



BZX884S series

Voltage regulator diodes

Rev. 4 — 9 February 2021

Product data sheet

1. General description

General-purpose Zener diodes in an ultra small SOD882BD (DFN1006BD-2) leadless Surface Mounted Device (SMD) plastic package with side-wettable flanks.

2. Features and benefits

- Leadless ultra small plastic package with side-wettable flanks suitable for surface-mounted design
- Two tolerance series: $\pm 2\%$ and approximately $\pm 5\%$
- Wide working voltage range: nominal 2.4 V to 75 V (E24 range)

3. Applications

- General regulation functions

4. Quick reference data

Table 1. Quick reference data

$T_{amb} = 25\text{ }^{\circ}\text{C}$ unless otherwise specified.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_F	forward voltage	$I_F = 10\text{ mA}$ [1]	-	-	0.9	V
P_{tot}	total power dissipation	[2]	-	-	365	mW

[1] Pulse test: $t_p \leq 300\text{ }\mu\text{s}$; $\delta \leq 0.02$

[2] Device mounted on a FR4 PCB, single-sided 70 μm copper, tin-plated and standard footprint.

5. Pinning information

Table 2. Pinning

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	K	cathode[1]	 Transparent top view	 006aaa152
2	A	anode		

[1] The marking bar indicates the cathode.

6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
BZX884S series [1]	DFN1006BD-2	Leadless ultra small plastic package with side-wettable flanks (SWF); 2 terminals; 0.65 mm pitch; 1 mm x 0.6 mm x 0.47 mm body	SOD882BD

[1] The series includes 37 breakdown voltages with nominal working voltages from 2.4 V to 75 V and $\pm 2\%$ and approximately $\pm 5\%$ tolerances.

7. Marking

Table 4. Marking Codes

Type number	Mark. Code	Type number	Mark. Code	Type number	Mark. Code	Type number	Mark. Code
BZX884S-B2V4	2A	BZX884S-B15	2U	BZX884S-C2V4	4K	BZX884S-C15	4C
BZX884S-B2V7	2B	BZX884S-B16	2V	BZX884S-C2V7	4L	BZX884S-C16	4D
BZX884S-B3V0	2C	BZX884S-B18	2W	BZX884S-C3V0	4R	BZX884S-C18	4E
BZX884S-B3V3	2D	BZX884S-B20	2X	BZX884S-C3V3	4S	BZX884S-C20	4F
BZX884S-B3V6	2E	BZX884S-B22	2Y	BZX884S-C3V6	4T	BZX884S-C22	4G
BZX884S-B3V9	2F	BZX884S-B24	2Z	BZX884S-C3V9	4U	BZX884S-C24	4H
BZX884S-B4V3	2G	BZX884S-B27	3A	BZX884S-C4V3	4U	BZX884S-C27	4J
BZX884S-B4V7	2H	BZX884S-B30	3B	BZX884S-C4V7	4Y	BZX884S-C30	4M
BZX884S-B5V1	2J	BZX884S-B33	3C	BZX884S-C5V1	5B	BZX884S-C33	4N
BZX884S-B5V6	2K	BZX884S-B36	3D	BZX884S-C5V6	5C	BZX884S-C36	4P
BZX884S-B6V2	2L	BZX884S-B39	3E	BZX884S-C6V2	5F	BZX884S-C39	4Q
BZX884S-B6V8	N3	BZX884S-B43	3F	BZX884S-C6V8	5G	BZX884S-C43	4V
BZX884S-B7V5	2M	BZX884S-B47	3G	BZX884S-C7V5	5J	BZX884S-C47	4W
BZX884S-B8V2	2N	BZX884S-B51	3H	BZX884S-C8V2	5K	BZX884S-C51	4Z
BZX884S-B9V1	2P	BZX884S-B56	3J	BZX884S-C9V1	5L	BZX884S-C56	5A
BZX884S-B10	2Q	BZX884S-B62	3K	BZX884S-C10	3Y	BZX884S-C62	5D
BZX884S-B11	2R	BZX884S-B68	3L	BZX884S-C11	3Z	BZX884S-C68	5E
BZX884S-B12	2S	BZX884S-B75	3M	BZX884S-C12	4A	BZX884S-C75	5H
BZX884S-B13	2T	-	-	BZX884S-C13	4B	-	-

8. 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		-	200	mA
P_{tot}	total power dissipation	$T_{amb} = 25\text{ °C}$	[1]	365	mW
T_j	junction temperature		-	150	°C
T_{amb}	ambient temperature		-55	+150	°C
T_{stg}	storage temperature		-65	+150	°C

[1] Device mounted on a FR4 PCB, single-sided 70 µm copper, tin-plated and standard footprint.

