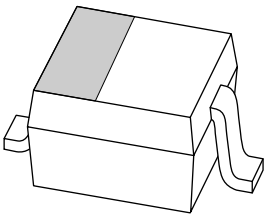
DATA SHEET



PDZ-B series
Voltage regulator diodes

Product specification
Supersedes data of 2002 Feb 18

2004 Mar 22

Philips
Semiconductors

PHILIPS

Voltage regulator diodes PDZ-B series

FEATURES

- Total power dissipation: max. 400 mW
- Small plastic package suitable for surface mounted design
- Wide variety of voltage ranges: nominal 2.4 to 36 V (E24 range)
- Tolerance approximately ±2%.

APPLICATIONS

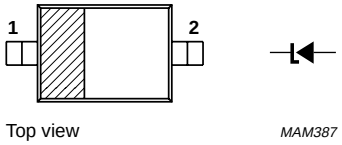
- General voltage regulation.

DESCRIPTION

Low-power general purpose voltage regulator diodes in a small plastic SMD SOD323 (SC-76) package.

PINNING

PIN	DESCRIPTION
1	cathode
2	anode



The marking bar indicates the cathode.

Fig.1 Simplified outline (SOD323; SC-76) and symbol.

MARKING

TYPE NUMBER	MARKING CODE	TYPE NUMBER	MARKING CODE	TYPE NUMBER	MARKING CODE	TYPE NUMBER	MARKING CODE
PDZ2.4B	Z0	PDZ5.1B	Z8	PDZ11B	ZG	PDZ24B	ZQ
PDZ2.7B	Z1	PDZ5.6B	Z9	PDZ12B	ZH	PDZ27B	ZR
PDZ3.0B	Z2	PDZ6.2B	ZA	PDZ13B	ZJ	PDZ30B	ZS
PDZ3.3B	Z3	PDZ6.8B	ZB	PDZ15B	ZK	PDZ33B	ZT
PDZ3.6B	Z4	PDZ7.5B	ZC	PDZ16B	ZL	PDZ36B	ZU
PDZ3.9B	Z5	PDZ8.2B	ZD	PDZ18B	ZM		
PDZ4.3B	Z6	PDZ9.1B	ZE	PDZ20B	ZN		
PDZ4.7B	Z7	PDZ10B	ZF	PDZ22B	ZP		

ORDERING INFORMATION

TYPE NUMBER	PACKAGE		
	NAME	DESCRIPTION	VERSION
PDZ2.4B to PDZ36B	–	plastic surface mounted package; 2 leads	SOD323

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 2		
P_{tot}	total power dissipation	T_{amb} = 25 °C; note 1; see Fig.2	–	400	mW
T_{stg}	storage temperature		–65	+150	°C
T_j	junction temperature		–	150	°C

Note

1. Device mounted on a printed-circuit board measuring 11 × 25 × 1.6 mm.

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th(j-s)}$	thermal resistance from junction to soldering point		130	K/W
$R_{th(j-a)}$	thermal resistance from junction to ambient	note 1	340	K/W

Note

1. Device mounted on a printed-circuit board measuring 11 × 25 × 1.6 mm.

CHARACTERISTICS

Table 1 Total series

T_j = 25 °C unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MAX.	UNIT
V_F	forward voltage	I_F = 10 mA; see Fig.3	0.9	V
		I_F = 100 mA; see Fig.3	1.1	V
I_R	reverse current			
	PDZ2.4B	V_R = 1 V	50	µA
	PDZ2.7B	V_R = 1 V	20	µA
	PDZ3.0B	V_R = 1 V	10	µA
	PDZ3.3B	V_R = 1 V	5	µA
	PDZ3.6B	V_R = 1 V	5	µA
	PDZ3.9B	V_R = 1 V	3	µA
	PDZ4.3B	V_R = 1 V	3	µA
	PDZ4.7B	V_R = 1 V	2	µA
	PDZ5.1B	V_R = 1.5 V	2	µA
	PDZ5.6B	V_R = 2.5 V	1	µA
	PDZ6.2B	V_R = 3 V	500	nA
	PDZ6.8B	V_R = 3.5 V	500	nA
	PDZ7.5B	V_R = 4 V	500	nA
	PDZ8.2B	V_R = 5 V	500	nA
	PDZ9.1B	V_R = 6 V	500	nA
	PDZ10B	V_R = 7 V	100	nA
	PDZ11B	V_R = 8 V	100	nA
	PDZ12B	V_R = 9 V	100	nA
	PDZ13B	V_R = 10 V	100	nA
	PDZ15B	V_R = 11 V	50	nA
	PDZ16B	V_R = 12 V	50	nA
	PDZ18B	V_R = 13 V	50	nA
	PDZ20B	V_R = 15 V	50	nA
	PDZ22B	V_R = 17 V	50	nA
	PDZ24B	V_R = 19 V	50	nA
	PDZ27B	V_R = 21 V	50	nA
	PDZ30B	V_R = 23 V	50	nA
	PDZ33B	V_R = 25 V	50	nA
	PDZ36B	V_R = 27 V	50	nA

Table 2 Per type

T_j = 25 °C unless otherwise specified.

