Zener Diodes



FEATURES

- Silicon planar power Zener diodes
- For use in stabilizing and clipping circuits with high power rating
- The Zener voltages are graded according to the international E 24 standard; replace suffix “C” with “B” for ± 2 % tolerance
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

RoHS COMPLIANT

HALOGEN FREE

LINKS TO ADDITIONAL RESOURCES

3D Models | Marking | Parametric Search | Order Samples

APPLICATIONS

- Voltage stabilization

PRIMARY CHARACTERISTICS		
PARAMETER	VALUE	UNIT
V_Z range nom.	3.3 to 75	V
Test current I_{ZT}	4 to 80	mA
V_Z specification	Pulse current	
Circuit configuration	Single	

ORDERING INFORMATION			
DEVICE NAME	ORDERING CODE	TAPED UNITS PER REEL	MINIMUM ORDER QUANTITY
BZX85-series	BZX85-series-TR	5000 (52 mm tape on 13" reel)	25 000/box
BZX85-series	BZX85-series-TAP	5000 per ammopack (52 mm tape)	25 000/box

PACKAGE				
PACKAGE NAME	WEIGHT	MOLDING COMPOUND FLAMMABILITY RATING	MOISTURE SENSITIVITY LEVEL	SOLDERING CONDITIONS
DO-41 (DO-204AL)	approx. 310 mg	UL 94 V-0	MSL level 1 (according J-STD-020)	Peak temperature max. 260 °C

ABSOLUTE MAXIMUM RATINGS (T_{amb} = 25 °C, unless otherwise specified)				
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Power dissipation	Valid provided that leads at a distance of 4 mm from case are kept at ambient temperature t_p = 10 ms	P_{tot}	1300	mW
Zener current	See Table “Electrical characteristics”			
Junction to ambient air	Valid provided that leads at a distance of 4 mm from case are kept at ambient temperature t_p = 10 ms	R_{thJA}	110	K/W
Junction temperature		T_j	175	°C
Storage temperature range		T_{stg}	-55 to +175	°C

For technical questions within your region: DiodesAmericas@vishay.com, DiodesAsia@vishay.com, DiodesEurope@vishay.com

THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000

ELECTRICAL CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)

PART NUMBER	ZENER VOLTAGE RANGE (1)			TEST CURRENT		REVERSE LAEKAGE CURRENT		DYNAMIC RESISTANCE (3)		TEMPERATURE COEFFICIENT OF ZENER VOLTAGE		ADMISSIBLE ZENER CURRENT (2)
	V_Z at I_{ZT1}			I_{ZT1}	I_{ZT2}	I_R at V_R		Z_Z at I_{ZT1}	Z_{ZK} at I_{ZT2}	α_{VZ} at I_{ZT1}		I_Z
