



# PZU884LS-Q series

Zener voltage regulator diodes

Rev. 4 — 16 August 2024

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 51 V (E24 range)
- PZU884LS-B5V1-Q to -C10-Q: Very low dynamic impedances at low currents, very low leakage current, hard breakdown knee
- PZU884LS-B11-Q to -C51-Q: Intentional minor rise of leakage current for optimized fast switching and noise reduction [Ref. [AN90031](#)]
- 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

$T_{amb} = 25\text{ °C}$  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
$P_{ZSM}$	non-repetitive peak reverse power dissipation	[3]	-	-	40	W

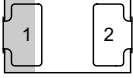
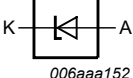
[1] Pulse test:  $t_p \leq 300\text{ }\mu\text{s}$ ;  $\delta \leq 0.02$

[2] Device mounted on a FR4 PCB, single-sided 70  $\mu\text{m}$  copper, tin-plated and standard footprint.

[3]  $t_p = 100\text{ }\mu\text{s}$ ; square wave;  $T_j = 25\text{ °C}$  prior to surge.

## 5. Pinning information

Table 2. Pinning

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

[1] The marking bar indicates the cathode.

## 6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
PZU884LS-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 breakdown voltages with nominal working voltages from 2.4 V to 51 V and  $\pm 2\%$  and approximately  $\pm 5\%$  tolerances.

## 7. Marking

Table 4. Marking Codes

Type number	Marking code	Type number	Marking code	Type number	Marking code	Type number	Marking code
PZU884LS-B2V7-Q	Q2	PZU884LS-B15-Q	S9	PZU884LS-C2V4-Q	HJ	PZU884LS-C15-Q	MP
PZU884LS-B3V0-Q	Q3	PZU884LS-B16-Q	SB	PZU884LS-C2V7-Q	HQ	PZU884LS-C16-Q	MQ
PZU884LS-B3V3-Q	Q4	PZU884LS-B18-Q	SD	PZU884LS-C3V0-Q	J1	PZU884LS-C18-Q	MR
PZU884LS-B3V6-Q	Q5	PZU884LS-B20-Q	SE	PZU884LS-C3V3-Q	J9	PZU884LS-C20-Q	MS
PZU884LS-B3V9-Q	Q6	PZU884LS-B22-Q	SF	PZU884LS-C3V6-Q	L4	PZU884LS-C22-Q	MT
PZU884LS-B4V3-Q	Q7	PZU884LS-B24-Q	SG	PZU884LS-C3V9-Q	L5	PZU884LS-C24-Q	MU
PZU884LS-B4V7-Q	Q8	PZU884LS-B27-Q	SH	PZU884LS-C4V3-Q	M1	PZU884LS-C27-Q	MV
PZU884LS-B5V1-Q	Q9	PZU884LS-B30-Q	SJ	PZU884LS-C4V7-Q	M5	PZU884LS-C30-Q	MX
PZU884LS-B5V6-Q	R1	PZU884LS-B33-Q	SK	PZU884LS-C5V1-Q	MA	PZU884LS-C33-Q	MY
PZU884LS-B6V2-Q	R2	PZU884LS-B36-Q	SL	PZU884LS-C5V6-Q	MB	PZU884LS-C36-Q	MZ
PZU884LS-B6V8-Q	R3	PZU884LS-B39-Q	SM	PZU884LS-C6V2-Q	MC	PZU884LS-C39-Q	N1
PZU884LS-B7V5-Q	R4	PZU884LS-B43-Q	SN	PZU884LS-C6V8-Q	MD	PZU884LS-C43-Q	NA
PZU884LS-B8V2-Q	R5	PZU884LS-B47-Q	SP	PZU884LS-C7V5-Q	ME	PZU884LS-C47-Q	NB
PZU884LS-B9V1-Q	R6	PZU884LS-B51-Q	SQ	PZU884LS-C8V2-Q	MF	PZU884LS-C51-Q	NC
PZU884LS-B10-Q	R7	-	-	PZU884LS-C9V1-Q	MG	-	-
PZU884LS-B11-Q	R8	-	-	PZU884LS-C10-Q	MJ	-	-
PZU884LS-B12-Q	R9	-	-	PZU884LS-C11-Q	MK	-	-
PZU884LS-B13-Q	S1	-	-	PZU884LS-C12-Q	ML	-	-
PZU884LS-B14-Q	S7	-	-	PZU884LS-C13-Q	MN	-	-

