



# BZX884S-Q series

## Voltage regulator diodes

Rev. 2 — 5 May 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)
- Qualified according to AEC-Q101 and recommended for use in automotive applications

## 3. Applications

- General regulation functions

## 4. Quick reference data

Table 1. Quick reference data

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

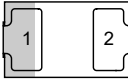
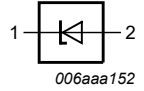
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$V_F$	forward voltage	$I_F = 10\text{ mA}$ [1]	-	-	0.9	V
$P_{tot}$	total power dissipation	[2]	-	-	365	mW

[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  $\mu\text{m}$  copper, tin-plated and standard footprint.

## 5. Pinning information

Table 2. Pinning

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

[1] The marking bar indicates the cathode.

## 6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
BZX884S-Q 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-Q	2A	BZX884S-B15-Q	2U	BZX884S-C2V4-Q	4K	BZX884S-C15-Q	4C
BZX884S-B2V7-Q	2B	BZX884S-B16-Q	2V	BZX884S-C2V7-Q	4L	BZX884S-C16-Q	4D
BZX884S-B3V0-Q	2C	BZX884S-B18-Q	2W	BZX884S-C3V0-Q	4R	BZX884S-C18-Q	4E
BZX884S-B3V3-Q	2D	BZX884S-B20-Q	2X	BZX884S-C3V3-Q	4S	BZX884S-C20-Q	4F
BZX884S-B3V6-Q	2E	BZX884S-B22-Q	2Y	BZX884S-C3V6-Q	4T	BZX884S-C22-Q	4G
BZX884S-B3V9-Q	2F	BZX884S-B24-Q	2Z	BZX884S-C3V9-Q	4U	BZX884S-C24-Q	4H
BZX884S-B4V3-Q	2G	BZX884S-B27-Q	3A	BZX884S-C4V3-Q	4U	BZX884S-C27-Q	4J
BZX884S-B4V7-Q	2H	BZX884S-B30-Q	3B	BZX884S-C4V7-Q	4Y	BZX884S-C30-Q	4M
BZX884S-B5V1-Q	2J	BZX884S-B33-Q	3C	BZX884S-C5V1-Q	5B	BZX884S-C33-Q	4N
BZX884S-B5V6-Q	2K	BZX884S-B36-Q	3D	BZX884S-C5V6-Q	5C	BZX884S-C36-Q	4P
BZX884S-B6V2-Q	2L	BZX884S-B39-Q	3E	BZX884S-C6V2-Q	5F	BZX884S-C39-Q	4Q
BZX884S-B6V8-Q	N3	BZX884S-B43-Q	3F	BZX884S-C6V8-Q	5G	BZX884S-C43-Q	4V
BZX884S-B7V5-Q	2M	BZX884S-B47-Q	3G	BZX884S-C7V5-Q	5J	BZX884S-C47-Q	4W
BZX884S-B8V2-Q	2N	BZX884S-B51-Q	3H	BZX884S-C8V2-Q	5K	BZX884S-C51-Q	4Z
BZX884S-B9V1-Q	2P	BZX884S-B56-Q	3J	BZX884S-C9V1-Q	5L	BZX884S-C56-Q	5A
BZX884S-B10-Q	2Q	BZX884S-B62-Q	3K	BZX884S-C10-Q	3Y	BZX884S-C62-Q	5D
BZX884S-B11-Q	2R	BZX884S-B68-Q	3L	BZX884S-C11-Q	3Z	BZX884S-C68-Q	5E
BZX884S-B12-Q	2S	BZX884S-B75-Q	3M	BZX884S-C12-Q	4A	BZX884S-C75-Q	5H
BZX884S-B13-Q	2T	-	-	BZX884S-C13-Q	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:  $t_p \leq 300\text{ µs}$ ;  $\delta \leq 0.02$ .

