BZX884 series

Voltage regulator diodes

Rev. 5 — 14 December 2020 **Product data sheet**

1. General description

General-purpose Zener diodes in an SOD882 (DFN1006-2) leadless ultra small Surface-Mounted Device (SMD) plastic package.

2. Features and benefits

- Total power dissipation: $P_{tot} \leq 250$ mW
- Wide working voltage range: nominal 2.4 V to 75 V (E24 range)
- Two tolerance series: ± 2 % and ± 5 %
- Leadless ultra small plastic package suitable for surface-mounted design
- AEC-Q101 qualified

3. Applications

- General regulation functions
- ElectroStatic Discharge (ESD) ultra high-speed switching
- High-frequency applications

4. Quick reference data

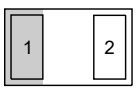
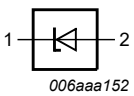
Table 1. Quick reference data

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
V_F	forward voltage	I_F = 10 mA	[1]	-	-	0.9	V
P_{tot}	total power dissipation	$T_{amb} \leq 25$ °C	[2]	-	-	250	mW

[1] Pulse test: $t_p \leq 300$ µs; $\delta \leq 0.02$.
[2] Device mounted on an FR4 Printed-Circuit Board (PCB), single-sided 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
BZX884-B2V4 to BZX884-C75[1]	DFN1006-2	leadless ultra small plastic package; 2 terminals; body 1.0 x 0.6 x 0.5 mm	SOD882

[1] The series consists of 74 types with nominal working voltages from 2.4 V to 75 V.

7. Marking

Table 4. Marking Codes

Type number	Mark. Code	Type number	Mark. Code	Type number	Mark. Code	Type number	Mark. Code
BZX884-B2V4	A1	BZX884-B15	AL	BZX884-C2V4	B1	BZX884-C15	BL
BZX884-B2V7	A2	BZX884-B16	C1	BZX884-C2V7	B2	BZX884-C16	D1
BZX884-B3V0	A3	BZX884-B18	C2	BZX884-C3V0	B3	BZX884-C18	D2
BZX884-B3V3	A4	BZX884-B20	C3	BZX884-C3V3	B4	BZX884-C20	D3
BZX884-B3V6	A5	BZX884-B22	C4	BZX884-C3V6	B5	BZX884-C22	D4
BZX884-B3V9	A6	BZX884-B24	C5	BZX884-C3V9	B6	BZX884-C24	D5
BZX884-B4V3	A7	BZX884-B27	C6	BZX884-C4V3	B7	BZX884-C27	D6
BZX884-B4V7	A8	BZX884-B30	C7	BZX884-C4V7	B8	BZX884-C30	D7
BZX884-B5V1	A9	BZX884-B33	C8	BZX884-C5V1	B9	BZX884-C33	D8
BZX884-B5V6	AA	BZX884-B36	C9	BZX884-C5V6	BA	BZX884-C36	D9
BZX884-B6V2	AB	BZX884-B39	CA	BZX884-C6V2	BB	BZX884-C39	DA
BZX884-B6V8	AC	BZX884-B43	CB	BZX884-C6V8	BC	BZX884-C43	DB
BZX884-B7V5	AD	BZX884-B47	CC	BZX884-C7V5	BD	BZX884-C47	DC
BZX884-B8V2	AE	BZX884-B51	CD	BZX884-C8V2	BE	BZX884-C51	DD
BZX884-B9V1	AF	BZX884-B56	CE	BZX884-C9V1	BF	BZX884-C56	DE
BZX884-B10	AG	BZX884-B62	CF	BZX884-C10	BG	BZX884-C62	DF
BZX884-B11	AH	BZX884-B68	CG	BZX884-C11	BH	BZX884-C68	DG
BZX884-B12	AJ	BZX884-B75	CH	BZX884-C12	BJ	BZX884-C75	DH
BZX884-B13	AK	-	-	BZX884-C13	BK	-	-

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
I_{ZSM}	non-repetitive peak reverse current	t_p = 100 µs; square wave; T_{amb} = 25 °C; prior to surge		see Table 7		
P_{tot}	total power dissipation	T_{amb} = 25 °C	[1]	-	250	mW
T_j	junction temperature			-	150	°C
T_{amb}	ambient temperature			−55	+150	°C
T_{stg}	storage temperature			−65	+150	°C

[1] Refer to SOD882 standard mounting conditions (footprint), FR4 with 60 µ copper strip line.

