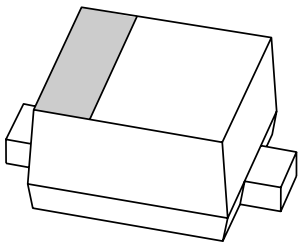
DATA SHEET



BZX585 series
Voltage regulator diodes

Product specification
Supersedes data of 2000 Jun 06

2000 Oct 20

Philips
Semiconductors

PHILIPS

Voltage regulator diodes BZX585 series

FEATURES

- Total power dissipation: max. 300 mW
- Two tolerance series: ±2% and ±5%
- Working voltage range: nom. 2.4 to 15 V (E24 range).

APPLICATIONS

- General regulation functions.

DESCRIPTION

Low-power voltage regulator diodes in a small plastic SMD SOD523 package. The diodes are available in the normalized E24 ±2% (BZX585-B) and ±5% (BZX585-C) tolerance range. The series consists of 20 types with nominal working voltages from 2.4 to 15 V.

PINNING

PIN	DESCRIPTION
1	cathode
2	anode

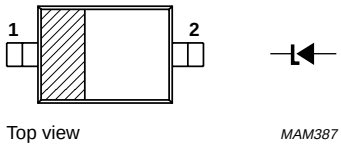


Fig.1 Simplified outline (SOD523) and symbol.

MARKING

TYPE NUMBER	MARKING CODE	TYPE NUMBER	MARKING CODE	TYPE NUMBER	MARKING CODE	TYPE NUMBER	MARKING CODE
BZX585-B2V4	C1	BZX585-B6V2	E1	BZX585-C2V4	F1	BZX585-C6V2	H1
BZX585-B2V7	C2	BZX585-B6V8	E2	BZX585-C2V7	F2	BZX585-C6V8	H2
BZX585-B3V0	C3	BZX585-B7V5	E3	BZX585-C3V0	F3	BZX585-C7V5	H3
BZX585-B3V3	C4	BZX585-B8V2	E4	BZX585-C3V3	F4	BZX585-C8V2	H4
BZX585-B3V6	C5	BZX585-B9V1	E5	BZX585-C3V6	F5	BZX585-C9V1	H5
BZX585-B3V9	C6	BZX585-B10	E6	BZX585-C3V9	F6	BZX585-C10	H6
BZX585-B4V3	C7	BZX585-B11	E7	BZX585-C4V3	F7	BZX585-C11	H7
BZX585-B4V7	C8	BZX585-B12	E8	BZX585-C4V7	F8	BZX585-C12	H8
BZX585-B5V1	C9	BZX585-B13	E9	BZX585-C5V1	F9	BZX585-C13	H9
BZX585-B5V6	C0	BZX585-B15	E0	BZX585-C5V6	F0	BZX585-C15	H0

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 Table 1		
P_{tot}	total power dissipation	T_{amb} = 25 °C; note 1	–	300	mW
T_{stg}	storage temperature		–65	+150	°C
T_j	junction temperature		–	150	°C

Note

1. Device mounted on an FR4 printed-circuit board with approximately 35 mm^2 Cu area at cathode tab.

ELECTRICAL CHARACTERISTICS

Total BZX585-B and C series

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			
	BZX585-B/C2V4	V_R = 1 V	50	µA
	BZX585-B/C2V7	V_R = 1 V	20	µA
	BZX585-B/C3V0	V_R = 1 V	10	µA
	BZX585-B/C3V3	V_R = 1 V	5	µA
	BZX585-B/C3V6	V_R = 1 V	5	µA
	BZX585-B/C3V9	V_R = 1 V	3	µA
	BZX585-B/C4V3	V_R = 1 V	3	µA
	BZX585-B/C4V7	V_R = 2 V	3	µA
	BZX585-B/C5V1	V_R = 2 V	2	µA
	BZX585-B/C5V6	V_R = 2 V	1	µA
	BZX585-B/C6V2	V_R = 4 V	3	µA
	BZX585-B/C6V8	V_R = 4 V	2	µA
	BZX585-B/C7V5	V_R = 5 V	1	µA
	BZX585-B/C8V2	V_R = 5 V	700	nA
	BZX585-B/C9V1	V_R = 6 V	500	nA
	BZX585-B/C10	V_R = 7 V	200	nA
	BZX585-B/C11	V_R = 8 V	100	nA
	BZX585-B/C12	V_R = 8 V	100	nA
	BZX585-B/C13	V_R = 8 V	100	nA
	BZX585-B/C15	V_R = 10.5V	50	nA

Table 1 Per type BZX585-**B/C2V4** to **B/C15**

T_j = 25 °C unless otherwise specified.

