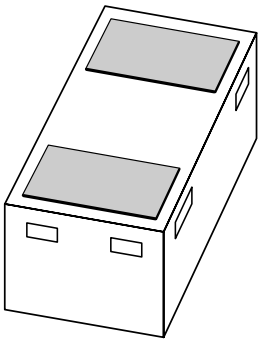
DATA SHEET



BZX884 series
Voltage regulator diodes

Product specification
Supersedes data of 2003 May 15

2004 Mar 26

Philips
Semiconductors

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Voltage regulator diodes BZX884 series

FEATURES

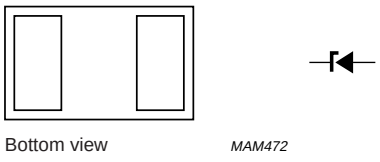
- Two tolerance series: ±2% and ±5%
- Working voltage range: nominal 2.4 V to 75 V (E24 range)
- Leadless ultra small plastic package (1 mm × 0.6 mm × 0.5 mm)
- Boardspace 1.17 mm^2 (approximately 10% of SOT23)
- Power dissipation comparable to SOT23.

APPLICATIONS

- General regulation functions
- ESD ultra high-speed switching
- High frequency applications
- Mobile communication, digital (still) cameras, PDAs and PCMCIA cards.

DESCRIPTION

Low-power voltage regulator diodes encapsulated in SOD882 leadless ultra small plastic packages.



The marking bar indicates the cathode.

Fig.1 Simplified outline (SOD882) and symbol.

MARKING

TYPE NUMBER	MARKING CODE	TYPE NUMBER	MARKING CODE	TYPE NUMBER	MARKING CODE	TYPE NUMBER	MARKING CODE
Marking codes for BZX884-B2V4 to BZX884-B75							
BZX884-B2V4	A1	BZX884-B6V2	AB	BZX884-B16	C1	BZX884-B43	CB
BZX884-B2V7	A2	BZX884-B6V8	AC	BZX884-B18	C2	BZX884-B47	CC
BZX884-B3V0	A3	BZX884-B7V5	AD	BZX884-B20	C3	BZX884-B51	CD
BZX884-B3V3	A4	BZX884-B8V2	AE	BZX884-B22	C4	BZX884-B56	CE
BZX884-B3V6	A5	BZX884-B9V1	AF	BZX884-B24	C5	BZX884-B62	CF
BZX884-B3V9	A6	BZX884-B10	AG	BZX884-B27	C6	BZX884-B68	CG
BZX884-B4V3	A7	BZX884-B11	AH	BZX884-B30	C7	BZX884-B75	CH
BZX884-B4V7	A8	BZX884-B12	AJ	BZX884-B33	C8		
BZX884-B5V1	A9	BZX884-B13	AK	BZX884-B36	C9		
BZX884-B5V6	AA	BZX884-B15	AL	BZX884-B39	CA		
Marking codes for BZX884-C2V4 to BZX884-C75							
BZX884-C2V4	B1	BZX884-C6V2	BB	BZX884-C16	D1	BZX884-C43	DB
BZX884-C2V7	B2	BZX884-C6V8	BC	BZX884-C18	D2	BZX884-C47	DC
BZX884-C3V0	B3	BZX884-C7V5	BD	BZX884-C20	D3	BZX884-C51	DD
BZX884-C3V3	B4	BZX884-C8V2	BE	BZX884-C22	D4	BZX884-C56	DE
BZX884-C3V6	B5	BZX884-C9V1	BF	BZX884-C24	D5	BZX884-C62	DF
BZX884-C3V9	B6	BZX884-C10	BG	BZX884-C27	D6	BZX884-C68	DG
BZX884-C4V3	B7	BZX884-C11	BH	BZX884-C30	D7	BZX884-C75	DH
BZX884-C4V7	B8	BZX884-C12	BJ	BZX884-C33	D8		
BZX884-C5V1	B9	BZX884-C13	BK	BZX884-C36	D9		
BZX884-C5V6	BA	BZX884-C15	BL	BZX884-C39	DA		

