THE DATASHEET OF

BZX884S-B12-QYL

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: ± 2 % and approximately ± 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

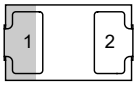
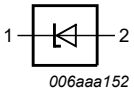
T_{amb} = 25 °C unless otherwise specified.

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

[1] Pulse test: tp ≤ 300 µs; δ ≤ 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-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 ±2 % and approximately ±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	-	-

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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 °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 °C unless otherwise specified.

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

[1] Pulse test: $t_p \leq 300$ µs; $\delta \leq 0.02$.

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

T_j = 25 °C unless otherwise specified.

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				I_Z = 5 mA		
		Min	Max	Typ	Max	Typ	Max	Max	V_R (V)	Min	Max	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									

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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				I_Z = 5 mA		
		Min	Max	Typ	Max	Typ	Max	Max	V_R (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

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

T_j = 25 °C unless otherwise specified.

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 = 2 mA		I_Z = 0.5 mA		I_Z = 2 mA				I_Z = 2 mA		
		Min	Max	Typ	Max	Typ	Max	Max	V_R (V)	Min	Max	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 MHz; V_R = 0 V

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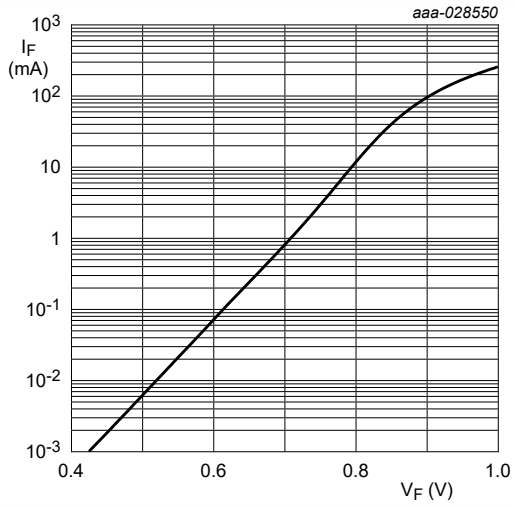
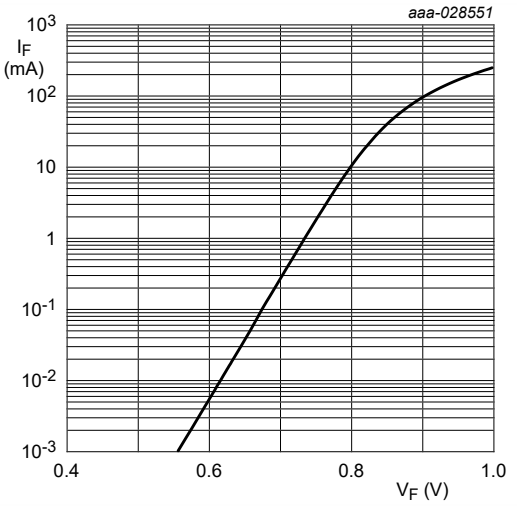


