Important notice

Dear Customer,

On 7 February 2017 the former NXP Standard Product business became a new company with the tradename **Nexperia**. Nexperia is an industry leading supplier of Discrete, Logic and PowerMOS semiconductors with its focus on the automotive, industrial, computing, consumer and wearable application markets

In data sheets and application notes which still contain NXP or Philips Semiconductors references, use the references to Nexperia, as shown below.

Instead of http://www.nxp.com, http://www.philips.com/ or http://www.semiconductors.philips.com/, use **http://www.nexperia.com**

Instead of sales.addresses@www.nxp.com or sales.addresses@www.semiconductors.philips.com, use **salesaddresses@nexperia.com** (email)

Replace the copyright notice at the bottom of each page or elsewhere in the document, depending on the version, as shown below:
- © NXP N.V. (year). All rights reserved or © Koninklijke Philips Electronics N.V. (year). All rights reserved
Should be replaced with:
- **© Nexperia B.V. (year). All rights reserved**.

If you have any questions related to the data sheet, please contact our nearest sales office via e-mail or telephone (details via **salesaddresses@nexperia.com**). Thank you for your cooperation and understanding,

Kind regards,

Team Nexperia

BZV85 series

Voltage regulator diodes

Rev. 03 — 10 November 2009 Product data sheet

1. Product profile

1.1 General description

Medium-power voltage regulator diodes in small hermetically sealed leaded SOD66 (DO-41) glass packages.

The diodes are available in the normalized E24 approximately ±5 % tolerance range. The series consists of 33 types with nominal working voltages from 3.6 V to 75 V.

1.2 Features

- Total power dissipation: max. 1.3 W
- Working voltage range: nominal 3.3 V to 75 V (E24 range)
- Small hermetically sealed glass package
- Tolerance series: approximately ±5 %
- Non-repetitive peak reverse power dissipation: max. 60 W

1.3 Applications

- Stabilization purposes

1.4 Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
V_F	forward voltage	I_F = 50 mA		-	-	1	V
P_{tot}	total power dissipation						
		T_{amb} = 25 °C; lead length 10 mm	[1]	-	-	1	W
			[2]	-	-	1.3	W
P_{ZSM}	non-repetitive peak reverse power dissipation	square wave; t_p = 100 µs	[3]	-	-	60	W

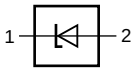
[1] Device mounted on a Printed-Circuit Board (PCB) with 1 cm^2 copper area per lead.

[2] If the leads are kept at T_{tp} = 55 °C at 4 mm from body.

[3] T_j = 25 °C prior to surge

2. Pinning information

Table 2. Pinning

Pin	Description	Simplified outline	Graphic symbol
1	cathode [1]		
2	anode		

006aaa152

[1] The marking band indicates the cathode.

3. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
BZV85 series[1]	-	hermetically sealed glass package; axial leaded; 2 leads	SOD66

[1] The series consists of 33 types with nominal working voltages from 3.3 V to 75 V.

4. Marking

Table 4. Marking codes

Type number	Marking code
BZV85 series	The diodes are type branded.

5. Limiting values

Table 5. Limiting values

In accordance with the Absolute Maximum Rating System (IEC 60134).

Symbol	Parameter	Conditions		Min	Max	Unit
I_F	forward current			-	500	mA
I_{ZSM}	non-repetitive peak reverse current	square wave; t_p = 100 µs	[1]	-	see Table 8	
		half sine wave; t_p = 10 ms	[1]	-	see Table 8	
P_{tot}	total power dissipation					
		T_{amb} = 25 °C; lead length 10 mm	[2]	-	1	W
			[3]	-	1.3	W
P_{ZSM}	non-repetitive peak reverse power dissipation	square wave; t_p = 100 µs	[1]	-	60	W
T_j	junction temperature			-	200	°C
T_{stg}	storage temperature			–65	+200	°C

[1] T_j = 25 °C prior to surge

[2] Device mounted on a PCB with 1 cm^2 copper area per lead.

[3] If the leads are kept at T_{tp} = 55 °C at 4 mm from body.

6. Thermal characteristics

Table 6. Thermal characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
$R_{th(j-t)}$	thermal resistance from junction to tie-point	lead length 4 mm		-	-	110	K/W
$R_{th(j-a)}$	thermal resistance from junction to ambient	lead length 10 mm	[1]	-	-	175	K/W

[1] Device mounted on a PCB with 1 cm^2 copper area per lead.