ORDERING INFORMATION

TYPE NUMBER	PACKAGE		
	NAME	DESCRIPTION	VERSION
BZX884-B2V4 to BZX884-B75	–	Leadless ultra small plastic package;2 terminals; body 1.0 x 0.6 x 0.5 mm	SOD882
BZX884-C2V4 to BZX884-C75	–	Leadless ultra small plastic package;2 terminals; body 1.0 x 0.6 x 0.5 mm	SOD882

LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 60134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
I_F	continuous 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 Tables 1 and 2		
P_{tot}	total power dissipation	T_{amb} = 25 °C; note 1	–	250	mW
T_{stg}	storage temperature		–65	+150	°C
T_j	junction temperature		–	150	°C

Note

1. Refer to SOD882 standard mounting conditions (footprint), FR4 with 60 µm copper strip line.

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th(j-a)}$	thermal resistance from junction to ambient	note 1	500	K/W

Note

1. Refer to SOD882 standard mounting conditions (footprint), FR4 with 60 µm copper strip line.

ELECTRICAL CHARACTERISTICS

T_j = 25 °C unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MAX.	UNIT
V_F	forward voltage	I_F = 10 mA; see Fig.2	0.9	V
I_R	reverse current			
	BZX884-B/C2V4	V_R = 1 V	50	µA
	BZX884-B/C2V7	V_R = 1 V	20	µA
	BZX884-B/C3V0	V_R = 1 V	10	µA
	BZX884-B/C3V3	V_R = 1 V	5	µA
	BZX884-B/C3V6	V_R = 1 V	5	µA
	BZX884-B/C3V9	V_R = 1 V	3	µA
	BZX884-B/C4V3	V_R = 1 V	3	µA
	BZX884-B/C4V7	V_R = 2 V	3	µA
	BZX884-B/C5V1	V_R = 2 V	2	µA
	BZX884-B/C5V6	V_R = 2 V	1	µA
	BZX884-B/C6V2	V_R = 4 V	3	µA
	BZX884-B/C6V8	V_R = 4 V	2	µA
	BZX884-B/C7V5	V_R = 5 V	1	µA
	BZX884-B/C8V2	V_R = 5 V	700	nA
	BZX884-B/C9V1	V_R = 6 V	500	nA
	BZX884-B/C10	V_R = 7 V	200	nA
	BZX884-B/C11	V_R = 8 V	100	nA
	BZX884-B/C12	V_R = 8 V	100	nA
	BZX884-B/C13	V_R = 8 V	100	nA
	BZX884-B/C15 to 75	V_R = 0.7 V_{Znom}	50	nA

Table 1 Per type BZX884-B/C2V4 to B/C24

T_j = 25 °C unless otherwise specified.

