BZX884-Q series

Voltage regulator diodes

Rev. 1 — 31 July 2024 **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
- Qualified according to AEC-Q101 and recommended for use in automotive applications

3. Applications

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

4. Quick reference data

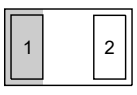
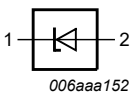
Table 1. Quick reference data

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.

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6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
BZX884-B2V4-Q to BZX884-C75-Q[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.

7. Marking

Table 4. Marking Codes

Type number	Mark. Code	Type number	Mark. Code	Type number	Mark. Code	Type number	Mark. Code
BZX884-B2V4-Q	A1	BZX884-B15-Q	AL	BZX884-C2V4-Q	B1	BZX884-C15-Q	BL
BZX884-B2V7-Q	A2	BZX884-B16-Q	C1	BZX884-C2V7-Q	B2	BZX884-C16-Q	D1
BZX884-B3V0-Q	A3	BZX884-B18-Q	C2	BZX884-C3V0-Q	B3	BZX884-C18-Q	D2
BZX884-B3V3-Q	A4	BZX884-B20-Q	C3	BZX884-C3V3-Q	B4	BZX884-C20-Q	D3
BZX884-B3V6-Q	A5	BZX884-B22-Q	C4	BZX884-C3V6-Q	B5	BZX884-C22-Q	D4
BZX884-B3V9-Q	A6	BZX884-B24-Q	C5	BZX884-C3V9-Q	B6	BZX884-C24-Q	D5
BZX884-B4V3-Q	A7	BZX884-B27-Q	C6	BZX884-C4V3-Q	B7	BZX884-C27-Q	D6
BZX884-B4V7-Q	A8	BZX884-B30-Q	C7	BZX884-C4V7-Q	B8	BZX884-C30-Q	D7
BZX884-B5V1-Q	A9	BZX884-B33-Q	C8	BZX884-C5V1-Q	B9	BZX884-C33-Q	D8
BZX884-B5V6-Q	AA	BZX884-B36-Q	C9	BZX884-C5V6-Q	BA	BZX884-C36-Q	D9
BZX884-B6V2-Q	AB	BZX884-B39-Q	CA	BZX884-C6V2-Q	BB	BZX884-C39-Q	DA
BZX884-B6V8-Q	AC	BZX884-B43-Q	CB	BZX884-C6V8-Q	BC	BZX884-C43-Q	DB
BZX884-B7V5-Q	AD	BZX884-B47-Q	CC	BZX884-C7V5-Q	BD	BZX884-C47-Q	DC
BZX884-B8V2-Q	AE	BZX884-B51-Q	CD	BZX884-C8V2-Q	BE	BZX884-C51-Q	DD
BZX884-B9V1-Q	AF	BZX884-B56-Q	CE	BZX884-C9V1-Q	BF	BZX884-C56-Q	DE
BZX884-B10-Q	AG	BZX884-B62-Q	CF	BZX884-C10-Q	BG	BZX884-C62-Q	DF
BZX884-B11-Q	AH	BZX884-B68-Q	CG	BZX884-C11-Q	BH	BZX884-C68-Q	DG
BZX884-B12-Q	AJ	BZX884-B75-Q	CH	BZX884-C12-Q	BJ	BZX884-C75-Q	DH
BZX884-B13-Q	AK	-	-	BZX884-C13-Q	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-Q	V_R = 1 V	50	µA
	BZX884-B/C2V7-Q	V_R = 1 V	20	µA
	BZX884-B/C3V0-Q	V_R = 1 V	10	µA
	BZX884-B/C3V3-Q	V_R = 1 V	5	µA
	BZX884-B/C3V6-Q	V_R = 1 V	5	µA
	BZX884-B/C3V9-Q	V_R = 1 V	3	µA
	BZX884-B/C4V3-Q	V_R = 1 V	3	µA
	BZX884-B/C4V7-Q	V_R = 2 V	3	µA
	BZX884-B/C5V1-Q	V_R = 2 V	2	µA
	BZX884-B/C5V6-Q	V_R = 2 V	1	µA
	BZX884-B/C6V2-Q	V_R = 4 V	3	µA
	BZX884-B/C6V8-Q	V_R = 4 V	2	µA
	BZX884-B/C7V5-Q	V_R = 5 V	1	µA
	BZX884-B/C8V2-Q	V_R = 5 V	700	nA
	BZX884-B/C9V1-Q	V_R = 6 V	500	nA
	BZX884-B/C10-Q	V_R = 7 V	200	nA
	BZX884-B/C11-Q	V_R = 8 V	100	nA
	BZX884-B/C12-Q	V_R = 8 V	100	nA
	BZX884-B/C13-Q	V_R = 8 V	100	nA
	BZX884-B/C15-Q to 75-Q	V_R = 0.7 V_{Znom}	50	nA

