    | 15              | 500               | 1    | 5                  | 1     |
| BZX85C4V3                                                                       | 4.0                          | 4.6  | 50    | 13              | 500               | 1    | 3                  | 1     |
| BZX85C4V7                                                                       | 4.4                          | 5    | 45    | 13              | 600               | 1    | 3                  | 1.5   |
| BZX85C5V1                                                                       | 4.8                          | 5.4  | 45    | 10              | 500               | 1    | 1                  | 2     |
| BZX85C5V6                                                                       | 5.2                          | 6    | 45    | 7               | 400               | 1    | 1                  | 2     |
| BZX85C6V2                                                                       | 5.8                          | 6.6  | 35    | 4               | 300               | 1    | 1                  | 3     |
| BZX85C6V8                                                                       | 6.4                          | 7.2  | 35    | 3.5             | 300               | 1    | 1                  | 4     |
| BZX85C7V5                                                                       | 7.0                          | 7.9  | 35    | 3               | 200               | 0.5  | 1                  | 4.5   |
| BZX85C8V2                                                                       | 7.7                          | 8.7  | 25    | 5               | 200               | 0.5  | 1                  | 5     |
| BZX85C9V1                                                                       | 8.5                          | 9.6  | 25    | 5               | 200               | 0.5  | 1                  | 6.5   |
| BZX85C10                                                                        | 9.4                          | 10.6 | 25    | 7               | 200               | 0.5  | 0.5                | 7     |
| BZX85C11                                                                        | 10.4                         | 11.6 | 20    | 8               | 300               | 0.5  | 0.5                | 7.7   |
| BZX85C12                                                                        | 11.4                         | 12.7 | 20    | 9               | 350               | 0.5  | 0.5                | 8.4   |
| BZX85C13                                                                        | 12.4                         | 14.1 | 20    | 10              | 400               | 0.5  | 0.5                | 9.1   |
| BZX85C15                                                                        | 13.8                         | 15.6 | 15    | 15              | 500               | 0.5  | 0.5                | 10.5  |
| BZX85C16                                                                        | 15.3                         | 17.1 | 15    | 15              | 500               | 0.5  | 0.5                | 11    |
| BZX85C18                                                                        | 16.8                         | 19.1 | 15    | 20              | 500               | 0.5  | 0.5                | 12.5  |
| BZX85C20                                                                        | 18.8                         | 21.2 | 10    | 24              | 600               | 0.5  | 0.5                | 14    |
| BZX85C22                                                                        | 20.8                         | 23.3 | 10    | 25              | 600               | 0.5  | 0.5                | 15.5  |
| BZX85C24                                                                        | 22.8                         | 25.6 | 10    | 25              | 600               | 0.5  | 0.5                | 17    |
| BZX85C27                                                                        | 25.1                         | 28.9 | 8     | 30              | 750               | 0.25 | 0.5                | 19    |
| BZX85C30                                                                        | 28                           | 32   | 8     | 30              | 1000              | 0.25 | 0.5                | 21    |
| BZX85C33                                                                        | 31                           | 35   | 8     | 35              | 1000              | 0.25 | 0.5                | 23    |
| BZX85C36                                                                        | 34                           | 38   | 8     | 40              | 1000              | 0.25 | 0.5                | 25    |
| BZX85C39                                                                        | 37                           | 41   | 6     | 45              | 1000              | 0.25 | 0.5                | 27    |
| BZX85C43                                                                        | 40                           | 46   | 6     | 50              | 1000              | 0.25 | 0.5                | 30    |
| BZX85C47                                                                        | 44                           | 50   | 4     | 90              | 1500              | 0.25 | 0.5                | 33    |
| BZX85C51                                                                        | 48                           | 54   | 4     | 115             | 1500              | 0.25 | 0.5                | 36    |
| BZX85C56                                                                        | 52                           | 60   | 4     | 120             | 2000              | 0.25 | 0.5                | 39    |
| <b><math>V_F</math> Forward Voltage = 1.2 V Max @ <math>I_F = 200</math> mA</b> |                              |      |       |                 |                   |      |                    |       |

### Note:

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.