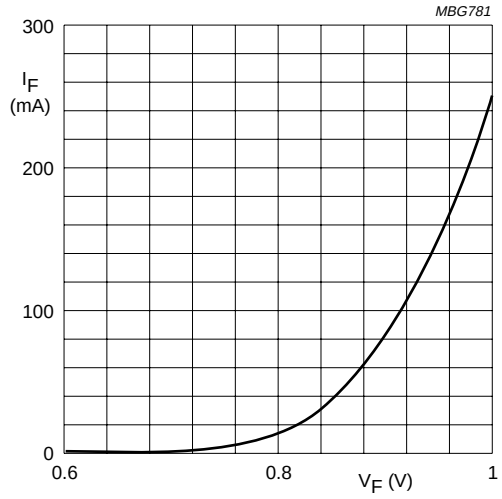
BZX884-B or C XXX	WORKING VOLTAGE V_Z (V) at I_Z = 5 mA				DIFFERENTIAL RESISTANCE r_{dif} (Ω)				TEMP. COEFF. S_Z (mV/K) at I_{Ztest} = 5 mA (see Figs 3 and 4)	DIODE CAP. C_d (pF) at f = 1 MHz; V_R = 0 V	NON-REPETITIVE PEAK REVERSE CURRENT I_{ZSM} (A) at t_p = 100 μs; T_{amb} = 25 °C
	Tol. ±2% (B)		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	6.0
2V7	2.65	2.75	2.57	2.84	300	450	75	100	–1.4	440	6.0
3V0	2.94	3.06	2.85	3.15	325	500	80	95	–1.6	425	6.0
3V3	3.23	3.37	3.14	3.47	350	500	85	95	–1.8	410	6.0
3V6	3.53	3.67	3.42	3.78	375	500	85	90	–1.9	390	6.0
3V9	3.82	3.98	3.71	4.10	400	500	85	90	–1.9	370	6.0
4V3	4.21	4.39	4.09	4.52	410	600	80	90	–1.7	350	6.0
4V7	4.61	4.79	4.47	4.94	425	500	50	80	–1.2	325	6.0
5V1	5.00	5.20	4.85	5.36	400	480	40	60	–0.5	300	6.0
5V6	5.49	5.71	5.32	5.88	80	400	15	40	1.0	275	6.0
6V2	6.08	6.32	5.89	6.51	40	150	6	10	2.2	250	6.0
6V8	6.66	6.94	6.46	7.14	30	80	6	15	3.0	215	6.0
7V5	7.35	7.65	7.13	7.88	15	80	2	10	3.6	170	4.0
8V2	8.04	8.36	7.79	8.61	20	80	2	10	4.3	150	4.0
9V1	8.92	9.28	8.65	9.56	20	100	2	10	5.2	120	3.0
10	9.80	10.20	9.50	10.50	20	150	2	10	6.0	110	3.0
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	2.0
16	15.68	18.32	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

Table 2 Per type BZX884-B/C27 to B/C75

T_j = 25 °C unless otherwise specified.

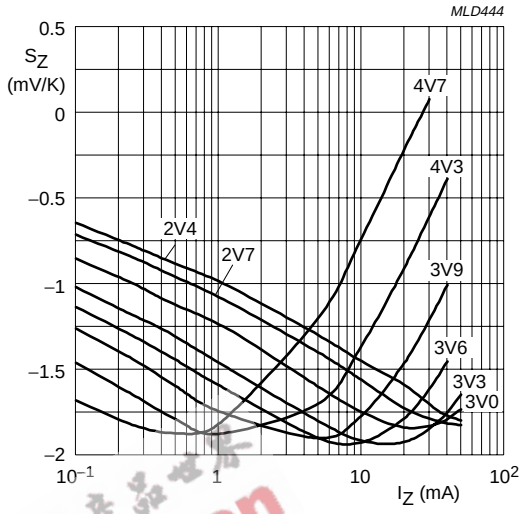
BZX884-B or C XXX	WORKING VOLTAGE V_Z (V) at I_Z = 2 mA				DIFFERENTIAL RESISTANCE r_{dif} (Ω)				TEMP. COEFF. S_Z (mV/K) at I_{Ztest} = 2 mA (see Figs 3 and 4)	DIODE CAP. C_d (pF) at f = 1 MHz; V_R = 0 V	NON-REPETITIVE PEAK REVERSE CURRENT I_{ZSM} (A) at t_p = 100 μs; T_{amb} = 25 °C
	Tol. ±2% (B)		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	27.54	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	51.0	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

GRAPHICAL DATA



T_j = 25 °C.

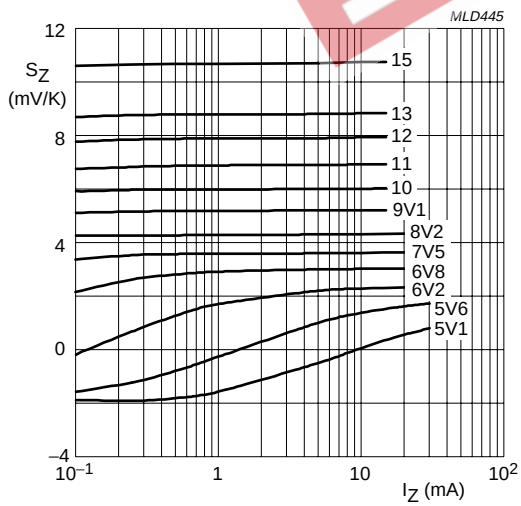
Fig.2 Forward current as a function of forward voltage; typical values.