	V			mA		µA	V	Ω		%/°C		mA
	MIN.	NOM.	MAX.					MAX.	MAX.	MIN.	MAX.	
BZX85C3V3	3.1	3.3	3.5	80	1	< 40	1	< 20	< 400	- 0.08	- 0.05	300
BZX85C3V6	3.4	3.6	3.8	60	1	< 20	1	< 20	< 500	- 0.08	- 0.05	290
BZX85C3V9	3.7	3.9	4.1	60	1	< 10	1	< 15	< 500	- 0.07	- 0.02	280
BZX85C4V3	4	4.3	4.6	50	1	< 3	1	< 13	< 500	- 0.05	0.01	250
BZX85C4V7	4.4	4.7	5	45	1	< 3	1	< 13	< 600	- 0.03	0.04	215
BZX85C5V1	4.8	5.1	5.4	45	1	< 1	1.5	< 10	< 500	- 0.01	0.04	200
BZX85C5V6	5.2	5.6	6	45	1	< 1	2	< 7	< 400	0	0.045	190
BZX85C6V2	5.8	6.2	6.6	35	1	< 1	3	< 4	< 300	0.01	0.055	170
BZX85C6V8	6.4	6.8	7.2	35	1	< 1	4	< 3.5	< 300	0.015	0.06	155
BZX85C7V5	7	7.5	7.9	35	0.5	< 1	4.5	< 3	< 200	0.02	0.065	140
BZX85C8V2	7.7	8.2	8.7	25	0.5	< 1	6.2	< 5	< 200	0.03	0.07	130
BZX85C9V1	8.5	9.1	9.6	25	0.5	< 1	6.8	< 5	< 200	0.035	0.075	120
BZX85C10	9.4	10	10.6	25	0.5	< 0.5	7.5	< 7	< 200	0.04	0.08	105
BZX85C11	10.4	11	11.6	20	0.5	< 0.5	8.2	< 8	< 300	0.045	0.08	97
BZX85C12	11.4	12	12.7	20	0.5	< 0.5	9.1	< 9	< 350	0.045	0.085	88
BZX85C13	12.4	13	14.1	20	0.5	< 0.5	10	< 10	< 400	0.05	0.085	79
BZX85C15	13.8	15	15.6	15	0.5	< 0.5	11	< 15	< 500	0.055	0.09	71
BZX85C16	15.3	16	17.1	15	0.5	< 0.5	12	< 15	< 500	0.055	0.09	66
BZX85C18	16.8	18	19.1	15	0.5	< 0.5	13	< 20	< 500	0.06	0.09	62
BZX85C20	18.8	20	21.2	10	0.5	< 0.5	15	< 24	< 600	0.06	0.09	56
BZX85C22	20.8	22	23.3	10	0.5	< 0.5	16	< 25	< 600	0.06	0.095	52
BZX85C24	22.8	24	25.6	10	0.5	< 0.5	18	< 25	< 600	0.06	0.095	47
BZX85C27	25.1	27	28.9	8	0.25	< 0.5	20	< 30	< 750	0.06	0.095	41
BZX85C30	28	30	32	8	0.25	< 0.5	22	< 30	< 1000	0.06	0.095	36
BZX85C33	31	33	35	8	0.25	< 0.5	24	< 35	< 1000	0.06	0.095	33
BZX85C36	34	36	38	8	0.25	< 0.5	27	< 40	< 1000	0.06	0.095	30
BZX85C39	37	39	41	6	0.25	< 0.5	30	< 50	< 1000	0.06	0.095	28
BZX85C43	40	43	46	6	0.25	< 0.5	33	< 50	< 1000	0.06	0.095	26
BZX85C47	44	47	50	4	0.25	< 0.5	36	< 90	< 1500	0.06	0.095	23
BZX85C51	48	51	54	4	0.25	< 0.5	39	< 115	< 1500	0.06	0.095	21
BZX85C56	52	56	60	4	0.25	< 0.5	43	< 120	< 2000	0.06	0.095	19
BZX85C62	58	62	66	4	0.25	< 0.5	47	< 125	< 2000	0.06	0.095	16
BZX85C68	64	68	72	4	0.25	< 0.5	51	< 130	< 2000	0.055	0.095	15
BZX85C75	70	75	80	4	0.25	< 0.5	56	< 135	< 2000	0.055	0.095	14