9. Thermal characteristics

Table 6. Thermal characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$R_{th(j-a)}$	thermal resistance from junction to ambient	in free air	[1]	-	340	K/W

[1] Device mounted on a FR4 PCB, single-sided 70 µm copper, tin-plated and standard footprint.

10. Characteristics

Table 7. Characteristics

$T_j = 25\text{ °C}$ unless otherwise specified.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_F	forward voltage	$I_F = 10\text{ mA}$	[1]	-	0.9	V

[1] Pulse test: $t_p \leq 300\text{ }\mu\text{s}$; $\delta \leq 0.02$.

Table 8. Characteristics per type; BZX884S-B2V4 to BZX884S-C24

 $T_j = 25\text{ °C}$ unless otherwise specified.

BZX884S	Sel	Working voltage V_Z (V)		Differential resistance r_{dif} (Ω)				Reverse current I_R (μ A)		Temperature coefficient S_Z (mV/K)		Diode capacitance C_d (pF) [1]
		$I_Z = 5\text{ mA}$		$I_Z = 1\text{ mA}$		$I_Z = 5\text{ mA}$		Max	V_R (V)	$I_Z = 5\text{ mA}$		
		Min	Max	Typ	Max	Typ	Max			Min	Max	
2V4	B	2.35	2.45	275	600	70	100	50	1.0	-3.5	0.0	260
	C	2.20	2.60									
2V7	B	2.65	2.75	300	600	75	100	20	1.0	-3.5	0.0	260
	C	2.50	2.90									
3V0	B	2.94	3.06	325	600	80	95	10	1.0	-3.5	0.0	260
	C	2.80	3.20									
3V3	B	3.23	3.37	350	600	85	95	5	1.0	-3.5	0.0	260
	C	3.10	3.50									
3V6	B	3.53	3.67	375	600	85	90	5	1.0	-3.5	0.0	260
	C	3.40	3.80									
3V9	B	3.82	3.98	400	600	85	90	3	1.0	-3.5	0.0	260
	C	3.70	4.10									
4V3	B	4.21	4.39	410	600	80	90	3	1.0	-3.5	0.0	260
	C	4.00	4.60									
4V7	B	4.61	4.79	425	500	50	80	3	2.0	-3.5	0.2	170
	C	4.40	5.00									
5V1	B	5.00	5.20	400	480	40	60	2	2.0	-2.7	1.2	170
	C	4.80	5.40									
5V6	B	5.49	5.71	80	400	15	40	1	2.0	-2.0	2.5	170
	C	5.20	6.00									
6V2	B	6.08	6.32	40	150	6	10	3	4.0	0.4	3.7	120
	C	5.80	6.60									
6V8	B	6.66	6.94	30	80	6	15	2	4.0	1.2	4.5	120
	C	6.40	7.20									
7V5	B	7.35	7.65	30	80	6	15	1	5.0	2.5	5.3	150
	C	7.00	7.90									
8V2	B	8.04	8.36	40	80	6	15	0.7	5.0	3.2	6.2	150
	C	7.70	8.70									
9V1	B	8.92	9.28	40	100	6	15	0.5	6.0	3.8	7.0	150
	C	8.50	9.60									
10	B	9.80	10.20	50	150	8	20	0.2	7.0	4.5	8.0	90
	C	9.40	10.60									
11	B	10.80	11.20	50	150	10	20	0.1	8.0	5.4	9.0	85
	C	10.40	11.60									
12	B	11.80	12.20	50	150	10	25	0.1	8.0	6.0	10.0	85
	C	11.40	12.70									
13	B	12.70	13.30	50	170	10	30	0.1	8.0	7.0	11.0	80
	C	12.40	14.10									