BZX884-B/C2V4 to B/C4V7.

T_j = 25 to 150 °C.

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



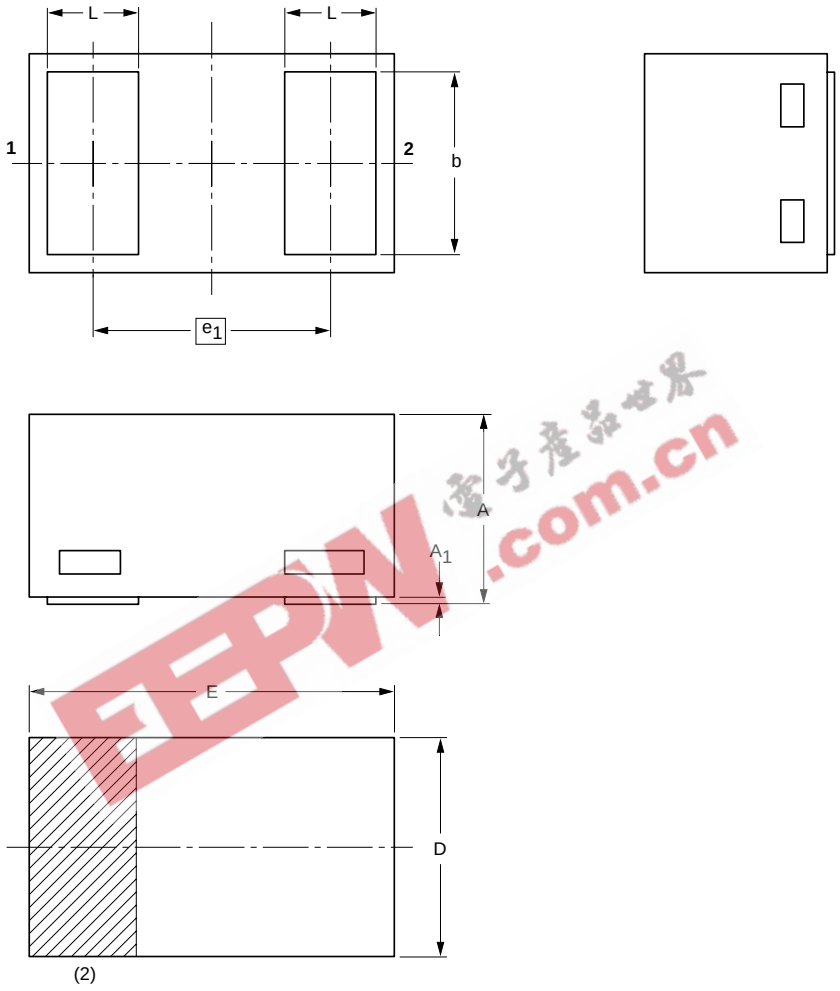
BZX884-B/C5V1 to B/C15.

T_j = 25 to 150 °C.

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

PACKAGE OUTLINE

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)	A1 max.	b	D	E	e1	L
mm	0.50 0.46	0.03	0.55 0.47	0.62 0.55	1.02 0.95	0.65	0.30 0.22

Notes

1. Including plating thickness
2. The marking bar indicates the cathode

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA			
SOD882						~~03-04-16~~ 03-04-17

SOLDERING

Reflow soldering is the only recommended soldering method.

DATA SHEET STATUS

LEVEL	DATA SHEET STATUS(1)	PRODUCT STATUS(2)(3)	DEFINITION
I	Objective data	Development	This data sheet contains data from the objective specification for product development. Philips Semiconductors reserves the right to change the specification in any manner without notice.
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3. For data sheets describing multiple type numbers, the highest-level product status determines the data sheet status.

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Limiting values definition — Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 60134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability.

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SCA76

Printed in The Netherlands R76/02/pp10 Date of release: 2004 Mar 26 Document order number: 9397 750 12713

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