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

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

BZX884S	Sel	Working voltage V <sub>Z</sub> (V)		Differential resistance r <sub>diff</sub> (Ω)				Reverse current I <sub>R</sub> (μA)		Temperature coefficient S <sub>Z</sub> (mV/K)		Diode capacitance C <sub>d</sub> (pF) <a href="#">[1]</a>
		I <sub>Z</sub> = 5 mA		I <sub>Z</sub> = 1 mA		I <sub>Z</sub> = 5 mA				I <sub>Z</sub> = 5 mA		
		Min	Max	Typ	Max	Typ	Max	Max	V <sub>R</sub> (V)	Min	Max	
2V4-Q	B	2.35	2.45	275	600	70	100	50	1.0	-3.5	0.0	260
	C	2.20	2.60									
2V7-Q	B	2.65	2.75	300	600	75	100	20	1.0	-3.5	0.0	260
	C	2.50	2.90									
3V0-Q	B	2.94	3.06	325	600	80	95	10	1.0	-3.5	0.0	260
	C	2.80	3.20									
3V3-Q	B	3.23	3.37	350	600	85	95	5	1.0	-3.5	0.0	260
	C	3.10	3.50									
3V6-Q	B	3.53	3.67	375	600	85	90	5	1.0	-3.5	0.0	260
	C	3.40	3.80									
3V9-Q	B	3.82	3.98	400	600	85	90	3	1.0	-3.5	0.0	260
	C	3.70	4.10									
4V3-Q	B	4.21	4.39	410	600	80	90	3	1.0	-3.5	0.0	260
	C	4.00	4.60									
4V7-Q	B	4.61	4.79	425	500	50	80	3	2.0	-3.5	0.2	170
	C	4.40	5.00									
5V1-Q	B	5.00	5.20	400	480	40	60	2	2.0	-2.7	1.2	170
	C	4.80	5.40									
5V6-Q	B	5.49	5.71	80	400	15	40	1	2.0	-2.0	2.5	170
	C	5.20	6.00									
6V2-Q	B	6.08	6.32	40	150	6	10	3	4.0	0.4	3.7	120
	C	5.80	6.60									
6V8-Q	B	6.66	6.94	30	80	6	15	2	4.0	1.2	4.5	120
	C	6.40	7.20									
7V5-Q	B	7.35	7.65	30	80	6	15	1	5.0	2.5	5.3	150
	C	7.00	7.90									
8V2-Q	B	8.04	8.36	40	80	6	15	0.7	5.0	3.2	6.2	150
	C	7.70	8.70									
9V1-Q	B	8.92	9.28	40	100	6	15	0.5	6.0	3.8	7.0	150
	C	8.50	9.60									
10-Q	B	9.80	10.20	50	150	8	20	0.2	7.0	4.5	8.0	90
	C	9.40	10.60									
11-Q	B	10.80	11.20	50	150	10	20	0.1	8.0	5.4	9.0	85
	C	10.40	11.60									
12-Q	B	11.80	12.20	50	150	10	25	0.1	8.0	6.0	10.0	85
	C	11.40	12.70									
13-Q	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 <sub>Z</sub> (V)		Differential resistance r <sub>dif</sub> (Ω)				Reverse current I <sub>R</sub> (μA)		Temperature coefficient S <sub>Z</sub> (mV/K)		Diode capacitance C <sub>d</sub> (pF) [1]
		I <sub>Z</sub> = 5 mA		I <sub>Z</sub> = 1 mA		I <sub>Z</sub> = 5 mA				I <sub>Z</sub> = 5 mA		
		Min	Max	Typ	Max	Typ	Max	Max	V <sub>R</sub> (V)	Min	Max	Max
15-Q	B	14.70	15.30	50	200	10	30	0.05	10.5	9.2	13.0	75
	C	13.80	15.60									
16-Q	B	15.70	16.30	50	200	10	40	0.05	11.2	10.4	14.0	75
	C	15.30	17.10									
18-Q	B	17.60	18.40	50	225	10	45	0.05	12.6	12.4	16.0	70
	C	16.80	19.10									
20-Q	B	19.60	20.40	60	225	15	55	0.05	14.0	14.4	18.0	60
	C	18.80	21.20									
22-Q	B	21.60	22.40	60	250	20	55	0.05	15.4	16.4	20.0	60
	C	20.80	23.30									
24-Q	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-Q to BZX884S-C75-Q