## 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
$P_{ZSM}$	non-repetitive peak reverse power dissipation	[2]	-	40	W
$T_j$	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.

[2]  $t_p = 100\text{ µs}$ ; square wave;  $T_j = 25\text{ °C}$  prior to surge.

## 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; PZU884LS-C2V4-Q to PZU884LS-C36-Q

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

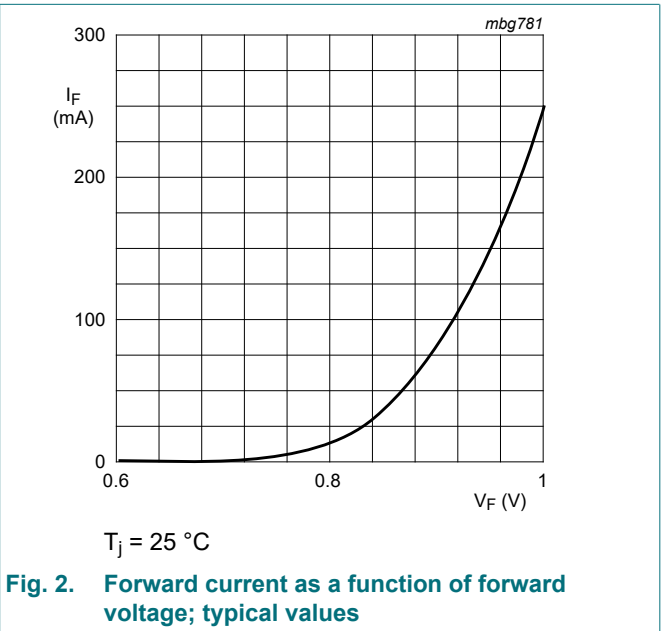
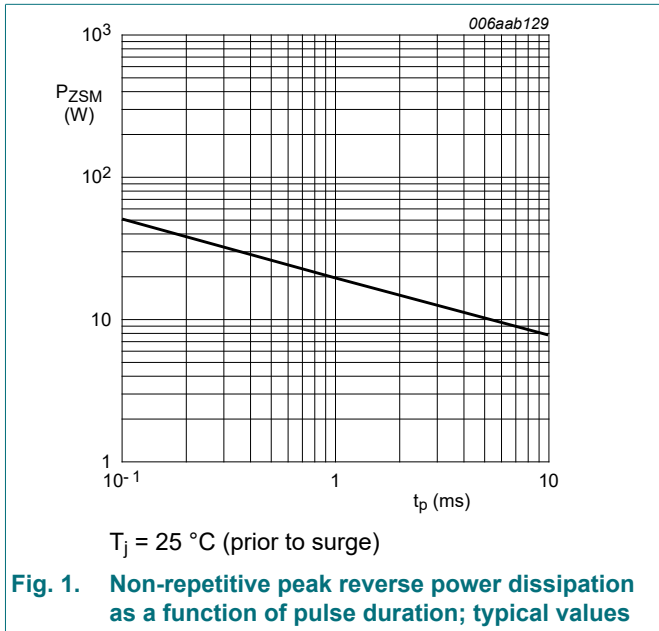
PZU884LS-xxx-Q	Sel	Working voltage $V_Z$ (V)		Differential resistance $r_{dif}$ ( $\Omega$ )		Reverse current $I_R$ ( $\mu$ A)		Temperature coefficient $S_Z$ (mV/K)		Diode capacitance $C_d$ (pF)
		$I_Z = 5\text{ mA}$		$I_Z = 0.5\text{ mA}$	$I_Z = 5\text{ mA}$	Max	$V_R$ (V)	$I_Z = 5\text{ mA}$		$f = 1\text{ MHz}$ $V_R = 0\text{ V}$
		Min	Max	Max	Max			Min	Max	Max
2V4	C	2.30	2.60	1000	100	50	1.0	-3.5	0.0	450
2V7	B	2.65	2.90	1000	100	20	1.0	-3.5	0.0	440
	C	2.50	2.90							
3V0	B	2.95	3.20	1000	95	10	1.0	-3.5	0.0	425
	C	2.80	3.20							
3V3	B	3.25	3.50	1000	95	5	1.0	-3.5	0.0	410
	C	3.10	3.50							
3V6	B	3.55	3.80	1000	90	5	1.0	-3.5	0.0	390
	C	3.40	3.80							
3V9	B	3.87	4.10	1000	90	3	1.0	-3.5	0.0	370
	C	3.70	4.10							
4V3	B	4.15	4.34	1000	90	3	1.0	-3.5	0.0	350
	C	4.01	4.48							
4V7	B	4.55	4.75	800	80	2	1.0	-3.5	0.2	325
	C	4.42	4.90							
5V1	B	4.98	5.20	250	60	2	1.5	-2.7	1.2	300
	C	4.80	5.40							
5V6	B	5.49	5.73	100	40	1	2.5	-2.0	2.5	275
	C	5.31	5.92							
6V2	B	6.06	6.33	80	30	0.5	3.0	0.4	3.7	250
	C	5.86	6.53							
6V8	B	6.65	6.93	60	20	0.5	3.5	1.2	4.5	215
	C	6.47	7.14							
7V5	B	7.28	7.60	60	10	0.5	4	2.5	5.3	170
	C	7.06	7.84							
8V2	B	8.02	8.36	60	10	0.5	5	3.2	6.2	150
	C	7.76	8.64							
9V1	B	8.85	9.23	60	10	0.5	6	3.8	7.0	120
	C	8.56	9.55							
10	B	9.77	10.21	60	10	0.1	7	4.5	8.0	110
	C	9.45	10.55							
11	B	10.76	11.22	60	10	0.1	8	5.4	9.0	108
	C	10.44	11.56							
12	B	11.74	12.24	80	10	0.1	9	6.0	10.0	105
	C	11.42	12.60							
13	B	12.91	13.49	80	10	0.1	10	7.0	11.0	103
	C	12.47	13.96							
14	B	13.70	14.30	80	10	0.1	11	8.0	12.5	101