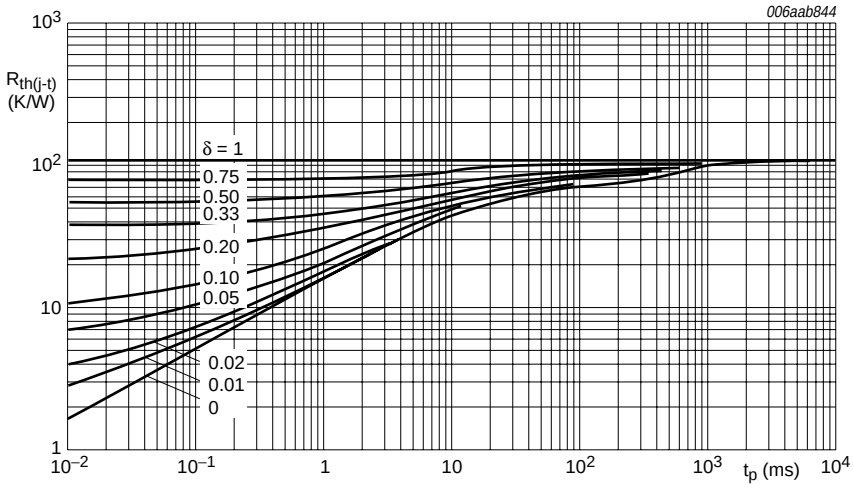


Fig 1. Thermal resistance from junction to tie-point as a function of pulse duration; lead length 4 mm

7. Characteristics

Table 7. Characteristics

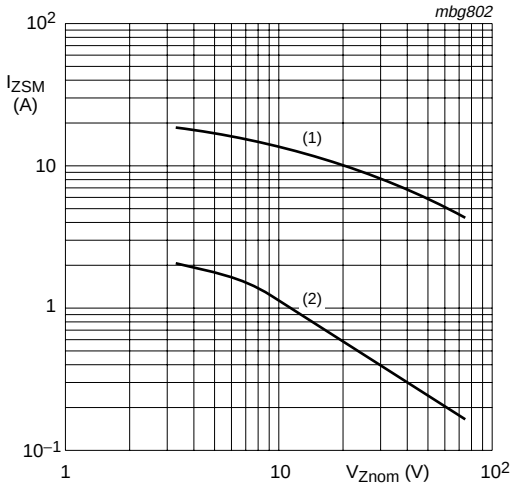
T_j = 25 °C unless otherwise specified.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_F	forward voltage	I_F = 50 mA	-	-	1	V

Table 8. Characteristics per type

T_j = 25 °C unless otherwise specified.