Notes

(1) Measured with pulses t_p = 5 ms

(2) Valid provided that electrodes at a distance of 4 mm from case are kept at ambient temperature, t_p = 10 ms

(3) Measured with f = 1 kHz

For technical questions within your region: DiodesAmericas@vishay.com, DiodesAsia@vishay.com, DiodesEurope@vishay.com

THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000

ELECTRICAL CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)

PART NUMBER	ZENER VOLTAGE RANGE (1)			TEST CURRENT		REVERSE LAEKAGE CURRENT		DYNAMIC RESISTANCE (3)		TEMPERATURE COEFFICIENT OF ZENER VOLTAGE		ADMISSIBLE ZENER CURRENT (2)
	V_Z at I_{ZT1}			I_{ZT1}	I_{ZT2}	I_R at V_R		Z_Z at I_{ZT1}	Z_{ZK} at I_{ZT2}	α_{VZ} at I_{ZT1}		I_Z
	V			mA		µA	V	Ω		%/°C		mA
	MIN.	NOM.	MAX.					MAX.	MAX.	MIN.	MAX.	
BZX85B3V3	2.24	3.3	3.36	80	1	< 40	1	< 20	< 400	- 0.08	- 0.05	300
BZX85B3V6	3.53	3.6	3.67	60	1	< 20	1	< 20	< 500	- 0.08	- 0.05	290
BZX85B3V9	3.82	3.9	3.98	60	1	< 10	1	< 15	< 500	- 0.07	- 0.02	280
BZX85B4V3	4.21	4.3	4.39	50	1	< 3	1	< 13	< 500	- 0.05	0.01	250
BZX85B4V7	4.61	4.7	4.79	45	1	< 3	1	< 13	< 600	- 0.03	0.04	215
BZX85B5V1	5	5.1	5.2	45	1	< 1	1.5	< 10	< 500	- 0.01	0.04	200
BZX85B5V6	5.49	5.6	5.71	45	1	< 1	2	< 7	< 400	0	0.045	190
BZX85B6V2	6.08	6.2	6.32	35	1	< 1	3	< 4	< 300	0.01	0.055	170
BZX85B6V8	6.66	6.8	6.94	35	1	< 1	4	< 3.5	< 300	0.015	0.06	155
BZX85B7V5	7.35	7.5	7.65	35	0.5	< 1	4.5	< 3	< 200	0.02	0.065	140
BZX85B8V2	8.04	8.2	8.36	25	0.5	< 1	6.2	< 5	< 200	0.03	0.07	130
BZX85B9V1	8.92	9.1	9.28	25	0.5	< 1	6.8	< 5	< 200	0.035	0.075	120
BZX85B10	9.8	10	10.2	25	0.5	< 0.5	7.5	< 7	< 200	0.04	0.08	105
BZX85B11	10.8	11	11.2	20	0.5	< 0.5	8.2	< 8	< 300	0.045	0.08	97
BZX85B12	11.8	12	12.2	20	0.5	< 0.5	9.1	< 9	< 350	0.045	0.085	88
BZX85B13	12.7	13	13.3	20	0.5	< 0.5	10	< 10	< 400	0.05	0.085	79
BZX85B15	14.7	15	15.3	15	0.5	< 0.5	11	< 15	< 500	0.055	0.09	71
BZX85B16	15.7	16	16.3	15	0.5	< 0.5	12	< 15	< 500	0.055	0.09	66
BZX85B18	17.6	18	18.4	15	0.5	< 0.5	13	< 20	< 500	0.06	0.09	62
BZX85B20	19.6	20	20.4	10	0.5	< 0.5	15	< 24	< 600	0.06	0.09	56
BZX85B22	21.6	22	22.4	10	0.5	< 0.5	16	< 25	< 600	0.06	0.095	52
BZX85B24	23.5	24	24.5	10	0.5	< 0.5	18	< 25	< 600	0.06	0.095	47
BZX85B27	26.5	27	27.5	8	0.25	< 0.5	20	< 30	< 750	0.06	0.095	41
BZX85B30	29.4	30	30.6	8	0.25	< 0.5	22	< 30	< 1000	0.06	0.095	36
BZX85B33	32.3	33	33.7	8	0.25	< 0.5	24	< 35	< 1000	0.06	0.095	33
BZX85B36	35.3	36	36.7	8	0.25	< 0.5	27	< 40	< 1000	0.06	0.095	30
BZX85B39	38.2	39	39.8	6	0.25	< 0.5	30	< 50	< 1000	0.06	0.095	28
BZX85B43	42.1	43	43.9	6	0.25	< 0.5	33	< 50	< 1000	0.06	0.095	26
BZX85B47	46.1	47	47.9	4	0.25	< 0.5	36	< 90	< 1500	0.06	0.095	23
BZX85B51	50	51	52	4	0.25	< 0.5	39	< 115	< 1500	0.06	0.095	21
BZX85B56	54.9	56	57.1	4	0.25	< 0.5	43	< 120	< 2000	0.06	0.095	19
BZX85B62	60.8	62	63.2	4	0.25	< 0.5	47	< 125	< 2000	0.06	0.095	16
BZX85B68	66.6	68	69.4	4	0.25	< 0.5	51	< 130	< 2000	0.055	0.095	15
BZX85B75	73.5	75	76.5	4	0.25	< 0.5	56	< 135	< 2000	0.055	0.095	14

Notes

(1) Measured with pulses t_p = 5 ms

(2) Valid provided that electrodes at a distance of 4 mm from case are kept at ambient temperature, t_p = 10 ms

(3) Measured with f = 1 kHz

For technical questions within your region: DiodesAmericas@vishay.com, DiodesAsia@vishay.com, DiodesEurope@vishay.com

THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000

BASIC CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)

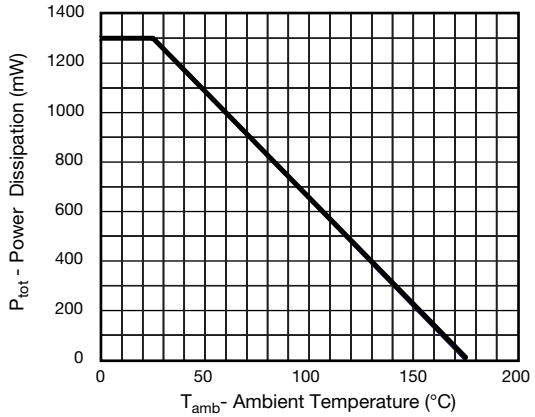


Fig. 1 - Admissible Power Dissipation vs. Ambient Temperature
$P_{tot} = f(T_{amb})$