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]	-	-	500	K/W

[1] Refer to SOD882 standard mounting conditions (footprint), FR4 with 60 µm copper strip line.

10. Characteristics

Table 7. Electrical characteristics

T_j = 25 °C unless otherwise specified.

Symbol	Parameter	Conditions	Max	Unit
V_F	forward voltage	I_F = 10 mA	0.9	V
I_R	reverse current			
	BZX884-B/C2V4	V_R = 1 V	50	µA
	BZX884-B/C2V7	V_R = 1 V	20	µA
	BZX884-B/C3V0	V_R = 1 V	10	µA
	BZX884-B/C3V3	V_R = 1 V	5	µA
	BZX884-B/C3V6	V_R = 1 V	5	µA
	BZX884-B/C3V9	V_R = 1 V	3	µA
	BZX884-B/C4V3	V_R = 1 V	3	µA
	BZX884-B/C4V7	V_R = 2 V	3	µA
	BZX884-B/C5V1	V_R = 2 V	2	µA
	BZX884-B/C5V6	V_R = 2 V	1	µA
	BZX884-B/C6V2	V_R = 4 V	3	µA
	BZX884-B/C6V8	V_R = 4 V	2	µA
	BZX884-B/C7V5	V_R = 5 V	1	µA
	BZX884-B/C8V2	V_R = 5 V	700	nA
	BZX884-B/C9V1	V_R = 6 V	500	nA
	BZX884-B/C10	V_R = 7 V	200	nA
	BZX884-B/C11	V_R = 8 V	100	nA
	BZX884-B/C12	V_R = 8 V	100	nA
	BZX884-B/C13	V_R = 8 V	100	nA
	BZX884-B/C15 to 75	V_R = 0.7 V_{Znom}	50	nA

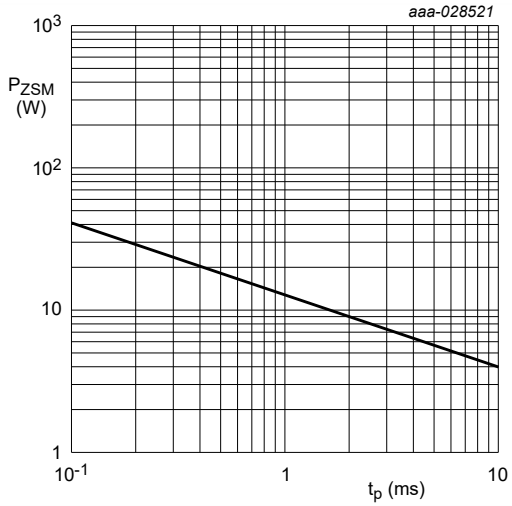
Table 8. Electrical characteristics per type

BZX884-B or C	Working voltage V_Z (V); at I_Z = 5 mA				Differential resistance r_{diff} (Ω);				Temperature coefficient S_Z (mV/K); I_{Ztest} = 5 mA	Diode capacit. C_d (pF)[1]	Non-repetitive peak reverse current I_{ZSM} (A) at t_p = 100 µs; T_{amb} = 25°C
	Tol. ± 2% (B)		Tol. ± 5% (C)		at I_{Ztest} = 1 mA		at I_{Ztest} = 5 mA				
	Min	Max	Min	Max	Typ	Max	Typ	Max	Typ	Max	Max
2V4	2.35	2.45	2.28	2.52	275	400	70	100	-1.3	450	6
2V7	2.65	2.75	2.57	2.84	300	450	75	100	-1.4	440	6
3V0	2.94	3.06	2.85	3.15	325	500	80	95	-1.6	425	6
3V3	3.23	3.37	3.14	3.47	350	500	85	95	-1.8	410	6
3V6	3.53	3.67	3.42	3.78	375	500	85	90	-1.9	390	6
3V9	3.82	3.98	3.71	4.10	400	500	85	90	-1.9	370	6
4V3	4.21	4.39	4.09	4.52	410	600	80	90	-1.7	350	6
4V7	4.61	4.79	4.47	4.94	425	500	50	80	-1.2	320	6
5V1	5.00	5.20	4.85	5.36	400	480	40	60	-0.5	300	6
5V6	5.49	5.71	5.32	5.88	80	400	15	40	1.0	275	6
6V2	6.08	6.32	5.89	6.51	40	150	6	10	2.2	250	6
6V8	6.66	6.94	6.46	7.14	30	80	6	15	3.0	215	6
7V5	7.35	7.65	7.13	7.88	15	80	2	10	3.6	170	4
8V2	8.04	8.36	7.79	8.61	20	80	2	10	4.3	150	4
9V1	8.92	9.28	8.65	9.56	20	100	2	10	5.2	120	3
10	9.80	10.20	9.50	10.50	20	150	2	10	6.0	110	3
11	10.78	11.22	10.45	11.55	25	150	2	10	6.9	110	2.5
12	11.76	12.24	11.40	12.60	25	150	2	10	7.9	105	2.5
13	12.74	13.26	12.35	13.65	25	170	2	10	8.8	105	2.5
15	14.70	15.30	14.25	15.75	25	200	3	15	10.7	100	2
16	15.68	16.32	15.20	16.80	50	200	10	40	12.4	90	1.5
18	17.64	18.36	17.10	18.90	50	225	10	45	14.4	80	1.5
20	19.60	20.40	19.00	21.00	60	225	15	55	16.4	70	1.5
22	21.56	22.44	20.90	23.10	60	250	20	55	18.4	60	1.25
24	23.52	24.48	22.80	25.20	60	250	25	70	20.4	55	1.25