BZX585-B or C XXX	WORKING VOLTAGE V_Z (V) at I_{Ztest} = 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

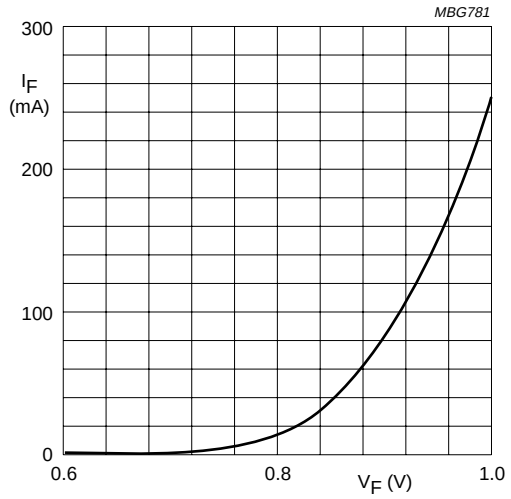
THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j\text{-}a}$	thermal resistance from junction to ambient	note 1	350	K/W
$R_{th\ j\text{-}s}$	thermal resistance from junction to solder point	note 2	65	K/W

Notes

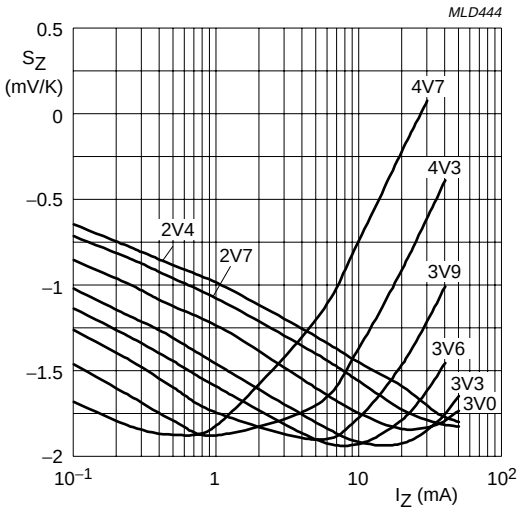
1. Device mounted on a FR4 printed-circuit board with approximately 35 mm^2 Cu area at cathode tab.
2. Solder point at cathode tab.

GRAPHICAL DATA



T_j = 25 °C.

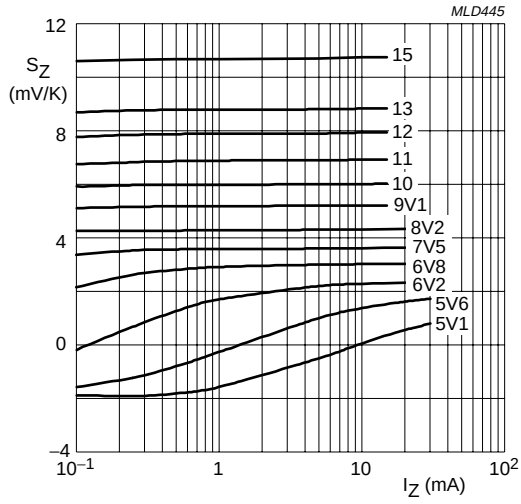
Fig.2 Forward current as a function of forward voltage; typical values.



BZX585-B/C2V4 to B/C4V7.

T_j = 25 to 150 °C.

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



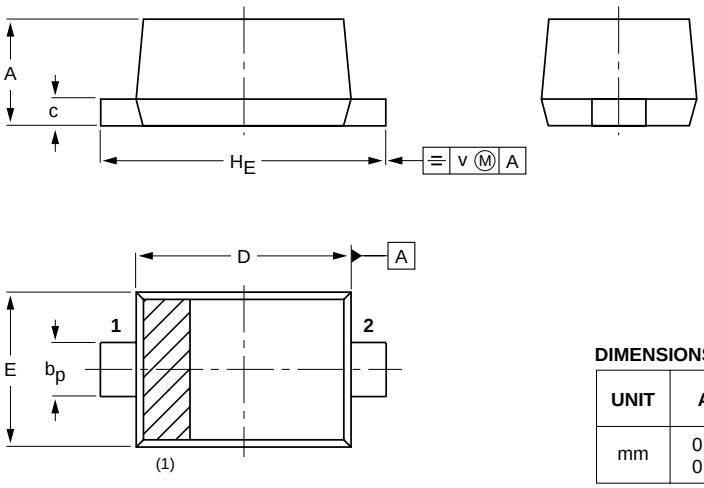
BZX585-B/C5V1 to B/C15.

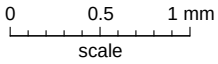
T_j = 25 to 150 °C.

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

PACKAGE OUTLINE

Plastic surface mounted package; 2 leads **SOD523**





DIMENSIONS (mm are the original dimensions)

UNIT	A	b_p	c	D	E	H_E	v
mm	0.7 0.5	0.35 0.25	0.2 0.1	1.3 1.1	0.9 0.7	1.7 1.5	0.15

Note

1. The marking bar indicates the cathode.

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOD523			SC-79			98-11-25

DATA SHEET STATUS

DATA SHEET STATUS	PRODUCT STATUS	DEFINITIONS (1)
Objective specification	Development	This data sheet contains the design target or goal specifications for product development. Specification may change in any manner without notice.
Preliminary specification	Qualification	This data sheet contains preliminary data, and supplementary data will be published at a later date. Philips Semiconductors reserves the right to make changes at any time without notice in order to improve design and supply the best possible product.
Product specification	Production	This data sheet contains final specifications. Philips Semiconductors reserves the right to make changes at any time without notice in order to improve design and supply the best possible product.

Note

1. Please consult the most recently issued data sheet before initiating or completing a design.

DEFINITIONS

Short-form specification — The data in a short-form specification is extracted from a full data sheet with the same type number and title. For detailed information see the relevant data sheet or data handbook.

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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