PZU884LS-Q series

Voltage regulator diodes

Rev. 1 — 27 May 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: ± 2 % and approximately ± 5 %
- Wide working voltage range: nominal 2.4 V to 36 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 -C36-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

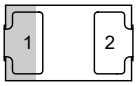
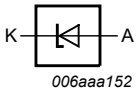
T_{amb} = 25 °C unless otherwise specified.

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
P_{ZSM}	non-repetitive peak reverse power dissipation		[3]	-	-	40	W

[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.
[3] t_p = 100 µs; square wave; T_j = 25 °C prior to surge.

5. Pinning information

Table 2. Pinning

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	K	cathode [1]	 Transparent top view	
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 30 breakdown voltages with nominal working voltages from 2.4 V to 36 V and ±2 % and approximately ±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-C6V2-Q	MC	-	-
PZU884LS-B7V5-Q	R4	-	-	PZU884LS-C6V8-Q	MD	-	-
PZU884LS-B8V2-Q	R5	-	-	PZU884LS-C7V5-Q	ME	-	-
PZU884LS-B9V1-Q	R6	-	-	PZU884LS-C8V2-Q	MF	-	-
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 °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 µs; square wave; T_j = 25 °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 °C unless otherwise specified.

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

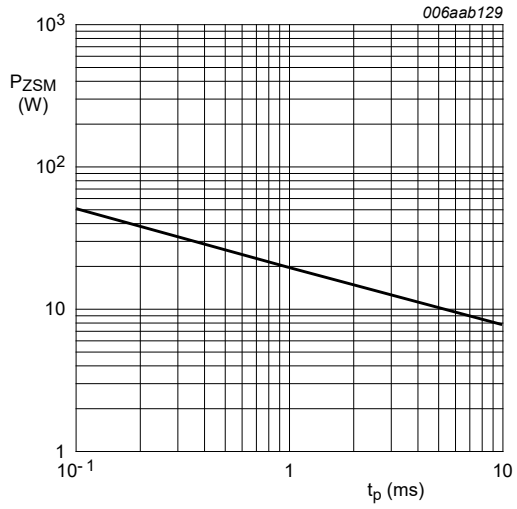
[1] Pulse test: $t_p \leq 300$ µs; $\delta \leq 0.02$.

Table 8. Characteristics per type; PZU884LS-C2V4-Q to PZU884LS-C36-Q

T_j = 25 °C unless otherwise specified.

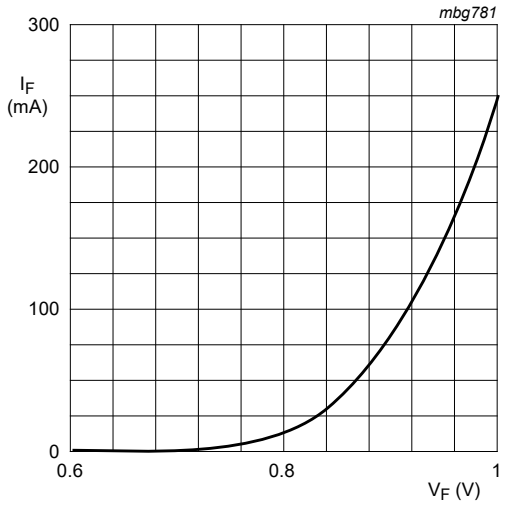
PZU884LS-xxx-Q	Sel	Working voltage V_Z (V)		Differential resistance r_{dif} (Ω)		Reverse current I_R (µA)		Temperature coefficient S_Z (mV/K)		Diode capacitance C_d (pF)
		I_Z = 5 mA		I_Z = 0.5 mA	I_Z = 5 mA			I_Z = 5 mA		f = 1 MHz V_R = 0 V
		Min	Max	Max	Max	Max	V_R (V)	Min	Max	Max
2V4	C	2.30	2.60	1000	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	3	0.5	0.4	3.7	250
	C	5.86	6.53							
6V8	B	6.65	6.93	60	20	2	0.5	1.2	4.5	215
	C	6.47	7.14							
7V5	B	7.28	7.60	60	10	1	0.5	2.5	5.3	170
	C	7.06	7.84							
8V2	B	8.02	8.36	60	10	0.7	0.5	3.2	6.2	150
	C	7.76	8.64							
9V1	B	8.85	9.23	60	10	0.5	0.5	3.8	7.0	120
	C	8.56	9.55							
10	B	9.77	10.21	60	10	0.2	0.1	4.5	8.0	110
	C	9.45	10.55							
11	B	10.76	11.22	60	10	0.1	0.1	5.4	9.0	108
	C	10.44	11.56							
12	B	11.74	12.24	80	10	0.1	0.1	6.0	10.0	105
	C	11.42	12.60							
13	B	12.91	13.49	80	10	0.1	0.1	7.0	11.0	103
	C	12.47	13.96							
14	B	13.70	14.30	80	10	0.1	10	8.0	12.5	101