BZX884S	Sel	Working voltage V_Z (V)		Differential resistance r_{dif} (Ω)				Reverse current I_R (μA)		Temperature coefficient S_Z (mV/K)		Diode capacitance C_d (pF) [1]
				$I_Z = 5$ mA		$I_Z = 1$ mA				$I_Z = 5$ mA		
		Min	Max	Typ	Max	Typ	Max	Max	V_R (V)	Min	Max	
15	B	14.70	15.30	50	200	10	30	0.05	10.5	9.2	13.0	75
	C	13.80	15.60									
16	B	15.70	16.30	50	200	10	40	0.05	11.2	10.4	14.0	75
	C	15.30	17.10									
18	B	17.60	18.40	50	225	10	45	0.05	12.6	12.4	16.0	70
	C	16.80	19.10									
20	B	19.60	20.40	60	225	15	55	0.05	14.0	14.4	18.0	60
	C	18.80	21.20									
22	B	21.60	22.40	60	250	20	55	0.05	15.4	16.4	20.0	60
	C	20.80	23.30									
24	B	23.50	24.50	60	250	25	70	0.05	16.8	18.4	22.0	55
	C	22.80	25.60									

[1] $f = 1$ MHz; $V_R = 0$ V

Table 9. Characteristics per type; BZX884S-B27 to BZX884S-C75

 $T_j = 25\text{ °C}$ unless otherwise specified.

BZX884S	Sel	Working voltage V_Z (V)		Differential resistance r_{dif} (Ω)				Reverse current I_R (μ A)		Temperature coefficient S_Z (mV/K)		Diode capacitance C_d (pF) [1]
		$I_Z = 2\text{ mA}$		$I_Z = 0.5\text{ mA}$		$I_Z = 2\text{ mA}$		Max	V_R (V)	$I_Z = 2\text{ mA}$		
		Min	Max	Typ	Max	Typ	Max			Min	Max	
27	B	26.50	27.50	65	300	25	80	0.05	18.9	21.4	25.3	50
	C	25.10	28.90									
30	B	29.40	30.60	70	300	30	80	0.05	21.0	24.4	29.4	50
	C	28.00	32.00									
33	B	32.30	33.70	75	325	35	80	0.05	23.1	27.4	33.4	45
	C	31.00	35.00									
36	B	35.30	36.70	80	350	35	90	0.05	25.2	30.4	37.4	45
	C	34.00	38.00									
39	B	38.20	39.80	80	350	40	130	0.05	27.3	33.4	41.2	45
	C	37.00	41.00									
43	B	42.10	43.90	85	375	45	150	0.05	30.1	37.6	46.6	40
	C	40.00	46.00									
47	B	46.10	47.90	85	375	50	170	0.05	32.9	42	51.8	40
	C	44.00	50.00									
51	B	50.00	52.00	90	400	60	180	0.05	35.7	46.6	57.2	40
	C	48.00	54.00									
56	B	54.90	57.10	100	425	70	200	0.05	39.2	52.2	63.8	40
	C	52.00	60.00									
62	B	60.80	63.20	120	450	80	215	0.05	43.4	58.8	71.6	35
	C	58.00	66.00									
68	B	66.60	69.40	150	475	90	240	0.05	47.6	65.6	79.8	35
	C	64.00	72.00									
75	B	73.50	76.50	170	500	95	255	0.05	52.5	73.4	88.6	35
	C	70.00	79.00									

[1] $f = 1\text{ MHz}$; $V_R = 0\text{ V}$

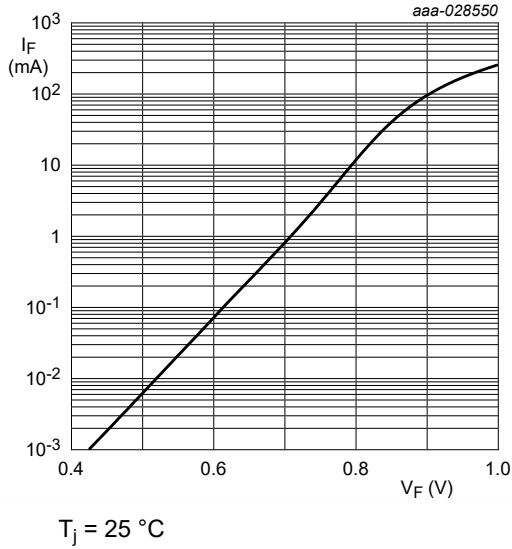


Fig. 1. Forward current as a function of forward voltage; typical values (BZX884S-B/C2V4)