PZU884LS- xxx-Q	Sel	Working voltage $V_Z$ (V)		Differential resistance $r_{dif}$ ( $\Omega$ )		Reverse current $I_R$ ( $\mu$ A)		Temperature coefficient $S_Z$ (mV/K)		Diode capacitance $C_d$ (pF)
		$I_Z = 5$ mA		$I_Z = 0.5$ mA	$I_Z = 5$ mA	Max	$V_R$ (V)	$I_Z = 5$ mA		$f = 1$ MHz $V_R = 0$ V
		Min	Max	Max	Max			Min	Max	Max
15	B	14.34	14.98	80	15	0.05	11	9.2	13.0	99
	C	13.84	15.52							
16	B	15.85	16.51	80	20	0.05	12	10.4	14.0	97
	C	15.37	17.09							
18	B	17.56	18.35	80	20	0.05	13	12.4	16.0	93
	C	16.94	19.03							
20	B	19.52	20.39	100	20	0.05	15	14.4	18.0	88
	C	18.86	21.08							
22	B	21.54	22.47	100	25	0.05	17	16.4	20.0	84
	C	20.88	23.17							
24	B	23.72	24.78	120	30	0.05	19	18.4	22.0	80
	C	22.93	25.57							
27	B	26.50	27.50	150	40	0.05	21	21.4	25.3	73
	C	25.10	28.90							
30	B	29.40	30.60	200	40	0.05	23	24.4	29.4	66
	C	28.00	32.00							
33	B	32.34	33.66	250	40	0.05	25	27.4	33.4	60
	C	31.00	35.00							
36	B	35.30	36.70	300	60	0.05	27	30.4	37.4	59
	C	34.00	38.00							