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

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

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

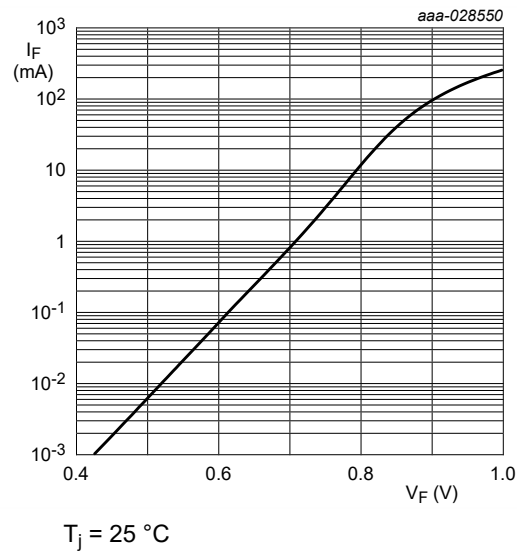


Fig. 1. Forward current as a function of forward voltage; typical values (BZX884S-B/C2V4-Q)

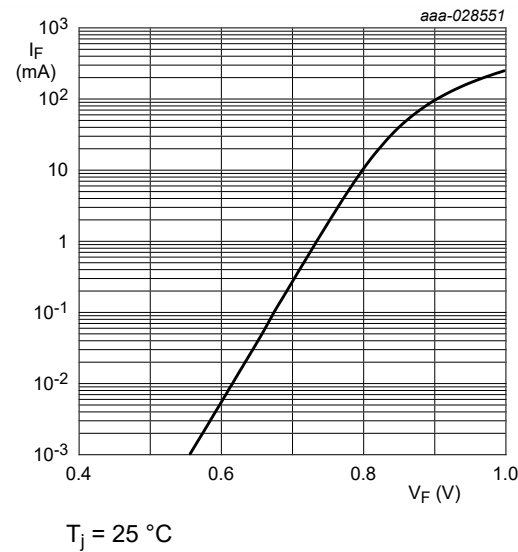


Fig. 2. Forward current as a function of forward voltage; typical values (BZX884S-B/C6V8-Q)

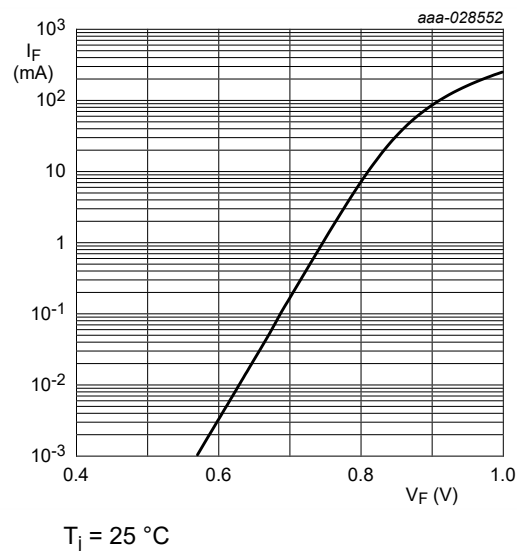


Fig. 3. Forward current as a function of forward voltage; typical values (BZX884S-B/C7V5-Q)

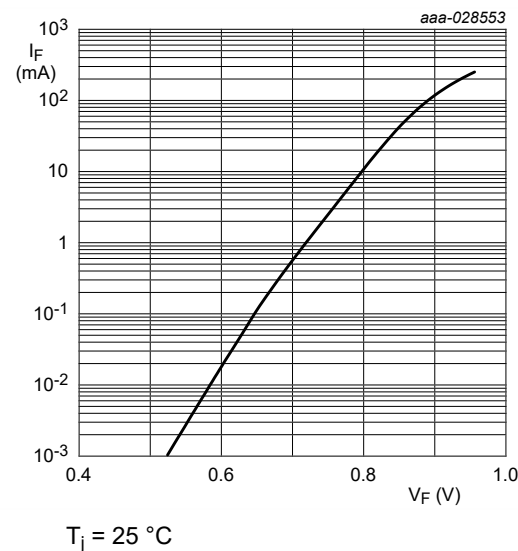


Fig. 4. Forward current as a function of forward voltage; typical values (BZX884S-B/C75-Q)