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

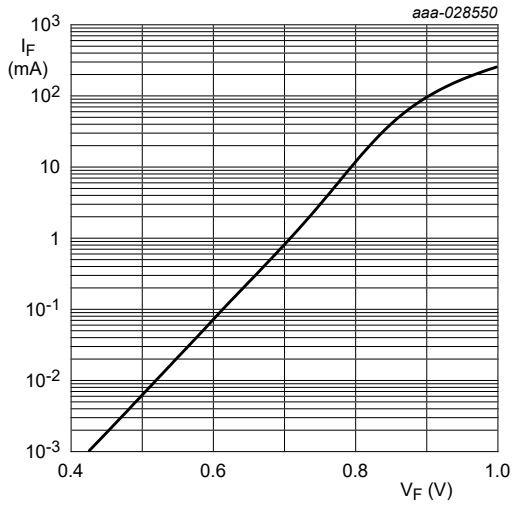
BZX884-B or C	Working voltage V_Z (V); at I_Z = 2 mA				Differential resistance r_{diff} (Ω);				Temperature coefficient S_Z (mV/K); I_{Ztest} = 2 mA	Diode capacit. C_d (pF)[1]	Non-repetitive peak reverse current I_{ZSM} (A) at t_p = 100 µs; T_{amb} = 25°C
	Tol. ± 2% (B)		Tol. ± 5% (C)		at I_{Ztest} = 0.5 mA		at I_{Ztest} = 2 mA				
	Min	Max	Min	Max	Typ	Max	Typ	Max	Typ	Max	Max
27	26.46	27.57	25.65	28.35	65	300	25	80	23.4	50	1.0
30	29.40	30.60	28.50	31.50	70	300	30	80	26.6	50	1.0
33	32.34	33.66	31.35	34.65	75	325	35	80	29.7	45	0.9
36	35.28	36.72	34.20	37.80	80	350	35	90	33.0	45	0.8
39	38.22	39.78	37.05	40.95	80	350	40	130	36.4	45	0.7
43	42.14	43.86	40.85	45.15	85	375	45	150	41.2	40	0.6
47	46.06	47.94	44.65	49.35	85	375	50	170	46.1	40	0.5
51	49.98	52.02	48.45	53.55	90	400	60	180	51	40	0.4
56	54.88	57.12	53.20	58.80	100	425	70	200	57.0	40	0.3
62	60.76	63.24	58.90	65.10	120	450	80	215	64.4	35	0.3
68	66.64	69.36	64.60	71.40	150	475	90	240	71.7	35	0.25
75	73.50	76.50	71.25	78.75	170	500	95	255	80.2	35	0.2