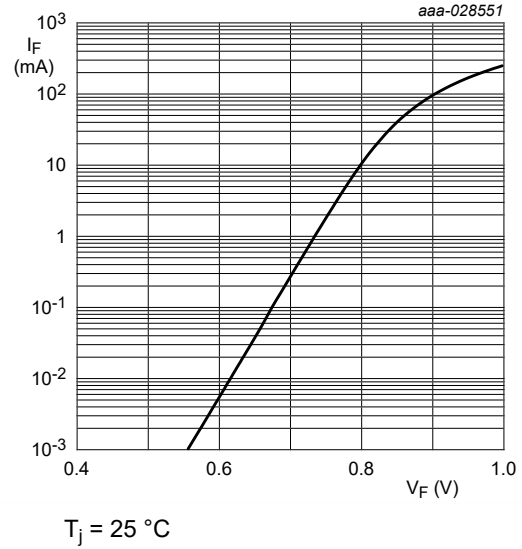


Fig. 2. Forward current as a function of forward voltage; typical values (BZX884S-B/C6V8)

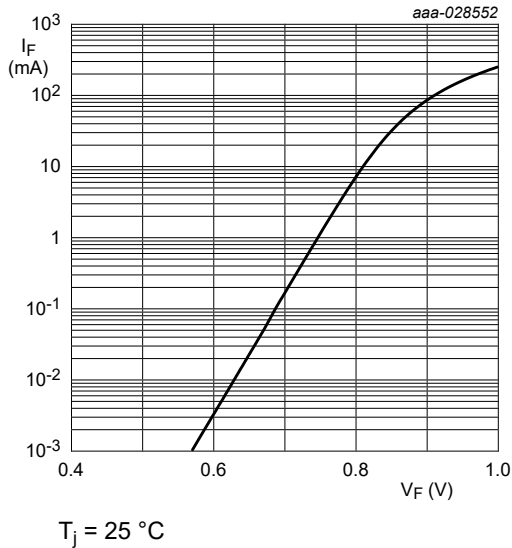


Fig. 3. Forward current as a function of forward voltage; typical values (BZX884S-B/C7V5)

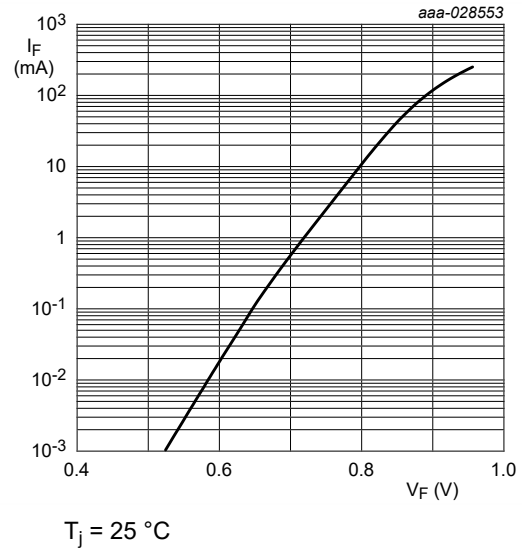


Fig. 4. Forward current as a function of forward voltage; typical values (BZX884S-B/C75)

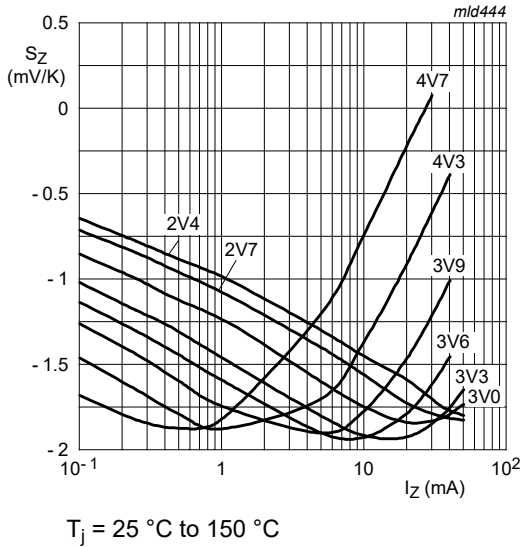


Fig. 5. Temperature coefficient as a function of working current; typical values (BZX884S-B/C2V4 to B/C4V7)

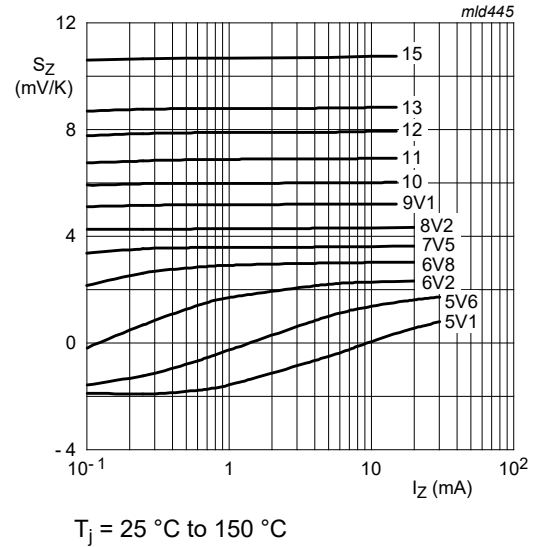


Fig. 6. Temperature coefficient as a function of working current; typical values (BZX884S-B/C5V1 to B/C15)