Table 9. Characteristics per type; PZU884LS-B39-Q to PZU884LS-C51-Q

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

PZU884LS-xxx-Q	Sel	Working voltage $V_Z$ (V)		Differential resistance $r_{dif}$ ( $\Omega$ )		Reverse current $I_R$ ( $\mu$ A)		Temperature coefficient $S_Z$ (mV/K)		Diode capacitance $C_d$ (pF)
		$I_Z = 2\text{ mA}$		$I_Z = 0.5\text{ mA}$	$I_Z = 2\text{ mA}$	Max	$V_R$ (V)	$I_Z = 2\text{ mA}$		$f = 1\text{ MHz}$ $V_R = 0\text{ V}$
		Min	Max	Max	Max			Min	Max	Max
39	B	38.20	39.80	350	130	0.05	27.3	33.4	41.2	45
	C	37.00	41.00							
43	B	42.10	43.90	375	150	0.05	30.1	37.6	46.6	40
	C	40.00	46.00							
47	B	46.10	47.90	375	170	0.05	32.9	42.0	51.8	40
	C	44.00	50.00							
51	B	50.00	52.00	400	180	0.05	35.7	46.6	57.2	40
	C	48.00	54.00							





$T_j = 25\text{ }^\circ\text{C}$  to  $150\text{ }^\circ\text{C}$   
 $V_Z = 2.4\text{ V}$  to  $4.3\text{ V}$

**Fig. 3. Temperature coefficient as a function of working current; typical values**



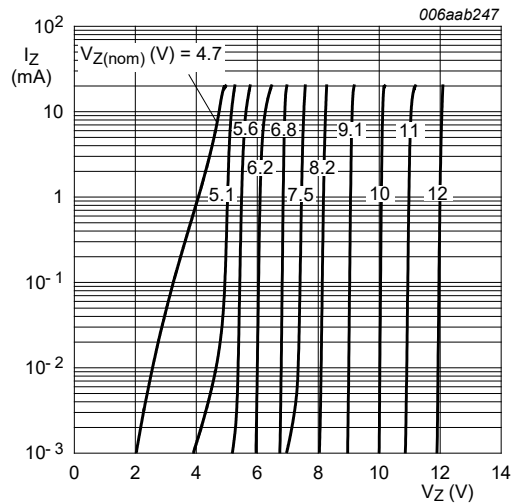
$T_j = 25\text{ }^\circ\text{C}$  to  $150\text{ }^\circ\text{C}$   
 $V_Z = 4.7\text{ V}$  to  $12\text{ V}$