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



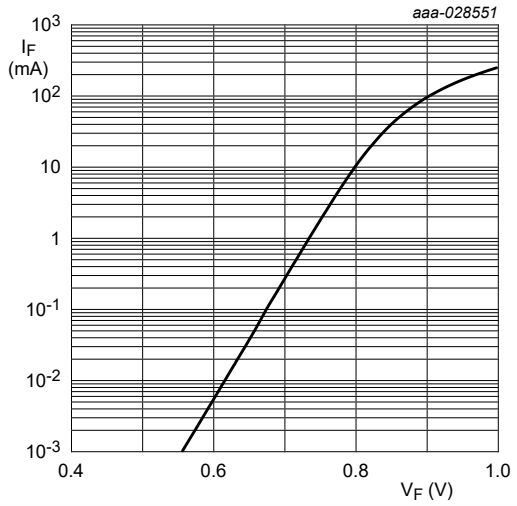
T_j = 25 °C (before surge)

Fig. 1. Non-repetitive peak reverse power dissipation as a funtion of pulse duration, maximum values



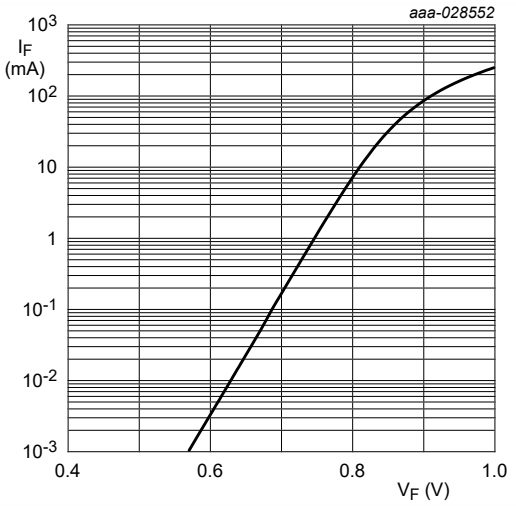
T_j = 25 °C

Fig. 2. BZX884-B/C2V4: Forward current as a function of forward voltage; typical values



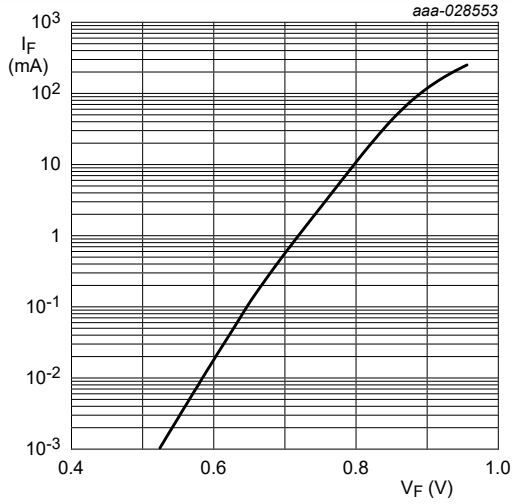
T_j = 25 °C

Fig. 3. BZX884-B/C6V8: Forward current as a function of forward voltage; typical values



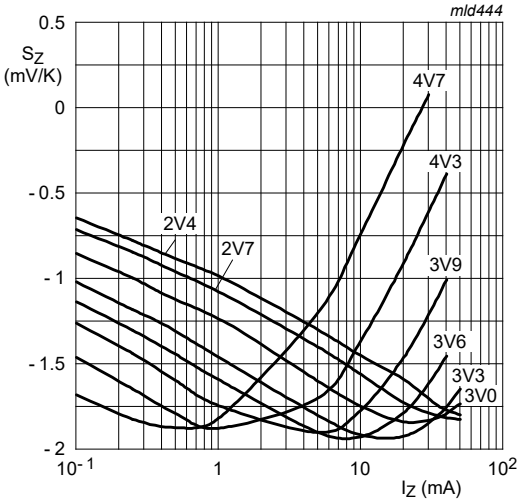
T_j = 25 °C

Fig. 4. BZX884-B/C7V5: Forward current as a function of forward voltage; typical values



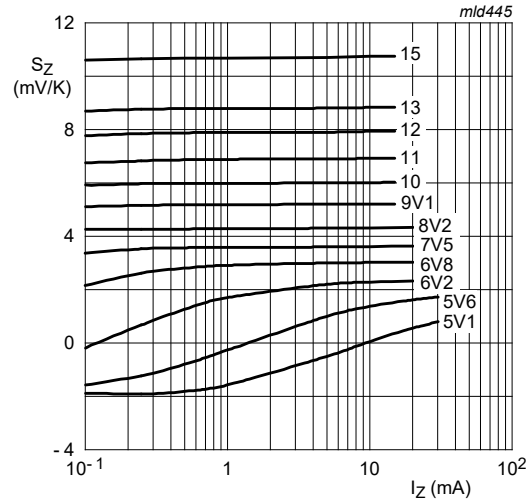
T_j = 25 °C

Fig. 5. BZX884-B/C75: Forward current as a function of forward voltage; typical values