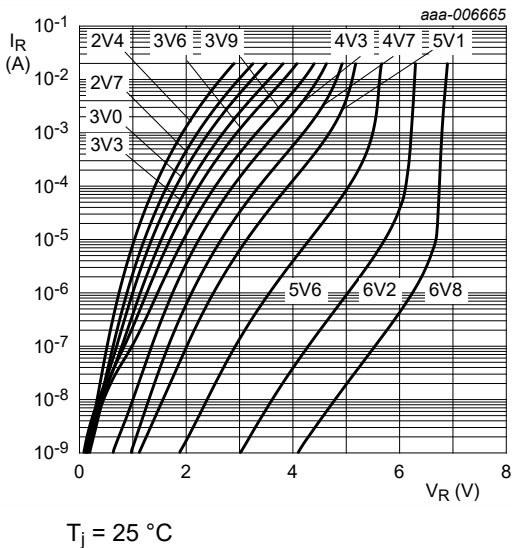


Fig. 7. Reverse current as a function of reverse voltage; typical values (BZX884S-B/C2V4 to BZX884S-B/C6V8)

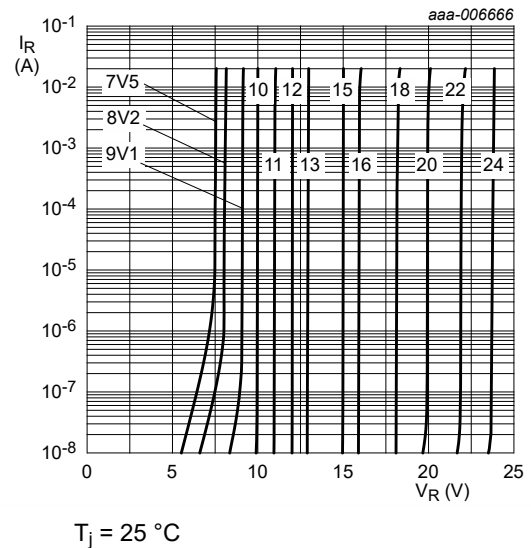
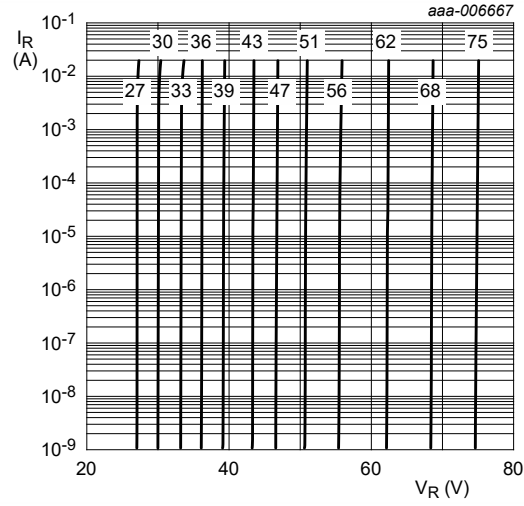


Fig. 8. Reverse current as a function of reverse voltage; typical values (BZX884S-B/C7V5 to BZX884S-B/C24)