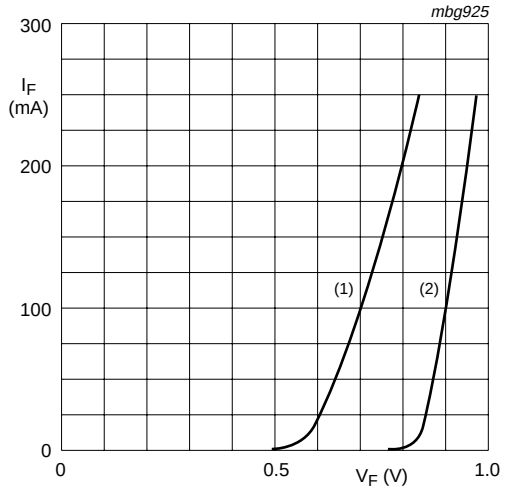
BZV85-Cxxx	Working voltage V_Z (V) at I_{test}		Differential resistance r_{dif} (Ω) at I_{test}	Temperature coefficient S_Z (mV/K) at I_{test}		Test current I_{test} (mA)	Diode capacitance C_d (pF) at f = 1 MHz; V_R = 0 V	Reverse current I_R (μA)		Non-repetitive peak reverse current I_{ZSM} at t_p = 100 μs; T_{amb} = 25 °C	Non-repetitive peak reverse current I_{ZSM} at t_p = 10 ms; T_{amb} = 25 °C
	Min	Max	Max	Min	Max		Max	Max	V_R (V)	Max (A)	Max (mA)
3V6	3.4	3.8	15	–3.5	–1.0	60	450	50	1.0	8.0	2000
3V9	3.7	4.1	15	–3.5	–1.0	60	450	10	1.0	8.0	1950
4V3	4.0	4.6	13	–2.7	0	50	450	5	1.0	8.0	1850
4V7	4.4	5.0	13	–2.0	0.7	45	300	3	1.0	8.0	1800
5V1	4.8	5.4	10	–0.5	2.2	45	300	3	2.0	8.0	1750
5V6	5.2	6.0	7	0	2.7	45	300	2	2.0	8.0	1700
6V2	5.8	6.6	4	0.6	3.6	35	200	2	3.0	7.0	1620
6V8	6.4	7.2	3.5	1.3	4.3	35	200	2	4.0	7.0	1550
7V5	7.0	7.9	3	2.5	5.5	35	150	1	4.5	5.0	1500
8V2	7.7	8.7	5	3.1	6.1	25	150	0.7	5.0	5.0	1400
9V1	8.5	9.6	5	3.8	7.2	25	150	0.7	6.5	4.0	1340
10	9.4	10.6	8	4.7	8.5	25	90	0.2	7.0	4.0	1200
11	10.4	11.6	10	5.3	9.3	20	85	0.2	7.7	3.0	1100
12	11.4	12.7	10	6.3	10.8	20	85	0.2	8.4	3.0	1000
13	12.4	14.1	10	7.4	12.0	20	80	0.2	9.1	3.0	900
15	13.8	15.6	15	8.9	13.6	15	75	0.05	10.5	2.5	760
16	15.3	17.1	15	10.7	15.4	15	75	0.05	11.0	1.75	700
18	16.8	19.1	20	11.8	17.1	15	70	0.05	12.5	1.75	600
20	18.8	21.2	24	13.6	19.1	10	60	0.05	14.0	1.75	540
22	20.8	23.3	25	16.6	22.1	10	60	0.05	15.5	1.5	500
24	22.8	25.6	30	18.3	24.3	10	55	0.05	17	1.5	450
27	25.1	28.9	40	20.1	27.5	8	50	0.05	19	1.2	400
30	28.0	32.0	45	22.4	32.0	8	50	0.05	21	1.2	380
33	31.0	35.0	45	24.8	35.0	8	45	0.05	23	1.0	350
36	34.0	38.0	50	27.2	39.9	8	45	0.05	25	0.9	320
39	37.0	41.0	60	29.6	43.0	6	45	0.05	27	0.8	296
43	40.0	46.0	75	34.0	48.3	6	40	0.05	30	0.7	270
47	44.0	50.0	100	37.4	52.5	4	40	0.05	33	0.6	246
51	48.0	54.0	125	40.8	56.5	4	40	0.05	36	0.5	226
56	52.0	60.0	150	46.8	63.0	4	40	0.05	39	0.4	208
62	58.0	66.0	175	52.2	72.5	4	35	0.05	43	0.4	186
68	64.0	72.0	200	60.5	81.0	4	35	0.05	48	0.35	171
75	70.0	80.0	225	66.5	88.0	4	35	0.05	53	0.3	161



(1) t_p = 10 µs; half sine wave; T_{amb} = 25 °C

(2) t_p = 10 ms; half sine wave; T_{amb} = 25 °C

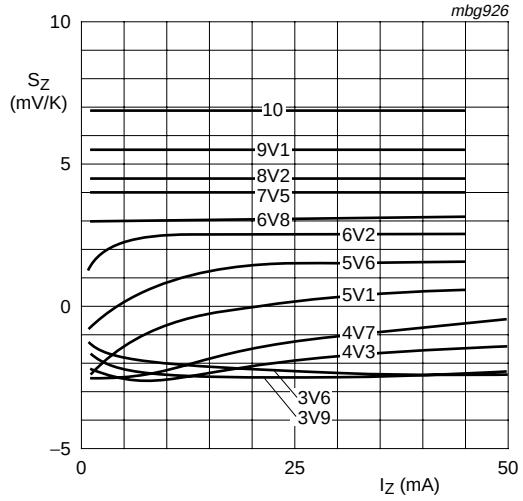
Fig 2. Non-repetitive peak reverse current as a function of the nominal working voltage



(1) T_j = 200 °C

(2) T_j = 25 °C

Fig 3. Forward current as a function of forward voltage; typical values

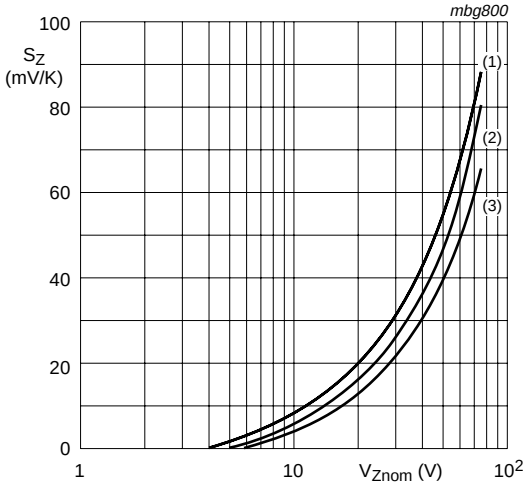


BZV85-C3V6 to BZV85-C10

T_j = 25 °C to 150 °C

For types above 7.5 V the temperature coefficient is independent of current; see Table 8.