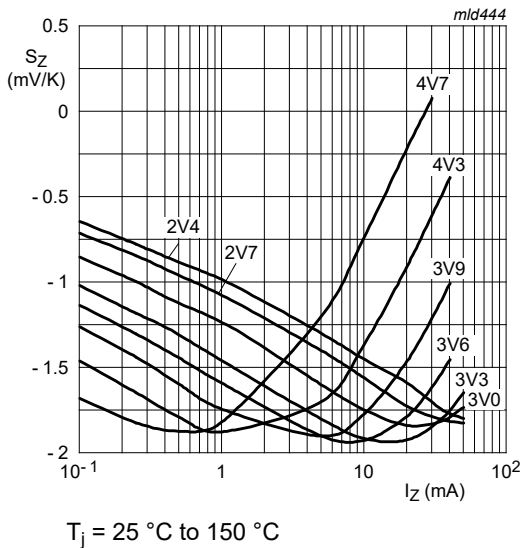


Fig. 5. Temperature coefficient as a function of working current; typical values (BZX884S-B/C2V4-Q to B/C4V7-Q)

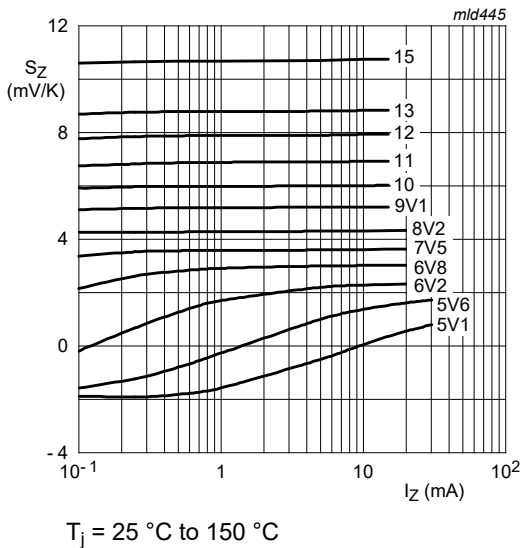


Fig. 6. Temperature coefficient as a function of working current; typical values (BZX884S-B/C5V1-Q to B/C15-Q)

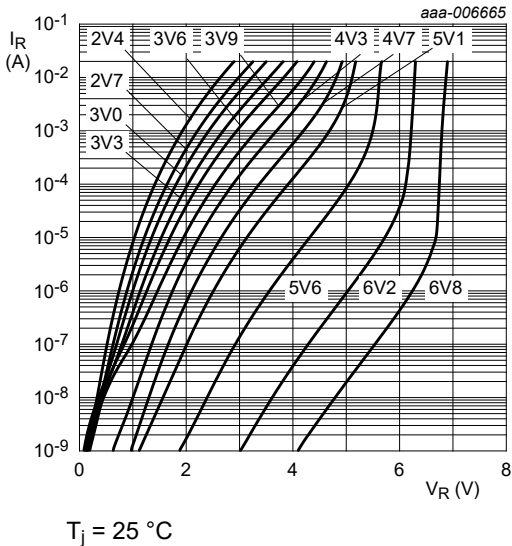


Fig. 7. Reverse current as a function of reverse voltage; typical values (BZX884S-B/C2V4-Q to BZX884S-B/C6V8-Q)

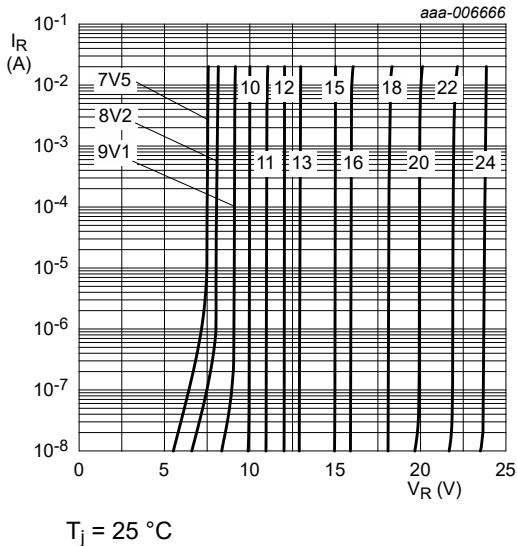
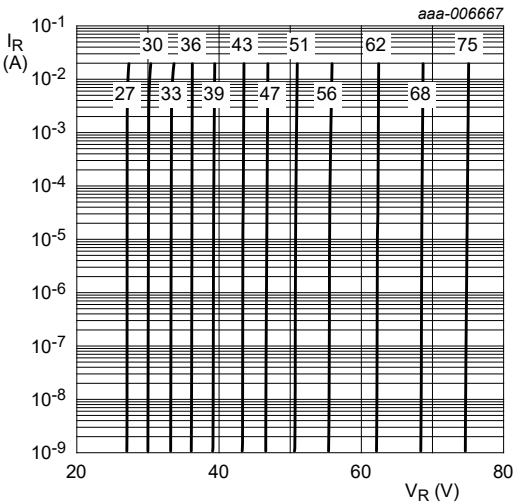