## Top Mark Information

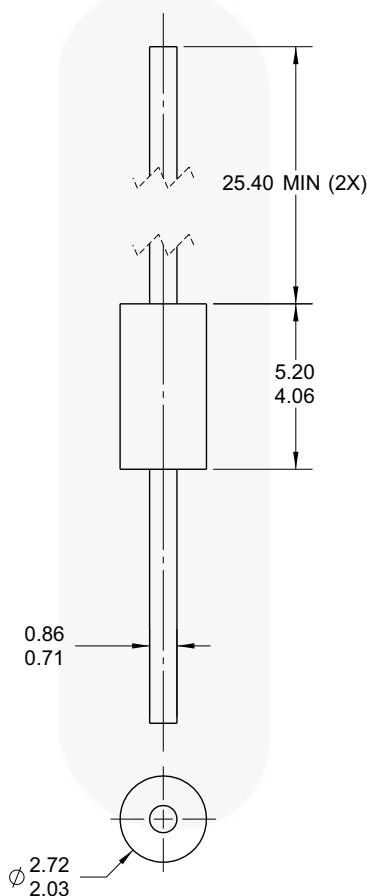
| Device    | Line 1 | Line 2 | Line 3 | Line 4 | Line 5 |
|-----------|--------|--------|--------|--------|--------|
| BZX85C3V3 | LOGO   | 85C    | 3V3    |        | XY     |
| BZX85C3V6 | LOGO   | 85C    | 3V6    |        | XY     |
| BZX85C3V9 | LOGO   | 85C    | 3V9    |        | XY     |
| BZX85C4V3 | LOGO   | 85C    | 4V3    |        | XY     |
| BZX85C4V7 | LOGO   | 85C    | 4V7    |        | XY     |
| BZX85C5V1 | LOGO   | 85C    | 5V1    |        | XY     |
| BZX85C5V6 | LOGO   | 85C    | 5V6    |        | XY     |
| BZX85C6V2 | LOGO   | 85C    | 6V2    |        | XY     |
| BZX85C6V8 | LOGO   | 85C    | 6V8    |        | XY     |
| BZX85C7V5 | LOGO   | 85C    | 7V5    |        | XY     |
| BZX85C8V2 | LOGO   | 85C    | 8V2    |        | XY     |
| BZX85C9V1 | LOGO   | 85C    | 9V1    |        | XY     |
| BZX85C10  | LOGO   | 85C    | 10     |        | XY     |
| BZX85C11  | LOGO   | 85C    | 11     |        | XY     |
| BZX85C12  | LOGO   | 85C    | 12     |        | XY     |
| BZX85C13  | LOGO   | 85C    | 13     |        | XY     |
| BZX85C15  | LOGO   | 85C    | 15     |        | XY     |
| BZX85C16  | LOGO   | 85C    | 16     |        | XY     |
| BZX85C18  | LOGO   | 85C    | 18     |        | XY     |
| BZX85C20  | LOGO   | 85C    | 20     |        | XY     |
| BZX85C22  | LOGO   | 85C    | 22     |        | XY     |
| BZX85C24  | LOGO   | 85C    | 24     |        | XY     |
| BZX85C27  | LOGO   | 85C    | 27     |        | XY     |
| BZX85C30  | LOGO   | 85C    | 30     |        | XY     |
| BZX85C33  | LOGO   | 85C    | 33     |        | XY     |
| BZX85C36  | LOGO   | 85C    | 36     |        | XY     |
| BZX85C39  | LOGO   | 85C    | 39     |        | XY     |
| BZX85C43  | LOGO   | 85C    | 43     |        | XY     |
| BZX85C47  | LOGO   | 85C    | 47     |        | XY     |
| BZX85C51  | LOGO   | 85C    | 51     |        | XY     |
| BZX85C56  | LOGO   | 85C    | 56     |        | XY     |

**Top Mark Information** (Continued)**General Requirements:**

- 1.0 Cathode Band
- 2.0 First Line: F - Fairchild Logo
- 3.0 Second Line: Device name - For 1Nxx series: 3<sup>rd</sup> to 4<sup>th</sup> characters of the device name.  
For BZXxx series: 4<sup>th</sup> to 6<sup>th</sup> characters of the device name.
- 4.0 Third Line: Device name - For 1Nxx series: 5<sup>th</sup> to 6<sup>th</sup> characters of the device name.  
For BZXyy series: Voltage rating
- 5.0 Third Line: Device name - For 1Nxx series: 7<sup>th</sup> to 8<sup>th</sup> characters of the device name.  
(the 8th character is the large die identification)  
For BZXyy series: Large Die Identification character
- 6.0 Fourth Line: Date Code - Two Digit - Six Weeks Date Code  
Where: X represents the last digit of the calendar year  
Y represents the Six weeks numeric code
- 7.0 Devices shall be marked as required in the device specification (PID or FSC Test Spec).
- 8.0 Maximum no. of marking lines: 5
- 9.0 Maximum no. of digits per line: 3
- 10.0 FSC logo must be 20% taller than the alphanumeric marking and should occupy the 2 characters of the specified line.
- 11.0 Marking Font: Arial (Except FSC Logo)
- 12.0 First character of each marking line must be aligned vertically
- 13.0 All device markings must be based on Fairchild device specification.