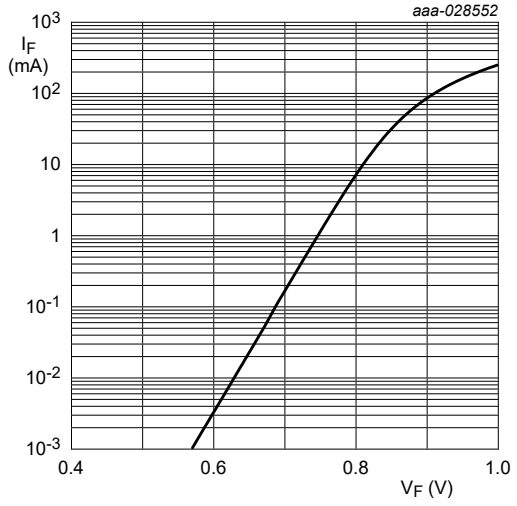
T_j = 25 °C

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



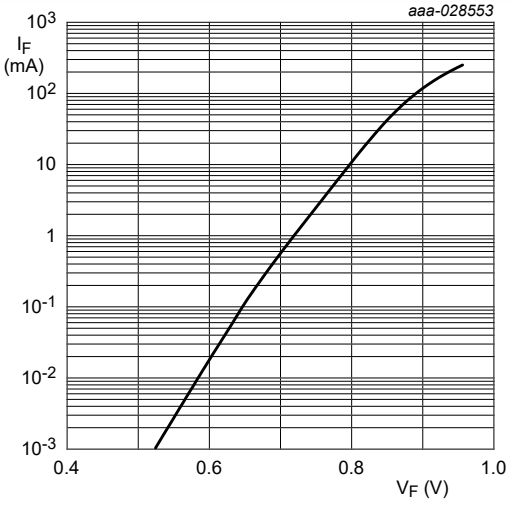
T_j = 25 °C

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



T_j = 25 °C

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



T_j = 25 °C

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

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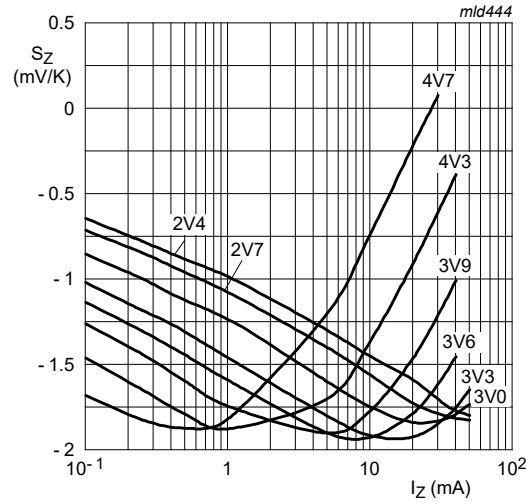
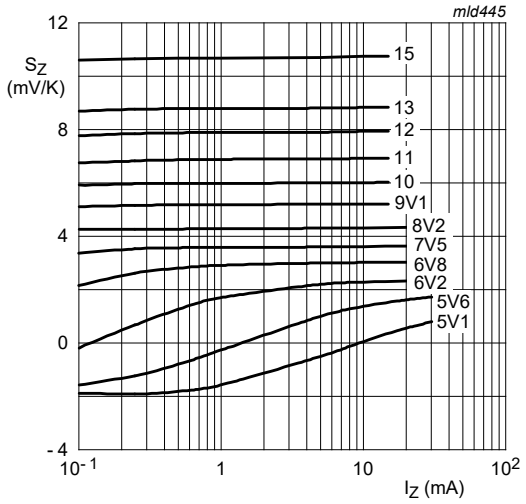


