



Is Now Part of



**ON Semiconductor®**

To learn more about ON Semiconductor, please visit our website at  
[www.onsemi.com](http://www.onsemi.com)

Please note: As part of the Fairchild Semiconductor integration, some of the Fairchild orderable part numbers will need to change in order to meet ON Semiconductor's system requirements. Since the ON Semiconductor product management systems do not have the ability to manage part nomenclature that utilizes an underscore (\_), the underscore (\_) in the Fairchild part numbers will be changed to a dash (-). This document may contain device numbers with an underscore (\_). Please check the ON Semiconductor website to verify the updated device numbers. The most current and up-to-date ordering information can be found at [www.onsemi.com](http://www.onsemi.com). Please email any questions regarding the system integration to [Fairchild\\_questions@onsemi.com](mailto:Fairchild_questions@onsemi.com).

ON Semiconductor and the ON Semiconductor logo are trademarks of Semiconductor Components Industries, LLC dba ON Semiconductor or its subsidiaries in the United States and/or other countries. ON Semiconductor owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of ON Semiconductor's product/patent coverage may be accessed at [www.onsemi.com/site/pdf/Patent-Marking.pdf](http://www.onsemi.com/site/pdf/Patent-Marking.pdf). ON Semiconductor reserves the right to make changes without further notice to any products herein. ON Semiconductor makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does ON Semiconductor assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. Buyer is responsible for its products and applications using ON Semiconductor products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by ON Semiconductor. "Typical" parameters which may be provided in ON Semiconductor data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. ON Semiconductor does not convey any license under its patent rights nor the rights of others. ON Semiconductor products are not designed, intended, or authorized for use as a critical component in life support systems or any FDA Class 3 medical devices or medical devices with a same or similar classification in a foreign jurisdiction or any devices intended for implantation in the human body. Should Buyer purchase or use ON Semiconductor products for any such unintended or unauthorized application, Buyer shall indemnify and hold ON Semiconductor and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that ON Semiconductor was negligent regarding the design or manufacture of the part. ON Semiconductor is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.



## 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 <sub>Z</sub> (V)		I <sub>Z</sub>	Z <sub>Z</sub> @ I <sub>Z</sub>	Z <sub>ZK</sub> @ I <sub>ZK</sub>		I <sub>R</sub> @ V <sub>R</sub>	
	Min.	Max.	mA	(Ω)	(Ω)	(mA)	μA 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

V<sub>F</sub> Forward Voltage = 1.2 V Max @ I<sub>F</sub> = 200 mA

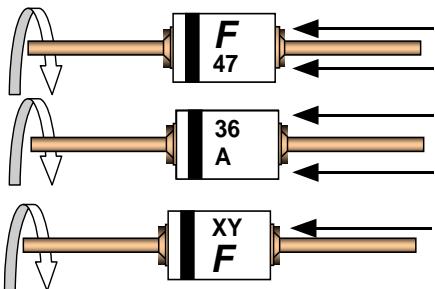
### Note:

1. Zener Voltage (V<sub>Z</sub>): The 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.

## 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)



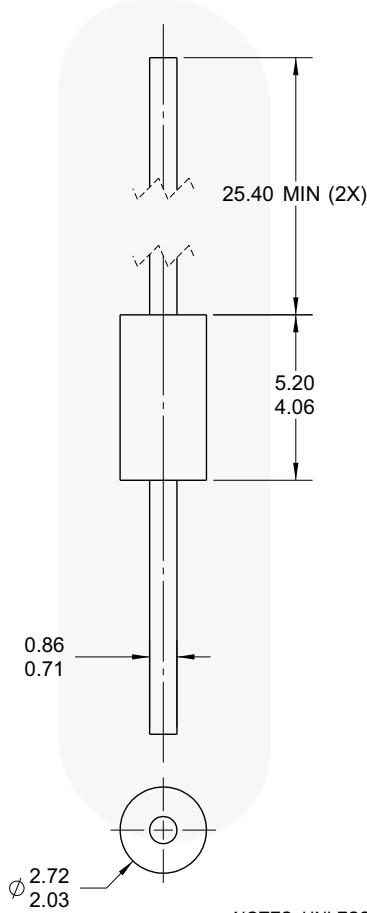
1<sup>st</sup> line: F - Fairchild Logo  
 2<sup>nd</sup> line: Device Name - 3<sup>rd</sup> to 4<sup>th</sup> characters of device name for 1Nxx series  
 or 4<sup>th</sup> to 6<sup>th</sup> characters for BZXyy series  
 3<sup>rd</sup> line: Device Name - 5<sup>th</sup> to 6<sup>th</sup> characters of device name for 1Nxx series  
 or Voltage rating for BZXyy series  
 4<sup>th</sup> line: Device Name - 7<sup>th</sup> to 8<sup>th</sup> characters of device name for 1Nxx series  
 or Large Die identification only for BZXyy series  
 5<sup>th</sup> line: Date Code - Two Digit - Six Weeks Date Code

### 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 8<sup>th</sup> 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.

Always visit Fairchild Semiconductor's online packaging area for the most recent package drawings:  
<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)



## TRADEMARKS

The following includes registered and unregistered trademarks and service marks, owned by Fairchild Semiconductor and/or its global subsidiaries, and is not intended to be an exhaustive list of all such trademarks.

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

\* Trademarks of System General Corporation, used under license by Fairchild Semiconductor.