PZU884LS-xxx-Q	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)
		I_Z = 5 mA		I_Z = 0.5 mA	I_Z = 5 mA			I_Z = 5 mA		f = 1 MHz V_R = 0 V
		Min	Max	Max	Max	Max	V_R (V)	Min	Max	Max
15	B	14.34	14.98	80	15	0.1	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							



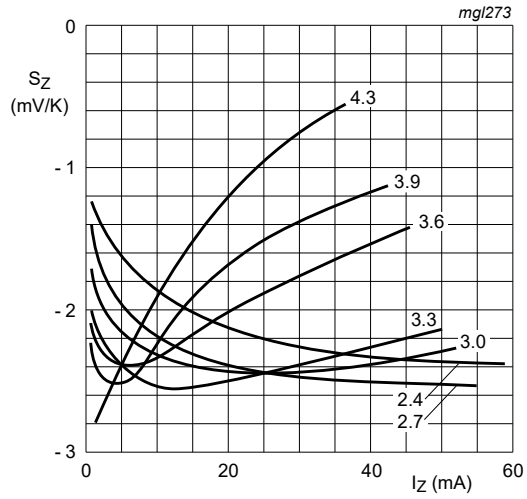
T_j = 25 °C (prior to surge)

Fig. 1. Non-repetitive peak reverse power dissipation as a function of pulse duration; typical values



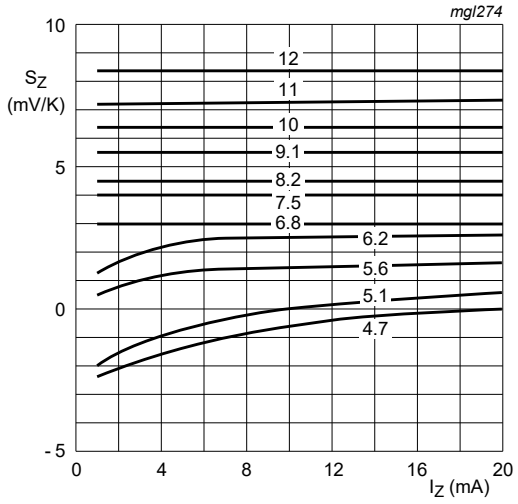
T_j = 25 °C

Fig. 2. Forward current as a function of forward voltage; typical values



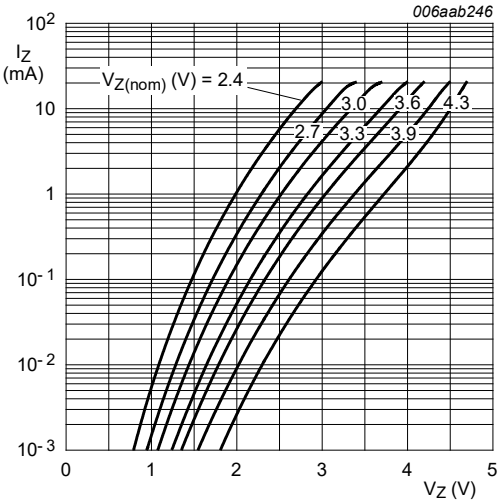
T_j = 25 °C to 150 °C
V_Z = 2.4 V to 4.3 V