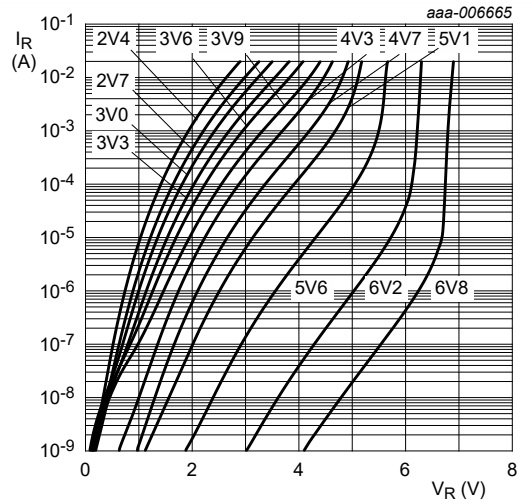
T_j = 25 °C to 150 °C

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



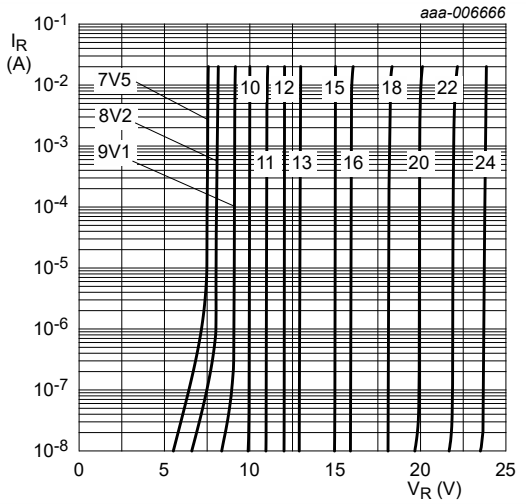
T_j = 25 °C to 150 °C

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



T_j = 25 °C

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



T_j = 25 °C

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

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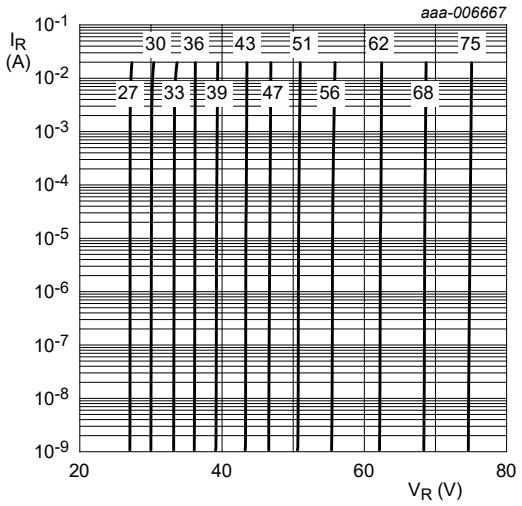

T_j = 25 °C

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

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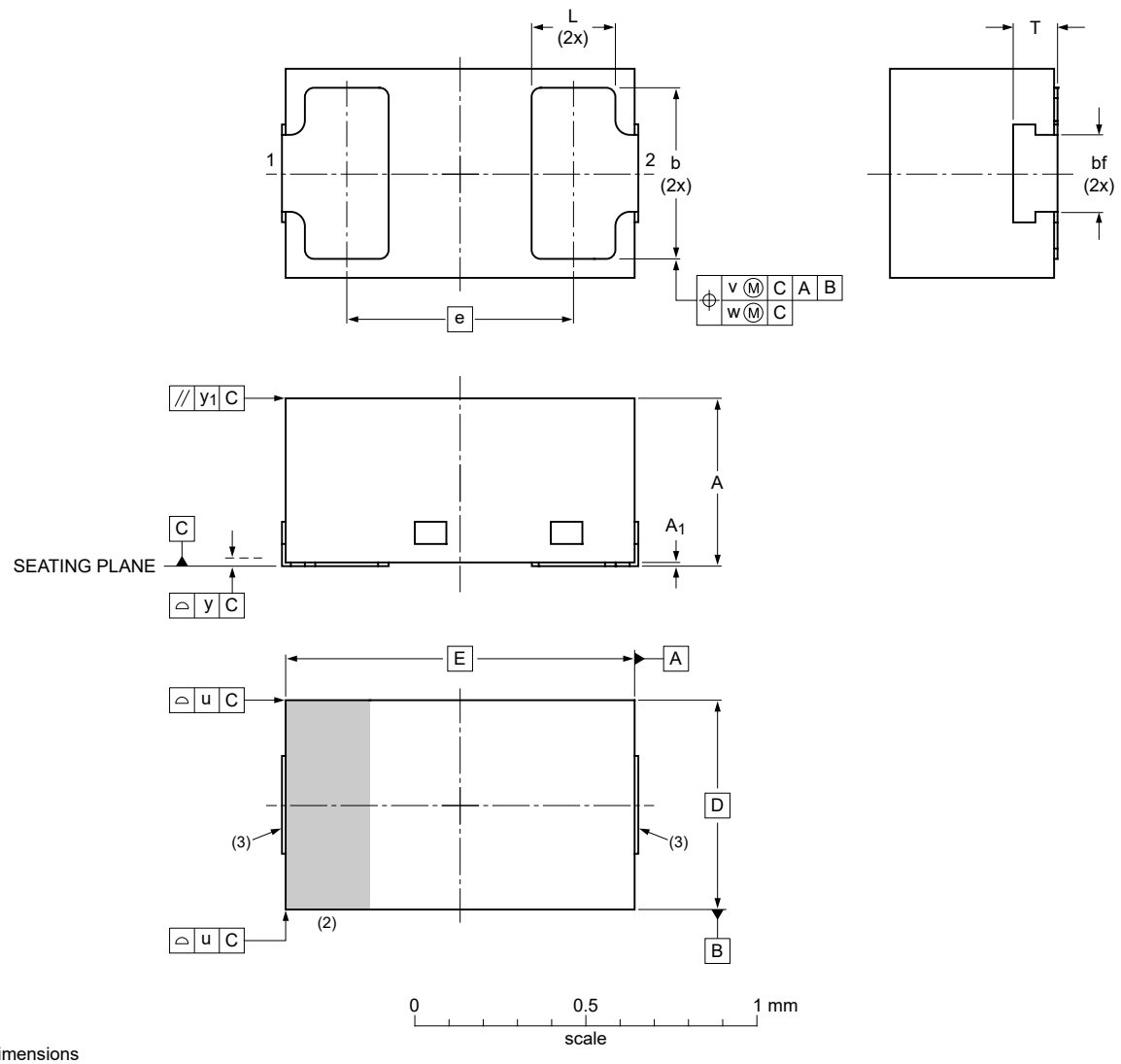
11. Package outline