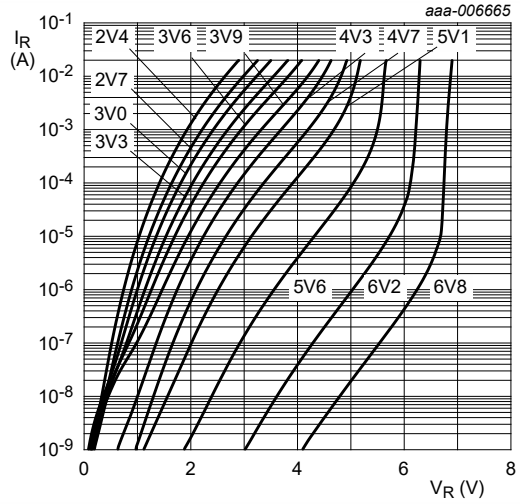
T_j = 25 °C to 150 °C

Fig. 6. BZX884-B/C2V4 to B/C4V7: Temperature coefficient as a function of working current; typical values



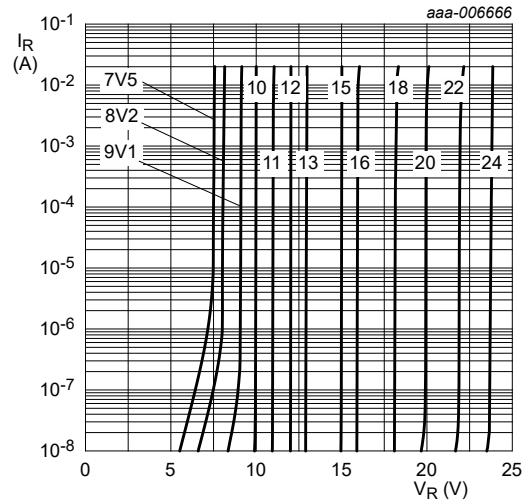
T_j = 25 °C to 150 °C

Fig. 7. BZX884-B/C5V1 to B/C15: Temperature coefficient as a function of working current; typical values



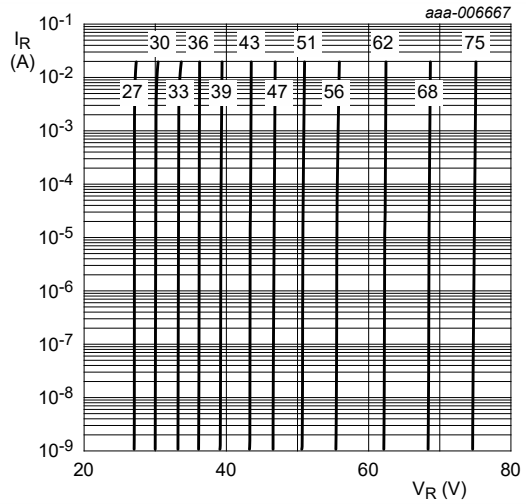
T_j = 25 °C

Fig. 8. BZX884-B/C2V4 to B/C6V8: Reverse current as a function of reverse voltage; typical values



T_j = 25 °C

Fig. 9. BZX884-B/C7V5 to B/C24: Reverse current as a function of reverse voltage; typical values