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



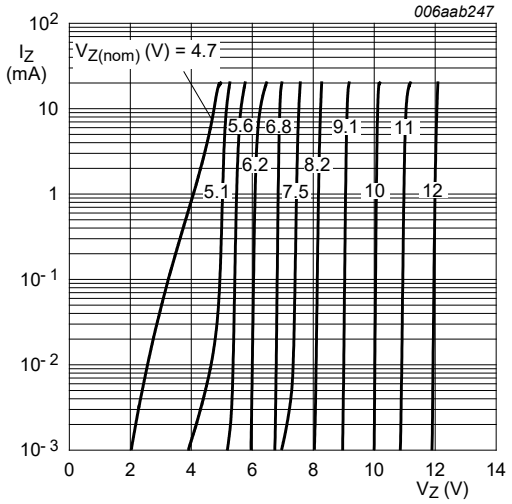
T_j = 25 °C to 150 °C
V_Z = 4.7 V to 12 V

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



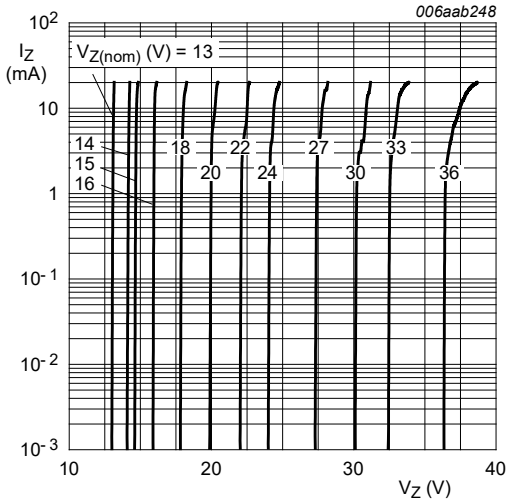
T_j = 25 °C
V_Z = 2.4 V to 4.3 V

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



T_j = 25 °C
V_Z = 4.7 V to 12 V

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



T_j = 25 °C

V_Z = 13 V to 36 V

Fig. 7. Working current as a function of working voltage; typical values

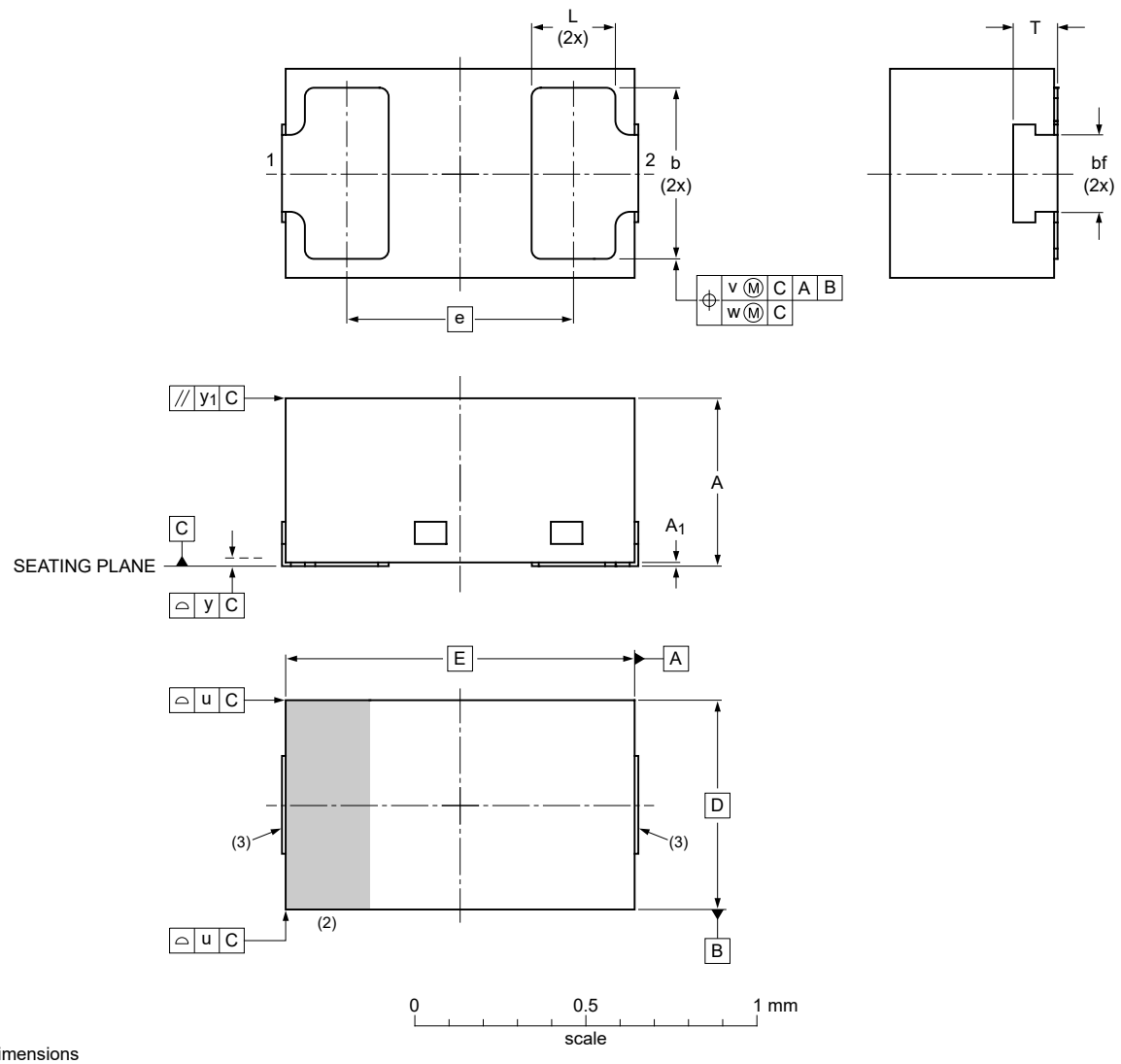
11. Test information