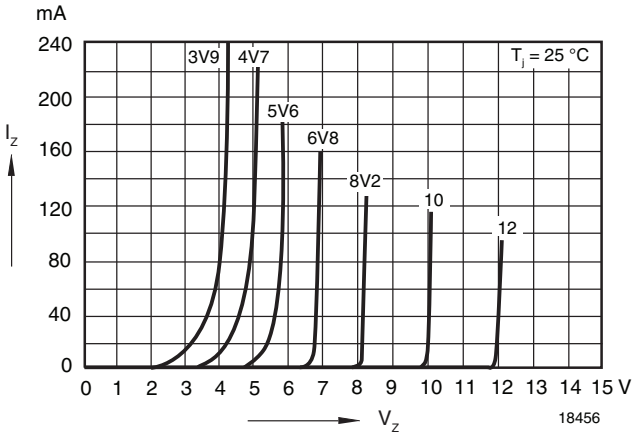


Fig. 3 - Typical Breakdown Characteristics

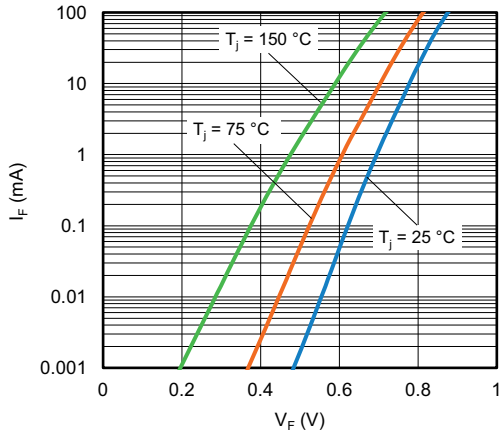


Fig. 2 - Typical Forward Current I_F vs. Forward Voltage V_F

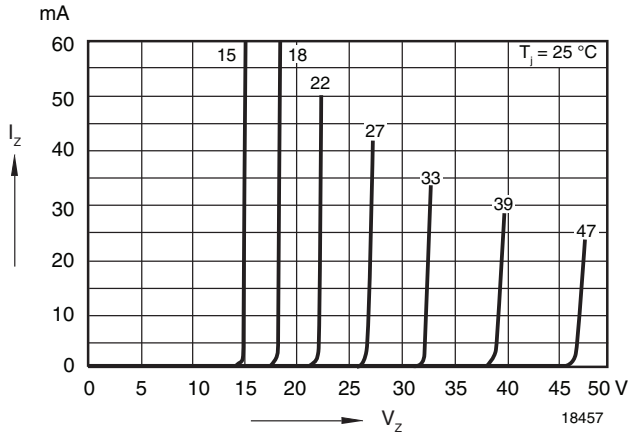
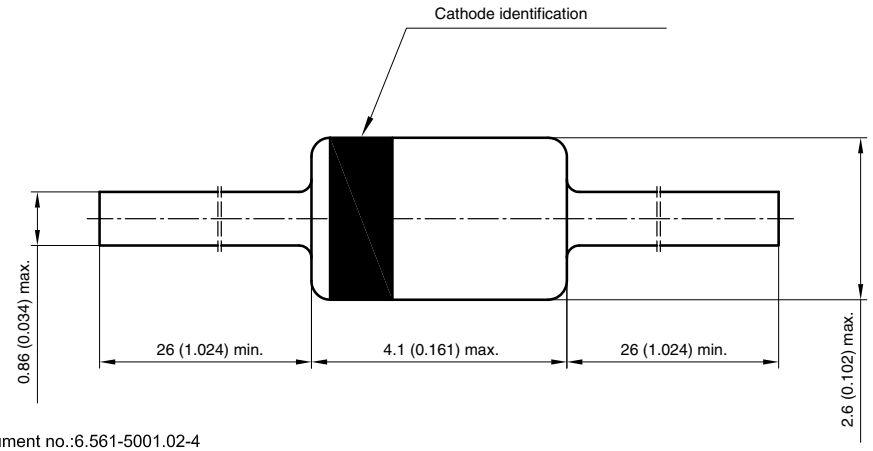


Fig. 4 - Typical Breakdown Characteristics

PACKAGE DIMENSIONS in millimeters (inches): DO-41 (DO-204AL)



Document no.:6.561-5001.02-4
Rev. 3 - Date: 09 February 2005
94 9368

For technical questions within your region: DiodesAmericas@vishay.com, DiodesAsia@vishay.com, DiodesEurope@vishay.com
THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000

Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, “Vishay”), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and / or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Hyperlinks included in this datasheet may direct users to third-party websites. These links are provided as a convenience and for informational purposes only. Inclusion of these hyperlinks does not constitute an endorsement or an approval by Vishay of any of the products, services or opinions of the corporation, organization or individual associated with the third-party website. Vishay disclaims any and all liability and bears no responsibility for the accuracy, legality or content of the third-party website or for that of subsequent links.

Vishay products are not designed for use in life-saving or life-sustaining applications or any application in which the failure of the Vishay product could result in personal injury or death unless specifically qualified in writing by Vishay. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.

© 2024 VISHAY INTERTECHNOLOGY, INC. ALL RIGHTS RESERVED

THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000