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

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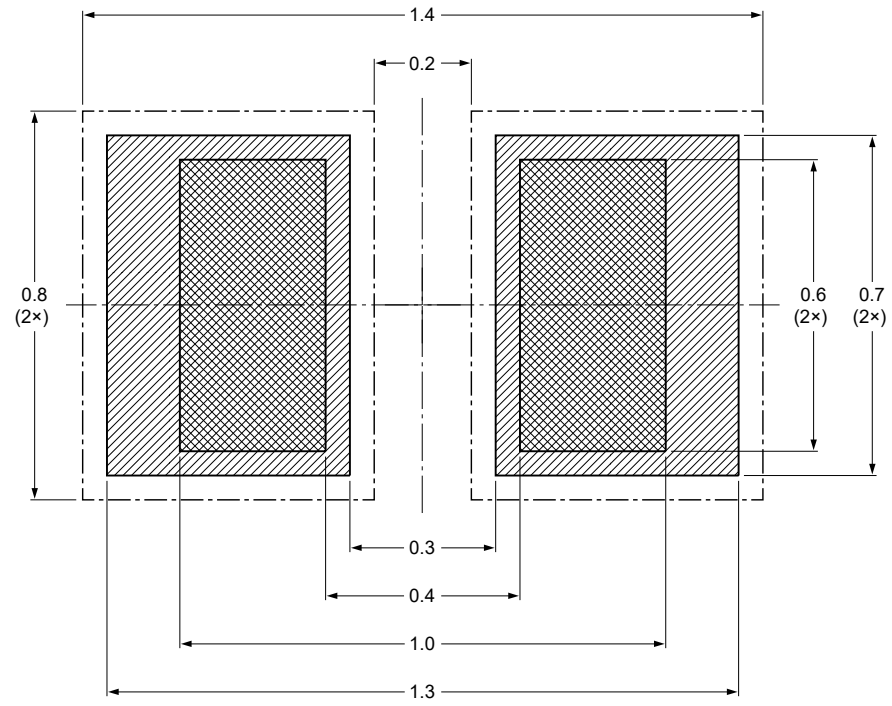
12. Soldering

Footprint information for reflow soldering of DFN1006BD-2 package **SOD882BD**



solder resist

solder paste

solder lands

Dimensions in mm

Issue date ~~20-05-01~~ 20-12-15

sod882bd_fr

Reflow soldering is the only recommended soldering method.

Dimensions in mm.

Fig. 11. Reflow soldering footprint SOD882BD

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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	-	-

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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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Contents

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