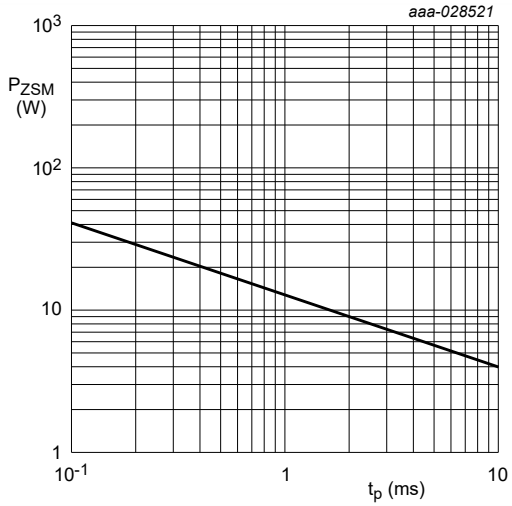
Table 8. Electrical characteristics per type

BZX884-B-Q or C-Q	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

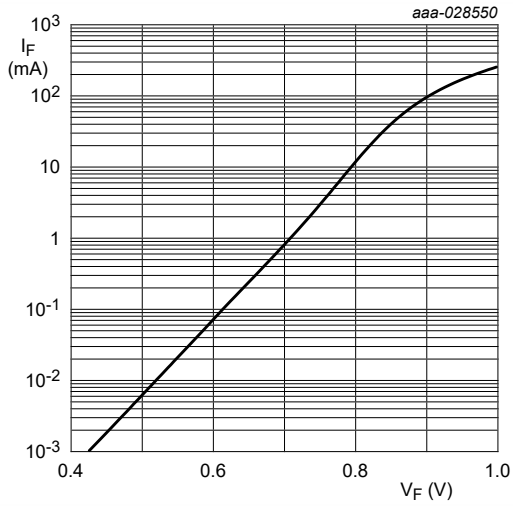
BZX884-B-Q or C-Q	Working voltage V_Z (V); at I_Z = 2 mA				Differential resistance r_{diff} (Ω);				Temperature coefficient S_Z (mV/K); I_{Ztest} = 2 mA	Diode capacit. C_d (pF)[1]	Non-repetitive peak reverse current I_{ZSM} (A) at t_p = 100 µs; T_{amb} = 25°C
	Tol. ± 2% (B)		Tol. ± 5% (C)		at I_{Ztest} = 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



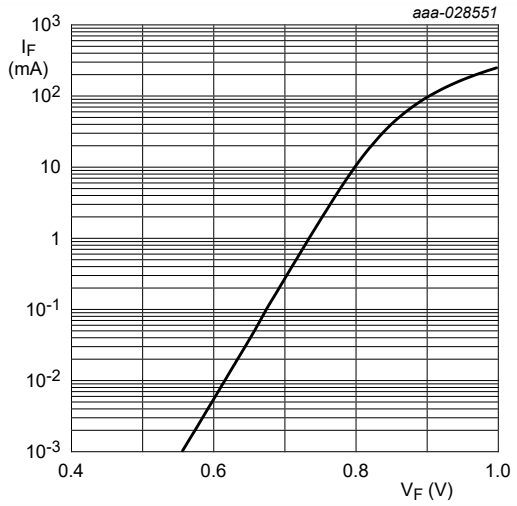
T_j = 25 °C (before surge)