**Fig. 4. Temperature coefficient as a function of working current; typical values**



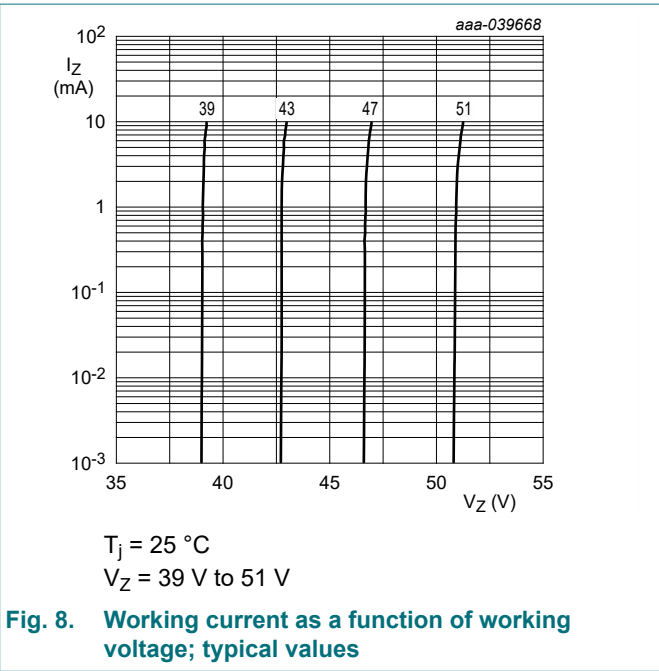
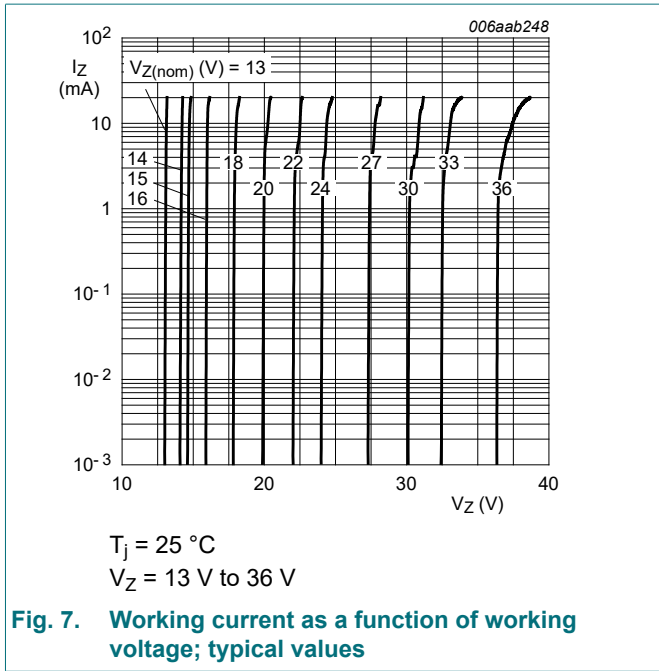
$T_j = 25\text{ }^\circ\text{C}$   
 $V_Z = 2.4\text{ V}$  to  $4.3\text{ V}$