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		$A^{(1)}$	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.

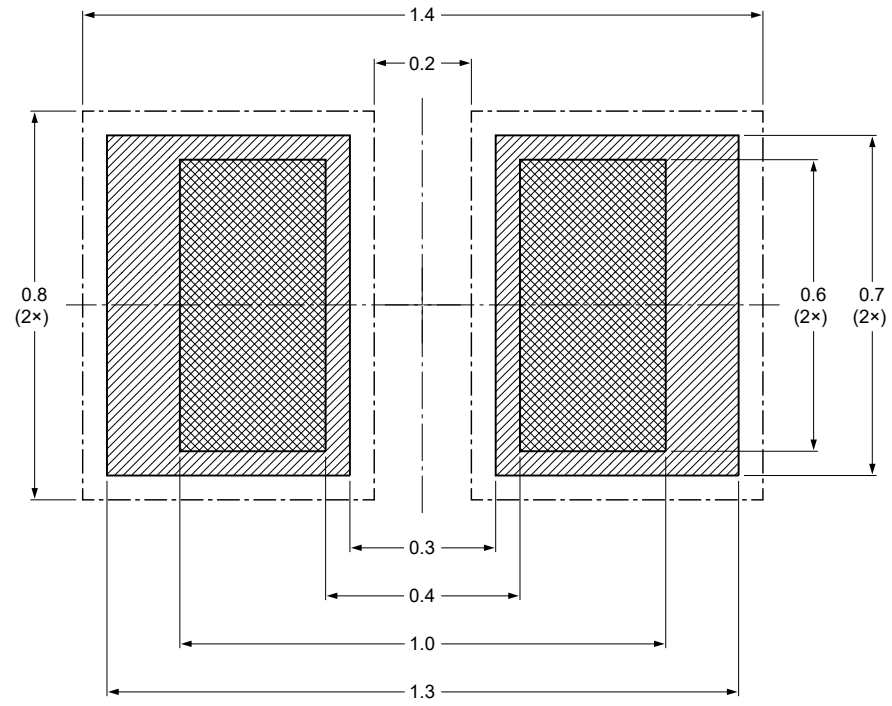
sod882bd_po

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

Fig. 8. Package outline DFN1006BD-2 (SOD882BD)

13. 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

Dimensions in mm.

Fig. 9. Reflow soldering footprint DFN1006BD-2 (SOD882BD)

14. Revision history

Table 9. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
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.

[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".
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Date of release: 27 May 2024