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



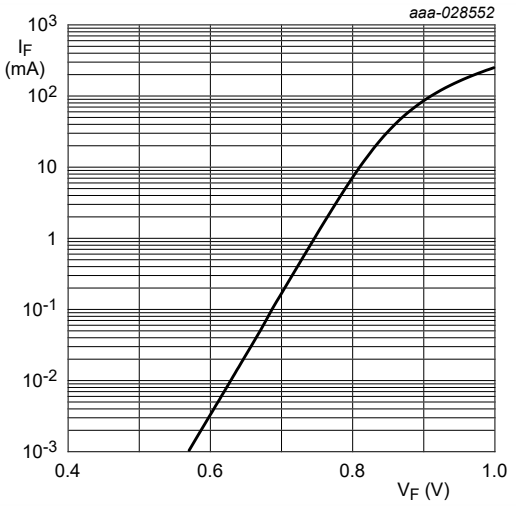
T_j = 25 °C

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



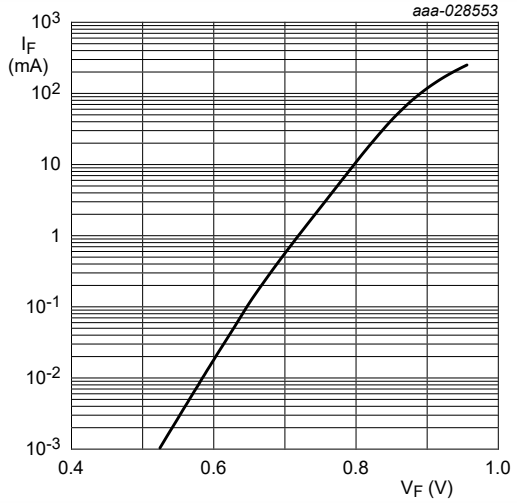
T_j = 25 °C

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



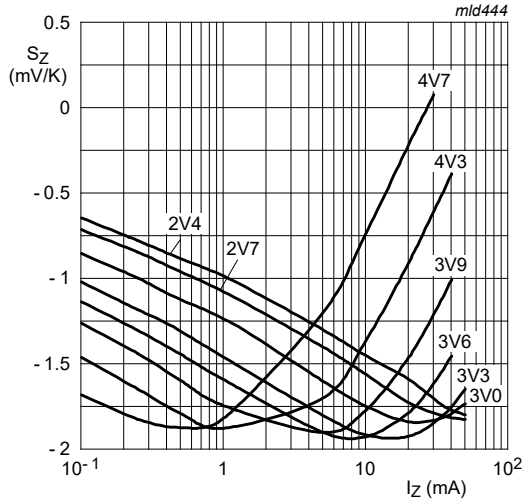
T_j = 25 °C

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



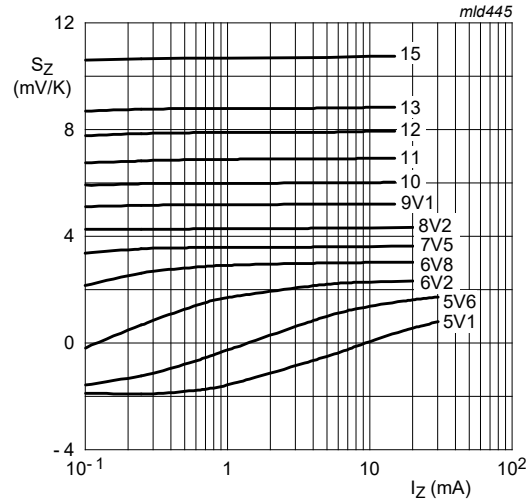
T_j = 25 °C

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



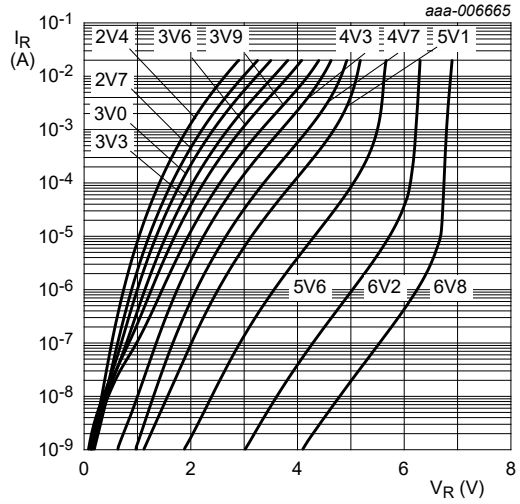
T_j = 25 °C to 150 °C

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



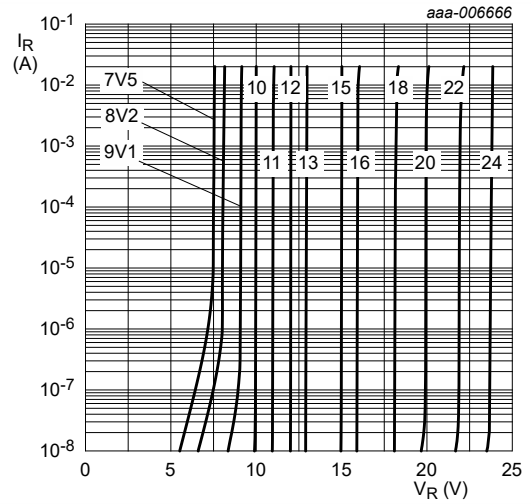
T_j = 25 °C to 150 °C

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



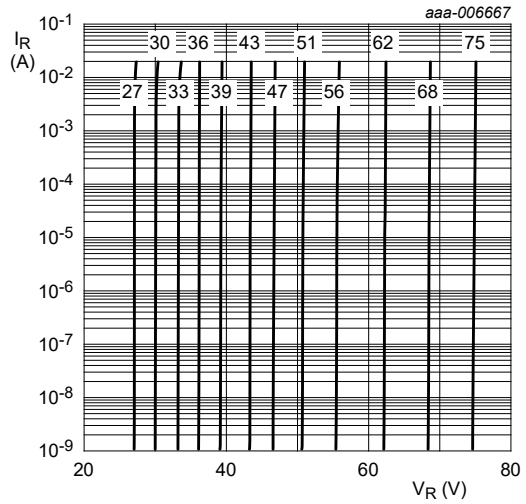
T_j = 25 °C

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

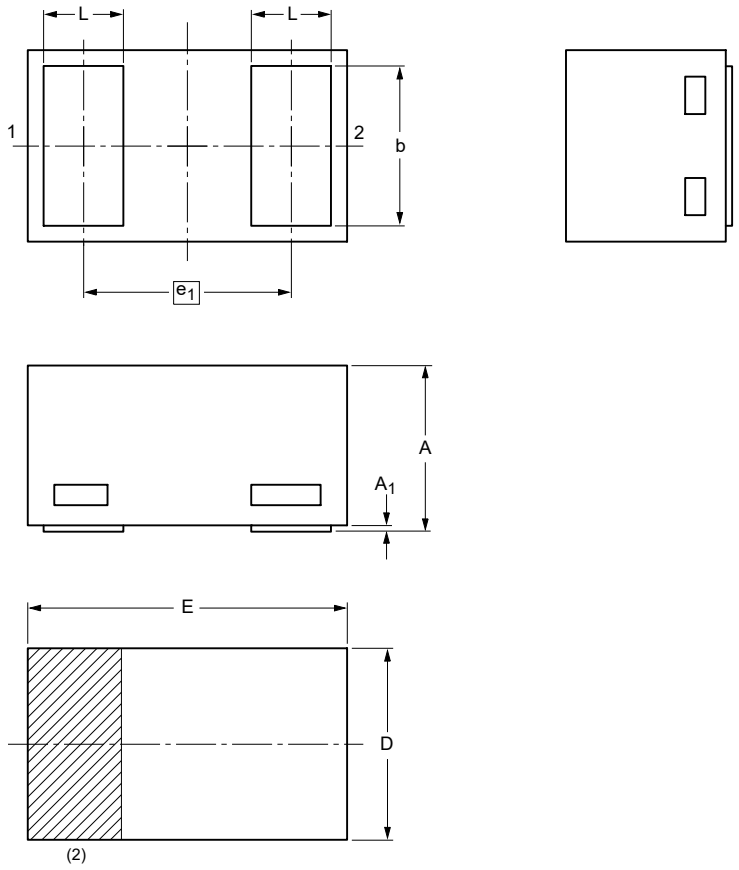
11. Test information

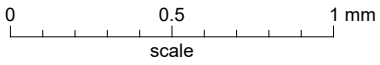