**Fig. 5. Working current as a function of working voltage; typical values**



$T_j = 25\text{ }^\circ\text{C}$   
 $V_Z = 4.7\text{ V}$  to  $12\text{ V}$

**Fig. 6. Working current as a function of working voltage; typical values**



## 11. Test information

### Quality information

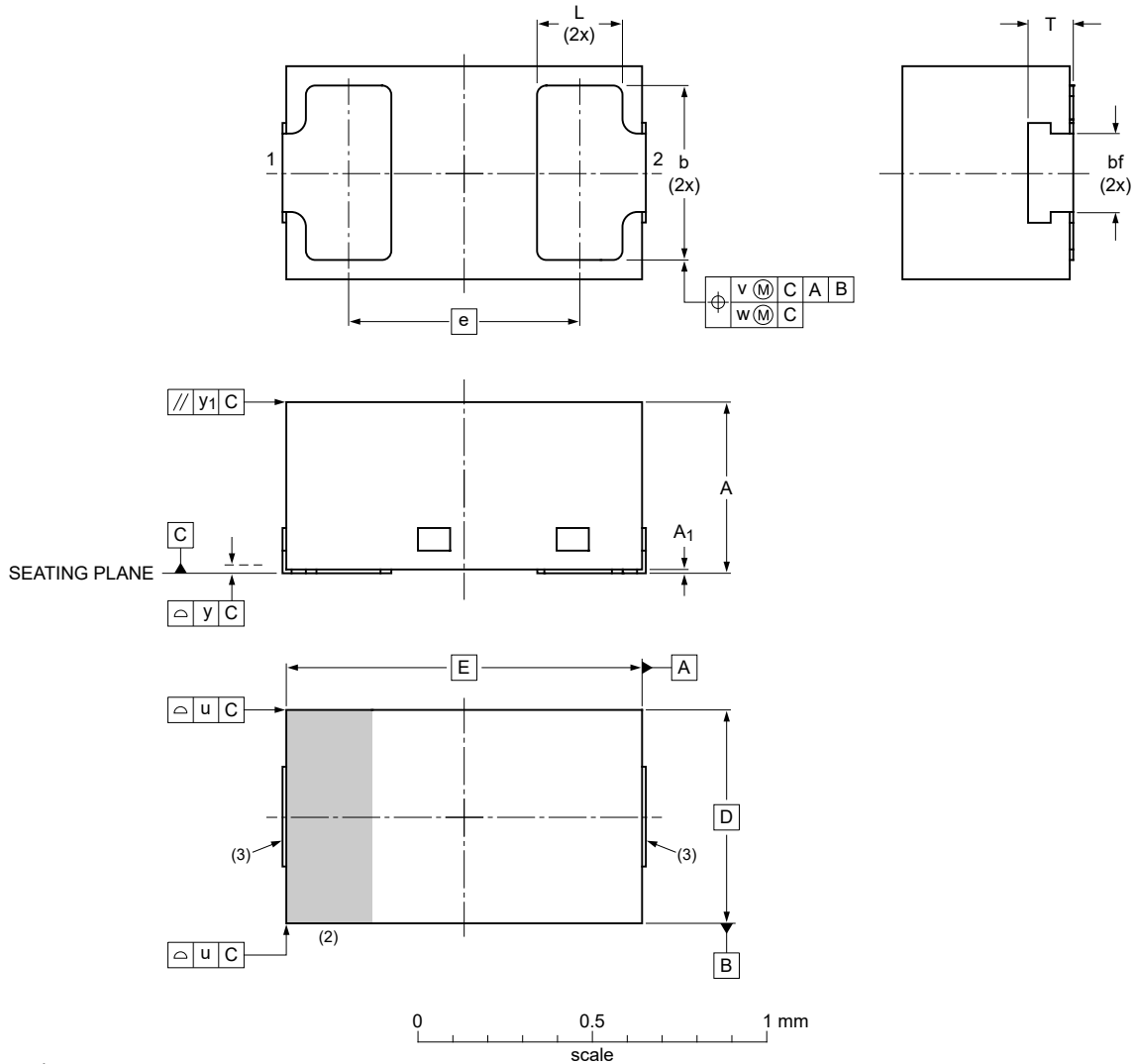
This product has been qualified in accordance with the Automotive Electronics Council (AEC) standard *Q101 - Stress test qualification for discrete semiconductors*, and is suitable for use in automotive applications.



## 12. Package outline

**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 <sup>(1)</sup>	A <sub>1</sub>	bf <sup>(1)</sup>	b	D	E	e	L	T <sup>(1)</sup>	u	v	w	y	y <sub>1</sub>
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**