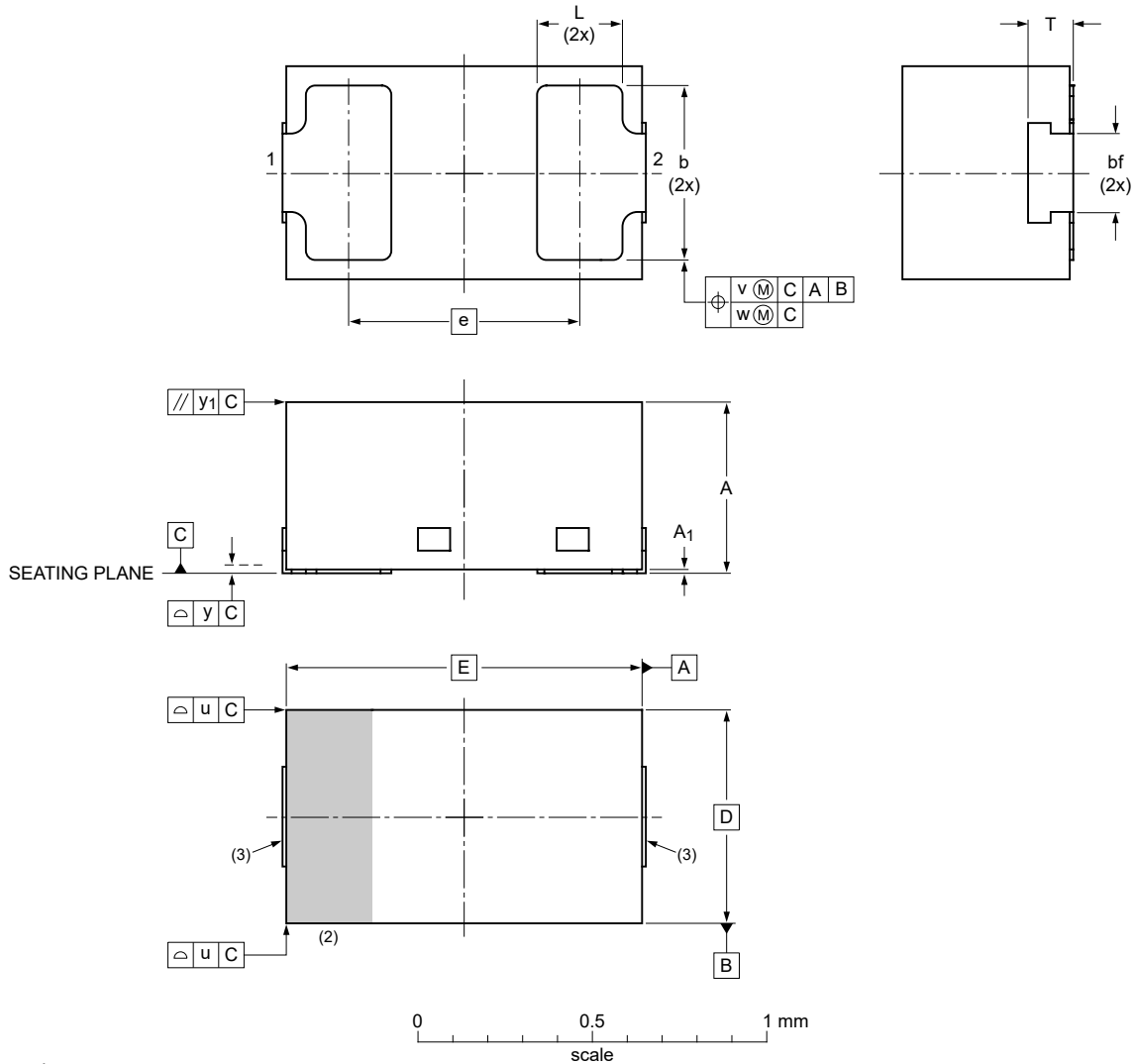
$T_j = 25\text{ }^\circ\text{C}$

Fig. 9. Reverse current as a function of reverse voltage; typical values (BZX884S-B/C27 to BZX884S-B/C75)

11. Package outline

DFN1006BD-2 Leadless ultra small plastic package with side-wettable flanks (SWF); 2 terminals; 0.65 mm pitch; 1 mm x 0.6 mm x 0.47 mm body

SOD882BD



Dimensions

Unit	A ⁽¹⁾	A ₁	bf ⁽¹⁾	b	D	E	e	L	T ⁽¹⁾	u	v	w	y	y ₁
max	0.50	0.04		0.55				0.30	0.22					
mm nom	0.47			0.50	0.60	1.00	0.65	0.25	0.16	0.05	0.10	0.05	0.05	0.05
min	0.44		0.20	0.45				0.22	0.10					