Quality information

This product has been qualified in accordance with the Automotive Electronics Council (AEC) standard *Q101 - Stress test qualification for discrete semiconductors*, and is suitable for use in automotive applications.

12. Package outline

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





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

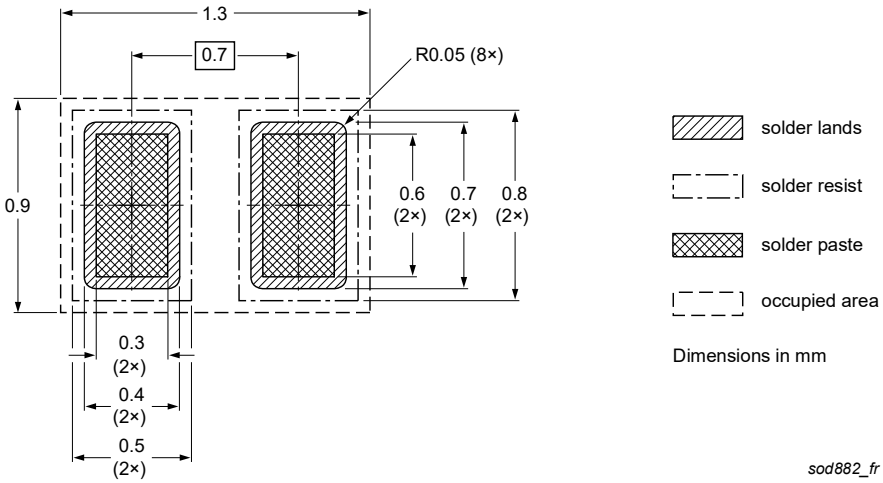
Note
1. Including plating thickness
2. The marking bar indicates the cathode (if applicable)

sod882_po

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

Fig. 11. Package outline SOD882

13. Soldering



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

Fig. 12. Reflow soldering footprint SOD882

14. Revision history

Table 9. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
BZX884_BC-Q_SER v.1	20240731	Product data sheet	-	-

15. 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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