Fig 4. Temperature coefficient as a function of working current; typical values



$I_Z = I_{test}$

T_j = 25 °C to 150 °C

(1) Maximum values

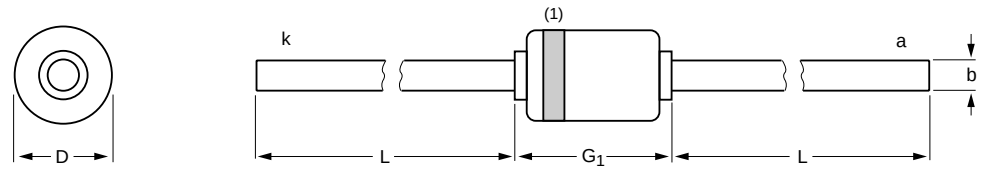
(2) Typical values

(3) Minimum values

Fig 5. Temperature coefficient as a function of working current; typical values

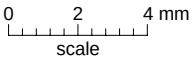
8. Package outline

Hermetically sealed glass package; axial leaded; 2 leads **SOD66**



Dimensions

Unit		b	D	G_1	L
mm	max	0.81	2.6	4.8	
	nom				
	min				25.4



Note
1. The marking band indicates the cathode.

sod066_po

Outline version	References				European projection	Issue date
	IEC	JEDEC	JEITA			
SOD66		DO-41				~~97-06-20~~ 09-10-09

Fig 6. Package outline SOD66 (DO-41)

9. Packing information

Table 9. Packing methods

The indicated -xxx are the last three digits of the 12NC ordering code.[1]

Type number	Package	Description	Packing quantity
			10000
BZV85 series[2]	SOD66	52 mm tape ammopack, axial	-133
		52 mm reel pack, axial	-113

[1] For further information and the availability of packing methods, see Section 11.

[2] The series consists of 33 types with nominal working voltages from 3.3 V to 75 V.

10. Revision history

Table 10. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
BZV85_SER_3	20091110	Product data sheet	-	BZV85_2
Modifications:	• The format of this data sheet has been redesigned to comply with the new identity guidelines of NXP Semiconductors. • Legal texts have been adapted to the new company name where appropriate. • Table 6: $R_{th(j-tp)}$ redefined to $R_{th(j-t)}$ thermal resistance from junction to tie-point • Figure 1: $R_{th(j-tp)}$ redefined to $R_{th(j-t)}$ thermal resistance from junction to tie-point • Table 8 “Characteristics per type”: I_{Ztest} redefined to I_{test} test current • Figure 6 “Package outline SOD66 (DO-41)”: updated			
BZV85_2	19990511	Product specification	-	BZV85_1
BZV85_1	19960426	Product specification	-	-

11. Legal information

11.1 Data sheet status

Document status[1][2]	Product status[3]	Definition
Objective [short] data sheet	Development	This document contains data from the objective specification for product development.
Preliminary [short] data sheet	Qualification	This document contains data from the preliminary specification.
Product [short] data sheet	Production	This document contains the product specification.

[1] Please consult the most recently issued document before initiating or completing a design.

[2] The term 'short data sheet' is explained in section "Definitions".

[3] The product status of device(s) described in this document may have changed since this document was published and may differ in case of multiple devices. The latest product status information is available on the Internet at URL http://www.nxp.com.

11.2 Definitions

Draft — The document is a draft version only. The content is still under internal review and subject to formal approval, which may result in modifications or additions. NXP Semiconductors does not give any representations or warranties as to the accuracy or completeness of information included herein and shall have no liability for the consequences of use of such information.

Short data sheet — A short data sheet is an extract from a full data sheet with the same product type number(s) and title. A short data sheet is intended for quick reference only and should not be relied upon to contain detailed and full information. For detailed and full information see the relevant full data sheet, which is available on request via the local NXP Semiconductors sales office. In case of any inconsistency or conflict with the short data sheet, the full data sheet shall prevail.

11.3 Disclaimers

General — Information in this document is believed to be accurate and reliable. However, NXP Semiconductors does not give any representations or warranties, expressed or implied, as to the accuracy or completeness of such information and shall have no liability for the consequences of use of such information.

Right to make changes — NXP Semiconductors reserves the right to make changes to information published in this document, including without limitation specifications and product descriptions, at any time and without notice. This document supersedes and replaces all information supplied prior to the publication hereof.