Fig. 8. Reverse current as a function of reverse voltage; typical values (BZX884S-B/C7V5-Q to BZX884S-B/C24-Q)





T<sub>J</sub> = 25 °C

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

11. Package outline

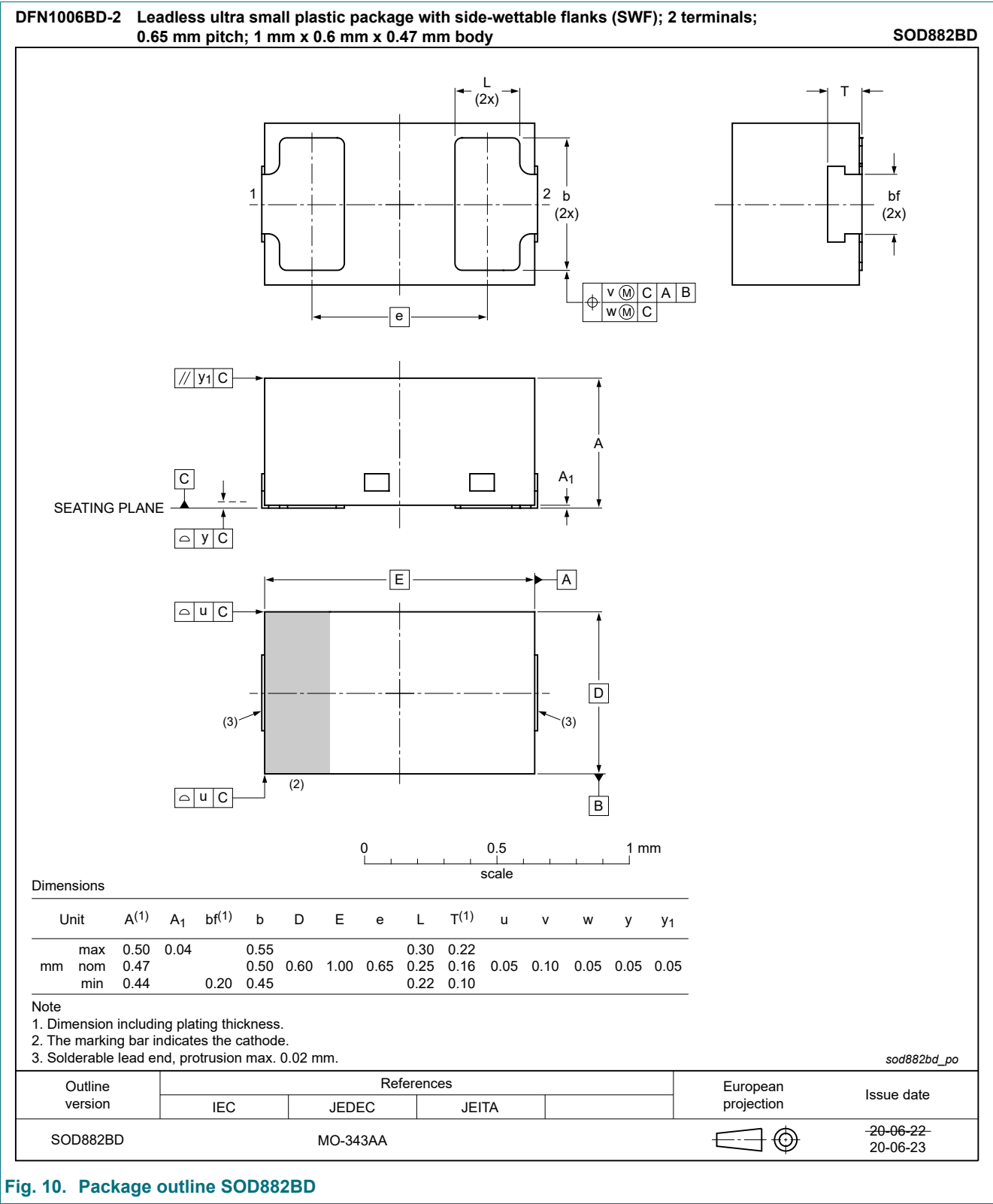
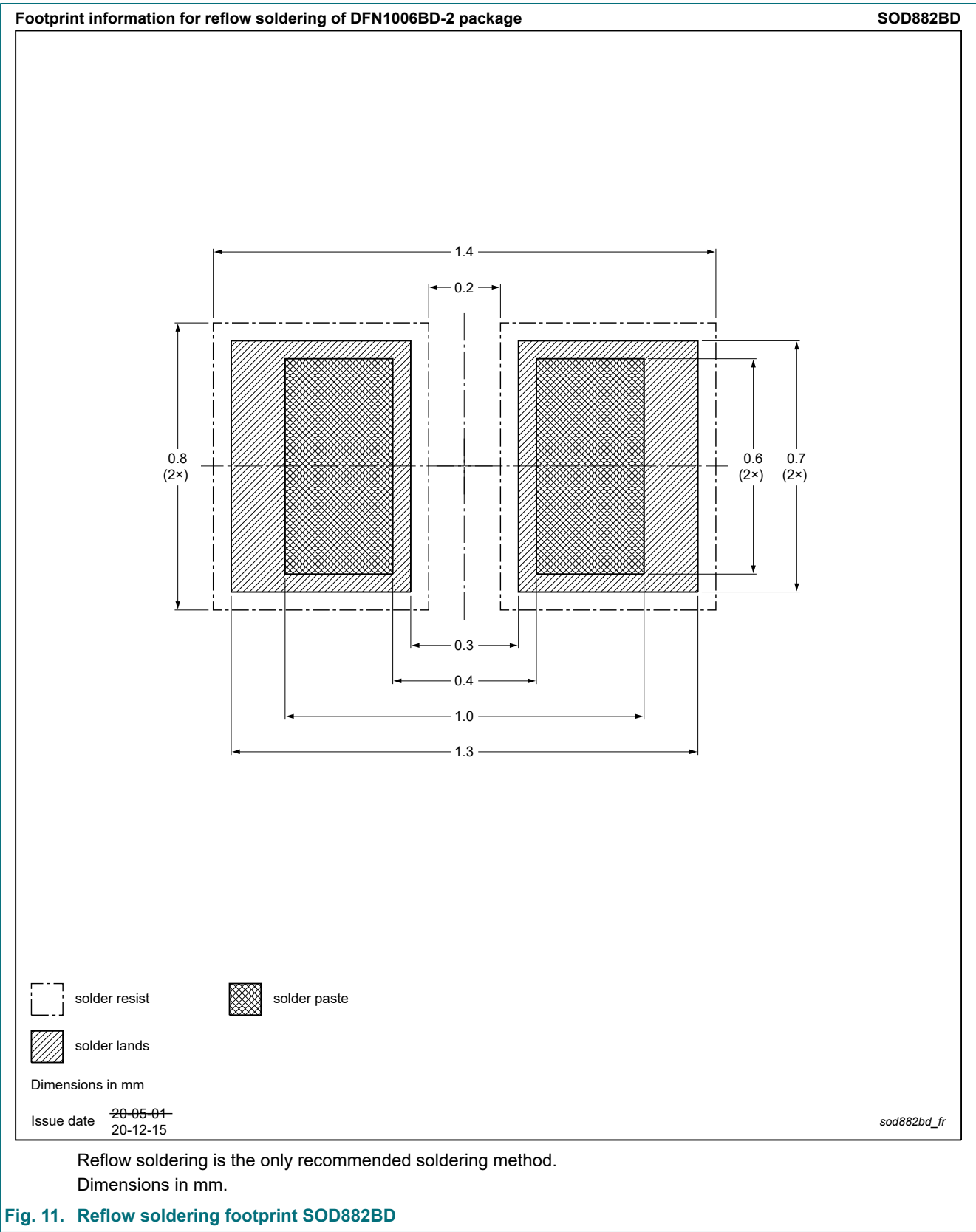


Fig. 10. Package outline SOD882BD

12. Soldering



## 13. Revision history

Table 10. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
BZX884S-Q_SER v.2	20210505	Product data sheet	-	BZX884S-Q_SER v.1
Modification:	• Features and benefits: added recommendation for automotive applications			
BZX884S-Q_SER v.1	20210210	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.
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