Note

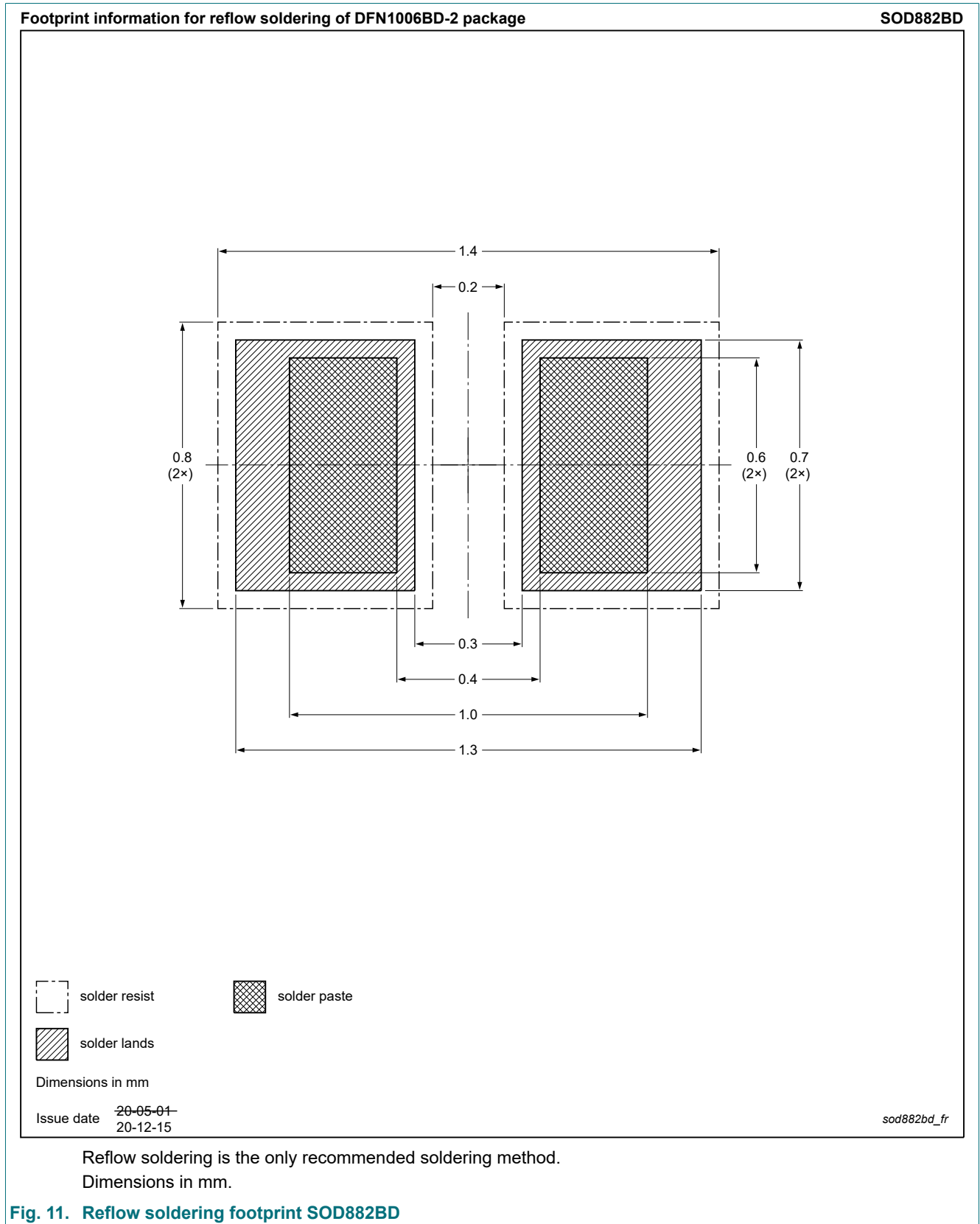
1. Dimension including plating thickness.
2. The marking bar indicates the cathode.
3. Solderable lead end, protrusion max. 0.02 mm.

sod882bd_po

Outline version	References				European projection	Issue date
	IEC	JEDEC	JEITA			
SOD882BD		MO-343AA				20-06-22 20-06-23

Fig. 10. Package outline SOD882BD

12. Soldering



13. Revision history

Table 10. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
BZX884S_SER v.4	20210209	Product data sheet	-	BZX884S_SER v.3
	<ul style="list-style-type: none"> Changed to non-automotive. Please refer to the automotive product(s) with -Q. 			
BZX884S_SER v.3	20210210	Product data sheet	-	BZX884S_SER v.2
Modifications:	<ul style="list-style-type: none"> Diode capacitance improved: BZX884S-B2V4 to BZX884S-C6V8 Data sheet changed to non-automotive 			
BZX884S_SER v.2	20201215	Product data sheet	-	BZX884S_SER v.1
BZX884S_SER v.1	20200713	Product data sheet	-	-

14. Legal information

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 <https://www.nexperia.com>.

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. Nexperia 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 Nexperia sales office. In case of any inconsistency or conflict with the short data sheet, the full data sheet shall prevail.