## Physical Dimensions

## DO-204AL (DO-41)



NOTES: UNLESS OTHERWISE SPECIFIED

- A) PACKAGE STANDARD REFERENCE:  
JEDEC DO-204 VARIATION AL.
- B) PACKAGE BODY CAN BE PLASTIC OR  
HERMETICALLY SEALED GLASS.
- D) ALL DIMENSIONS ARE IN MILLIMETERS.
- E) DRAWING FILE NAME: DO41AREV2

**Figure 7. AXIAL LEADED, GLASS, JEDEC DO204, VARIATION AL**

Package drawings are provided as a service to customers considering Fairchild components. Drawings may change in any manner without notice. Please note the revision and/or date on the drawing and contact a Fairchild Semiconductor representative to verify or obtain the most recent revision. Package specifications do not expand the terms of Fairchild's worldwide terms and conditions, specifically the warranty therein, which covers Fairchild products.

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<http://www.fairchildsemi.com/dwg/DO/DO41A.pdf>.

For current tape and reel specifications, visit Fairchild Semiconductor's online packaging area:

[http://www.fairchildsemi.com/packing\\_dwg/PKG-DO41A\\_TC.pdf](http://www.fairchildsemi.com/packing_dwg/PKG-DO41A_TC.pdf).

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|-----------------------------------------------------------------------------------|------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 2Cool™                                                                            | FPS™                                           |  | Sync-Lock™                                                                          |
| AccuPower™                                                                        | F-PFS™                                         | PowerTrench®                                                                      |  |
| AX-CAP®*                                                                          | FRFET®                                         | PowerXS™                                                                          | TinyBoost®                                                                          |
| BitSiC™                                                                           | Global Power Resource™                         | Programmable Active Droop™                                                        | TinyBuck®                                                                           |
| Build it Now™                                                                     | GreenBridge™                                   | QFET®                                                                             | TinyCalc™                                                                           |
| CorePLUS™                                                                         | Green FPS™                                     | QS™                                                                               | TinyLogic®                                                                          |
| CorePOWER™                                                                        | Green FPS™ e-Series™                           | Quiet Series™                                                                     | TINYOPTO™                                                                           |
| CROSSVOLT™                                                                        | Gmax™                                          | RapidConfigure™                                                                   | TinyPower™                                                                          |
| CTL™                                                                              | GTO™                                           |  | TinyPWM™                                                                            |
| Current Transfer Logic™                                                           | IntelliMAX™                                    | Saving our world, 1mW/W/kW at a time™                                             | TinyWire™                                                                           |
| DEUXPEED®                                                                         | ISOPLANAR™                                     | SignalWise™                                                                       | TranSiC™                                                                            |
| Dual Cool™                                                                        | Making Small Speakers Sound Louder and Better™ | SmartMax™                                                                         | TriFault Detect™                                                                    |
| EcoSPARK®                                                                         | MegaBuck™                                      | SMART START™                                                                      | TRUECURRENT®*                                                                       |
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| ESBC™                                                                             | MicroFET™                                      | SPM®                                                                              |  |
|  | MicroPak™                                      | STEALTH™                                                                          | UHC®                                                                                |
| Fairchild®                                                                        | MicroPak2™                                     | SuperFET®                                                                         | Ultra FRFET™                                                                        |
| Fairchild Semiconductor®                                                          | MillerDrive™                                   | SuperSOT™-3                                                                       | UniFET™                                                                             |
| FACT Quiet Series™                                                                | MotionMax™                                     | SuperSOT™-6                                                                       | VCX™                                                                                |
| FACT®                                                                             | mWSaver®                                       | SuperSOT™-8                                                                       | VisualMax™                                                                          |
| FAST®                                                                             | OptoHiT™                                       | SupreMOS®                                                                         | VoltagePlus™                                                                        |
| FastvCore™                                                                        | OPTOLOGIC®                                     | SyncFET™                                                                          | XS™                                                                                 |
| FETBench™                                                                         | OPTOPLANAR®                                    |                                                                                   |                                                                                     |

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