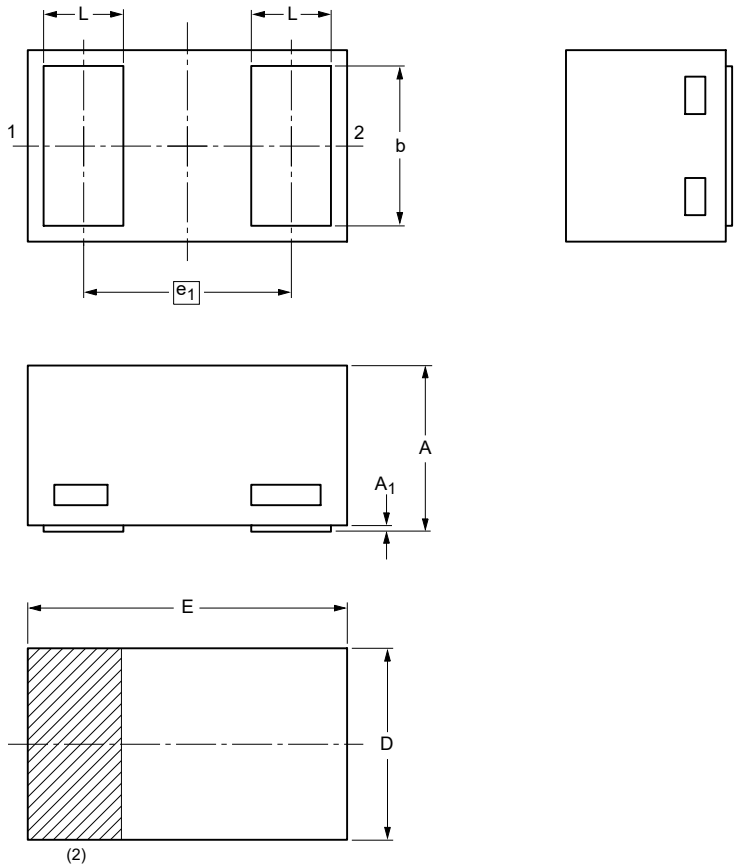


T_j = 25 °C

Fig. 10. BZX884-B/C27 to B/C75: Reverse current as a function of reverse voltage; typical values

11. Package outline

DFN1006-2: Leadless ultra small plastic package; 2 terminals; body 1.0 x 0.6 x 0.5 mm **SOD882**



0 0.5 1 mm

scale

Dimensions (mm are the original dimensions)

Unit		A(1)	A_1	b	D	E	e_1	L
mm	max	0.50	0.03	0.55	0.62	1.02		0.30
	nom						0.65	
	min	0.46		0.47	0.55	0.95		0.22

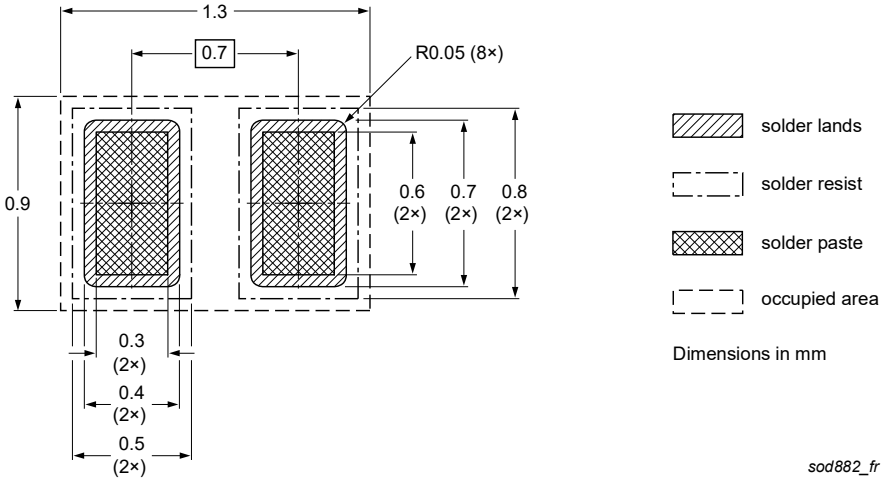
Note
1. Including plating thickness
2. The marking bar indicates the cathode (if applicable)

sod882_po

Outline version	References				European projection	Issue date
	IEC	JEDEC	JEITA			
SOD882						~~14-08-26~~ 14-08-27

Fig. 11. Package outline SOD882

12. Soldering



Reflow soldering is the only recommended soldering method.
Dimensions in mm.

Fig. 12. Reflow soldering footprint SOD882

13. Revision history

Table 9. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
BZX884_BC_SER v.5	20201214	Product data sheet	-	BZX884_SER v.4
Modifications:	• Characteristics: Working voltage min. value at tolerance ± 2 % for BZX884B/C4V3 corrected • Characteristics: Graphs and figures aligned			
BZX884_SER v.4	20180323	Product data sheet	-	BZX884_SER v.3
BZX884_SER v.3	20171114	Product data sheet	-	BZX884_SER v.2

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.

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