Product specification — The information and data provided in a Product data sheet shall define the specification of the product as agreed between Nexperia and its customer, unless Nexperia and customer have explicitly agreed otherwise in writing. In no event however, shall an agreement be valid in which the Nexperia product is deemed to offer functions and qualities beyond those described in the Product data sheet.

Disclaimers

Limited warranty and liability — Information in this document is believed to be accurate and reliable. However, Nexperia 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. Nexperia takes no responsibility for the content in this document if provided by an information source outside of Nexperia.

In no event shall Nexperia be liable for any indirect, incidental, punitive, special or consequential damages (including - without limitation - lost profits, lost savings, business interruption, costs related to the removal or replacement of any products or rework charges) whether or not such damages are based on tort (including negligence), warranty, breach of contract or any other legal theory.

Notwithstanding any damages that customer might incur for any reason whatsoever, Nexperia's aggregate and cumulative liability towards customer for the products described herein shall be limited in accordance with the Terms and conditions of commercial sale of Nexperia.

Right to make changes — Nexperia 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 — Nexperia products are not designed, authorized or warranted to be suitable for use in life support, life-critical or safety-critical systems or equipment, nor in applications where failure or malfunction of an Nexperia product can reasonably be expected to result in personal

injury, death or severe property or environmental damage. Nexperia and its suppliers accept no liability for inclusion and/or use of Nexperia products in such equipment or applications and therefore such inclusion and/or use is at the customer's own risk.

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.

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

Customers are responsible for the design and operation of their applications and products using Nexperia products, and Nexperia accepts no liability for any assistance with applications or customer product design. It is customer's sole responsibility to determine whether the Nexperia product is suitable and fit for the customer's applications and products planned, as well as for the planned application and use of customer's third party customer(s). Customers should provide appropriate design and operating safeguards to minimize the risks associated with their applications and products.

Nexperia does not accept any liability related to any default, damage, costs or problem which is based on any weakness or default in the customer's applications or products, or the application or use by customer's third party customer(s). Customer is responsible for doing all necessary testing for the customer's applications and products using Nexperia products in order to avoid a default of the applications and the products or of the application or use by customer's third party customer(s). Nexperia does not accept any liability in this respect.

Limiting values — Stress above one or more limiting values (as defined in the Absolute Maximum Ratings System of IEC 60134) will cause permanent damage to the device. Limiting values are stress ratings only and (proper) operation of the device at these or any other conditions above those given in the Recommended operating conditions section (if present) or the Characteristics sections of this document is not warranted. Constant or repeated exposure to limiting values will permanently and irreversibly affect the quality and reliability of the device.

Terms and conditions of commercial sale — Nexperia products are sold subject to the general terms and conditions of commercial sale, as published at <http://www.nexperia.com/profile/terms>, unless otherwise agreed in a valid written individual agreement. In case an individual agreement is concluded only the terms and conditions of the respective agreement shall apply. Nexperia hereby expressly objects to applying the customer's general terms and conditions with regard to the purchase of Nexperia products by customer.

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 competent authorities.

Non-automotive qualified products — Unless this data sheet expressly states that this specific Nexperia product is automotive qualified, the product is not suitable for automotive use. It is neither qualified nor tested in accordance with automotive testing or application requirements. Nexperia accepts no liability for inclusion and/or use of non-automotive qualified products in automotive equipment or applications.

In the event that customer uses the product for design-in and use in automotive applications to automotive specifications and standards, customer (a) shall use the product without Nexperia's warranty of the product for such automotive applications, use and specifications, and (b) whenever customer uses the product for automotive applications beyond Nexperia's specifications such use shall be solely at customer's own risk, and (c) customer fully indemnifies Nexperia for any liability, damages or failed product claims resulting from customer design and use of the product for automotive applications beyond Nexperia's standard warranty and Nexperia's product specifications.

Translations — A non-English (translated) version of a document is for reference only. The English version shall prevail in case of any discrepancy between the translated and English versions.

Trademarks

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

Contents

1. General description.....	1
2. Features and benefits.....	1
3. Applications.....	1
4. Quick reference data.....	1
5. Pinning information.....	1
6. Ordering information.....	2
7. Marking.....	2
8. Limiting values.....	3
9. Thermal characteristics.....	3
10. Characteristics.....	3
11. Package outline.....	10
12. Soldering.....	11
13. Revision history.....	12
14. Legal information.....	13

© Nexperia B.V. 2021. All rights reserved

For more information, please visit: <http://www.nexperia.com>

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

Date of release: 9 February 2021