Suitability for use — NXP Semiconductors products are not designed, authorized or warranted to be suitable for use in medical, military, aircraft, space or life support equipment, nor in applications where failure or malfunction of an NXP Semiconductors product can reasonably be expected to result in personal injury, death or severe property or environmental damage. NXP Semiconductors accepts no liability for inclusion and/or use of NXP Semiconductors products in such equipment or applications and therefore such inclusion and/or use is at the customer's own risk.

Applications — Applications that are described herein for any of these products are for illustrative purposes only. NXP Semiconductors makes no representation or warranty that such applications will be suitable for the specified use without further testing or modification.

Limiting values — Stress above one or more limiting values (as defined in the Absolute Maximum Ratings System of IEC 60134) may cause permanent damage to the device. Limiting values are stress ratings only and operation of the device at these or any other conditions above those given in the Characteristics sections of this document is not implied. Exposure to limiting values for extended periods may affect device reliability.

Terms and conditions of sale — NXP Semiconductors products are sold subject to the general terms and conditions of commercial sale, as published at http://www.nxp.com/profile/terms, including those pertaining to warranty, intellectual property rights infringement and limitation of liability, unless explicitly otherwise agreed to in writing by NXP Semiconductors. In case of any inconsistency or conflict between information in this document and such terms and conditions, the latter will prevail.

No offer to sell or license — Nothing in this document may be interpreted or construed as an offer to sell products that is open for acceptance or the grant, conveyance or implication of any license under any copyrights, patents or other industrial or intellectual property rights.

Export control — This document as well as the item(s) described herein may be subject to export control regulations. Export might require a prior authorization from national authorities.

Quick reference data — The Quick reference data is an extract of the product data given in the Limiting values and Characteristics sections of this document, and as such is not complete, exhaustive or legally binding.

11.4 Trademarks

Notice: All referenced brands, product names, service names and trademarks are the property of their respective owners.

12. Contact information

For more information, please visit: **http://www.nxp.com**

For sales office addresses, please send an email to: **salesaddresses@nxp.com**

13. Contents

1	**Product profile**	**1**
1.1	General description	1
1.2	Features	1
1.3	Applications	1
1.4	Quick reference data	1
2	**Pinning information**	**2**
3	**Ordering information**	**2**
4	**Marking**	**2**
5	**Limiting values**	**3**
6	**Thermal characteristics**	**4**
7	**Characteristics**	**4**
8	**Package outline**	**7**
9	**Packing information**	**7**
10	**Revision history**	**8**
11	**Legal information**	**9**
11.1	Data sheet status	9
11.2	Definitions	9
11.3	Disclaimers	9
11.4	Trademarks	9
12	**Contact information**	**9**
13	**Contents**	**10**

For more information, please visit: http://www.nxp.com
For sales office addresses, please send an email to: salesaddresses@nxp.com

Date of release: 10 November 2009
Document identifier: BZV85_SER_3

Mouser Electronics

Authorized Distributor

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

Nexperia:

BZV85-C10,133 BZV85-C11,133 BZV85-C12,133 BZV85-C13,133 BZV85-C15,133 BZV85-C16,133 BZV85-C18,133 BZV85-C20,133 BZV85-C22,133 BZV85-C24,133 BZV85-C27,133 BZV85-C30,133 BZV85-C33,133 BZV85-C36,133 BZV85-C39,133 BZV85-C3V6,133 BZV85-C3V9,133 BZV85-C43,133 BZV85-C47,133 BZV85-C4V3,133 BZV85-C4V7,133 BZV85-C51,133 BZV85-C56,133 BZV85-C5V1,133 BZV85-C5V6,133 BZV85-C62,133 BZV85-C68,133 BZV85-C6V2,133 BZV85-C6V8,133 BZV85-C75,133 BZV85-C7V5,133 BZV85-C8V2,133 BZV85-C9V1,133 BZV85-C10,113 BZV85-C11,113 BZV85-C12,113 BZV85-C13,113 BZV85-C15,113 BZV85-C16,113 BZV85-C18,113 BZV85-C20,113 BZV85-C22,113 BZV85-C24,113 BZV85-C27,113 BZV85-C30,113 BZV85-C33,113 BZV85-C36,113 BZV85-C39,113 BZV85-C3V6,113 BZV85-C3V9,113 BZV85-C43,113 BZV85-C47,113 BZV85-C4V3,113 BZV85-C4V7,113 BZV85-C51,113 BZV85-C56,113 BZV85-C5V1,113 BZV85-C5V6,113 BZV85-C62,113 BZV85-C68,113 BZV85-C6V2,113 BZV85-C6V8,113 BZV85-C75,113 BZV85-C7V5,113 BZV85-C8V2,113 BZV85-C9V1,113