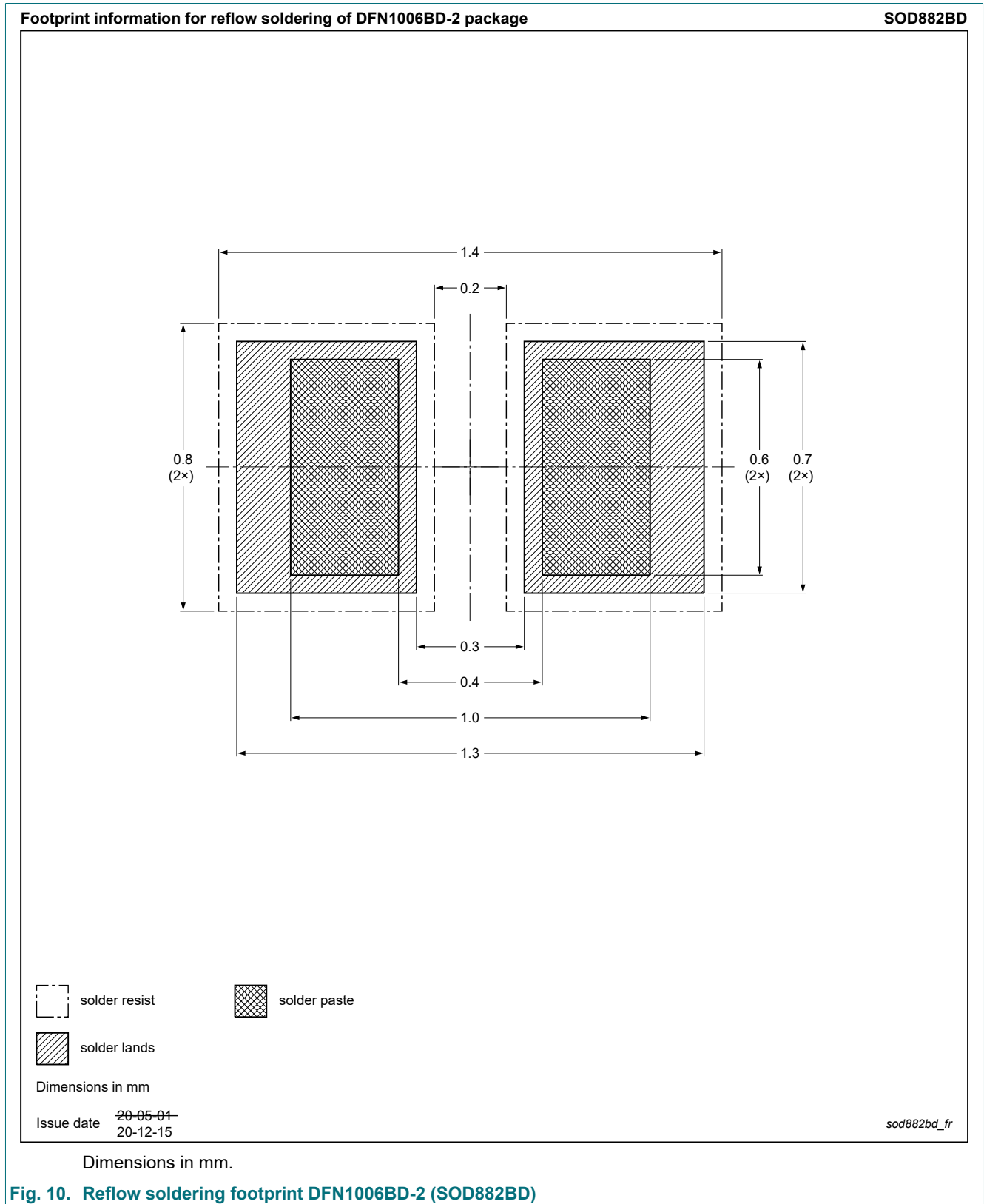
1. Dimension including plating thickness.
2. The marking bar indicates the cathode.
3. Solderable lead end, protrusion max. 0.02 mm.

sod882bd\_po

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

**Fig. 9. Package outline DFN1006BD-2 (SOD882BD)**

### 13. Soldering



## 14. Revision history

Table 10. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
PZU884LS-Q_SER v.4	20240816	Product data sheet	-	PZU884LS-Q_SER v.3
Modifications	• Subtitle of data sheet adapted			
PZU884LS-Q_SER v.3	20240802	Product data sheet	-	PZU884LS-Q_SER v.2
PZU884LS-Q_SER v.2	20240611	Product data sheet	-	PZU884LS-Q_SER v.1
PZU884LS-Q_SER v.1	20240527	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.

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- [2] The term 'short data sheet' is explained in section "Definitions".
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