## DISCLAIMER

FAIRCHILD SEMICONDUCTOR RESERVES THE RIGHT TO MAKE CHANGES WITHOUT FURTHER NOTICE TO ANY PRODUCTS HEREIN TO IMPROVE RELIABILITY, FUNCTION, OR DESIGN. FAIRCHILD DOES NOT ASSUME ANY LIABILITY ARISING OUT OF THE APPLICATION OR USE OF ANY PRODUCT OR CIRCUIT DESCRIBED HEREIN; NEITHER DOES IT CONVEY ANY LICENSE UNDER ITS PATENT RIGHTS, NOR THE RIGHTS OF OTHERS. THESE SPECIFICATIONS DO NOT EXPAND THE TERMS OF FAIRCHILD'S WORLDWIDE TERMS AND CONDITIONS, SPECIFICALLY THE WARRANTY THEREIN, WHICH COVERS THESE PRODUCTS.

## LIFE SUPPORT POLICY

FAIRCHILD'S PRODUCTS ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT THE EXPRESS WRITTEN APPROVAL OF FAIRCHILD SEMICONDUCTOR CORPORATION.

As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body or (b) support or sustain life, and (c) whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury of the user.
2. A critical component in 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.

## ANTI-COUNTERFEITING POLICY

Fairchild Semiconductor Corporation's Anti-Counterfeiting Policy. Fairchild's Anti-Counterfeiting Policy is also stated on our external website, [www.fairchildsemi.com](http://www.fairchildsemi.com), under Sales Support.

Counterfeiting of semiconductor parts is a growing problem in the industry. All manufacturers of semiconductor products are experiencing counterfeiting of their parts. Customers who inadvertently purchase counterfeit parts experience many problems such as loss of brand reputation, substandard performance, failed applications, and increased cost of production and manufacturing delays. Fairchild is taking strong measures to protect ourselves and our customers from the proliferation of counterfeit parts. Fairchild strongly encourages customers to purchase Fairchild parts either directly from Fairchild or from Authorized Fairchild Distributors who are listed by country on our web page cited above. Products customers buy either from Fairchild directly or from Authorized Fairchild Distributors are genuine parts, have full traceability, meet Fairchild's quality standards for handling and storage and provide access to Fairchild's full range of up-to-date technical and product information. Fairchild and our Authorized Distributors will stand behind all warranties and will appropriately address any warranty issues that may arise. Fairchild will not provide any warranty coverage or other assistance for parts bought from Unauthorized Sources. Fairchild is committed to combat this global problem and encourage our customers to do their part in stopping this practice by buying direct or from authorized distributors.

## PRODUCT STATUS DEFINITIONS

### Definition of Terms

Datasheet Identification	Product Status	Definition
Advance Information	Formative / In Design	Datasheet contains the design specifications for product development. Specifications may change in any manner without notice.
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.
No Identification Needed	Full Production	Datasheet contains final specifications. Fairchild Semiconductor reserves the right to make changes at any time without notice to improve the design.
Obsolete	Not In Production	Datasheet contains specifications on a product that is discontinued by Fairchild Semiconductor. The datasheet is for reference information only.

Rev. I65

ON Semiconductor and  are trademarks of Semiconductor Components Industries, LLC dba ON Semiconductor or its subsidiaries in the United States and/or other countries. ON Semiconductor owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of ON Semiconductor's product/patent coverage may be accessed at [www.onsemi.com/site/pdf/Patent-Marking.pdf](http://www.onsemi.com/site/pdf/Patent-Marking.pdf). ON Semiconductor reserves the right to make changes without further notice to any products herein. ON Semiconductor makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does ON Semiconductor assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. Buyer is responsible for its products and applications using ON Semiconductor products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by ON Semiconductor. "Typical" parameters which may be provided in ON Semiconductor data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. ON Semiconductor does not convey any license under its patent rights nor the rights of others. ON Semiconductor products are not designed, intended, or authorized for use as a critical component in life support systems or any FDA Class 3 medical devices or medical devices with a same or similar classification in a foreign jurisdiction or any devices intended for implantation in the human body. Should Buyer purchase or use ON Semiconductor products for any such unintended or unauthorized application, Buyer shall indemnify and hold ON Semiconductor and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that ON Semiconductor was negligent regarding the design or manufacture of the part. ON Semiconductor is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

## PUBLICATION ORDERING INFORMATION

### LITERATURE FULFILLMENT:

Literature Distribution Center for ON Semiconductor  
19521 E. 32nd Pkwy, Aurora, Colorado 80011 USA  
**Phone:** 303-675-2175 or 800-344-3860 Toll Free USA/Canada  
**Fax:** 303-675-2176 or 800-344-3867 Toll Free USA/Canada  
**Email:** [orderlit@onsemi.com](mailto:orderlit@onsemi.com)

**N. American Technical Support:** 800-282-9855 Toll Free  
USA/Canada

**Europe, Middle East and Africa Technical Support:**  
Phone: 421 33 790 2910  
**Japan Customer Focus Center**  
Phone: 81-3-5817-1050

**ON Semiconductor Website:** [www.onsemi.com](http://www.onsemi.com)

**Order Literature:** <http://www.onsemi.com/orderlit>

For additional information, please contact your local  
Sales Representative

# Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[ON Semiconductor](#):

[BZX85C8V2\\_T50A](#) [BZX85C8V2\\_T50R](#) [BZX85C8V2](#)