TYPE NUMBER	WORKING VOLTAGE V_Z (V) at I_Z = 5 mA		DIFFERENTIAL RESISTANCE r_{dif} (Ω)				TEMP. COEFF. S_Z (mV/K) at I_Z = 5 mA (see Figs 4 and 5)	DIODE CAP. C_d (pF) at f = 1 MHz; V_R = 0	NON-REPETITIVE PEAK REVERSE CURRENT I_{ZSM} (A) at t_p = 100 μs; T_{amb} = 25 °C
	MIN.	MAX.	MAX.	at I_Z (mA)	MAX.	at I_Z (mA)	TYP.	MAX.	MAX.
PDZ2.4B	2.43	2.63	1000	0.5	100	5	–1.6	450	8.0
PDZ2.7B	2.69	2.91	1000	0.5	100	5	–2.0	440	8.0
PDZ3.0B	2.85	3.07	1000	0.5	95	5	–2.1	425	8.0
PDZ3.3B	3.32	3.53	1000	0.5	95	5	–2.4	410	8.0
PDZ3.6B	3.60	3.85	500	1.0	90	5	–2.4	390	8.0
PDZ3.9B	3.89	4.16	500	1.0	90	5	–2.5	370	8.0
PDZ4.3B	4.17	4.48	600	1.0	90	5	–2.5	350	8.0
PDZ4.7B	4.55	4.75	600	1.0	90	5	–1.4	325	8.0
PDZ5.1B	4.96	5.20	250	0.5	60	5	0.3	300	5.5
PDZ5.6B	5.48	5.73	100	0.5	50	5	1.9	275	5.5
PDZ6.2B	6.06	6.33	80	0.5	50	5	2.7	250	5.5
PDZ6.8B	6.65	6.93	60	0.5	40	5	3.4	215	5.5
PDZ7.5B	7.28	7.60	60	0.5	10	5	4.0	170	3.5
PDZ8.2B	8.02	8.36	60	0.5	10	5	4.6	150	3.5
PDZ9.1B	8.85	9.23	60	0.5	10	5	5.5	120	3.5
PDZ10B	9.77	10.21	60	0.5	10	5	6.4	110	3.5
PDZ11B	10.78	11.22	60	0.5	10	5	7.4	108	3.0
PDZ12B	11.74	12.24	80	0.5	10	5	8.4	105	3.0
PDZ13B	12.91	13.49	80	0.5	10	5	9.4	103	2.5
PDZ15B	14.34	14.98	80	0.5	15	5	11.4	99	2.0
PDZ16B	15.85	16.51	80	0.5	20	5	12.4	97	1.5
PDZ18B	17.56	18.35	80	0.5	20	5	14.4	93	1.5
PDZ20B	19.52	20.39	100	0.5	20	5	16.4	88	1.5
PDZ22B	21.54	22.47	100	0.5	25	5	18.4	84	1.3
PDZ24B	23.72	24.78	120	0.5	30	5	20.4	80	1.3
PDZ27B	26.19	27.53	150	0.5	40	5	23.4	73	1.0
PDZ30B	29.19	30.69	200	0.5	40	5	26.6	66	1.0
PDZ33B	32.15	33.79	250	0.5	40	5	29.7	60	0.9
PDZ36B	35.07	36.87	300	0.5	60	5	33.0	59	0.8

GRAPHICAL DATA

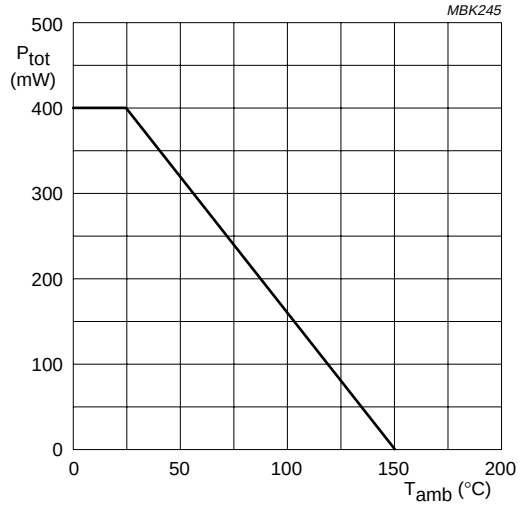
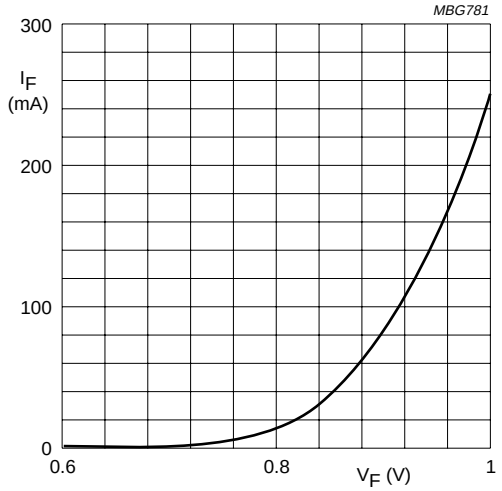
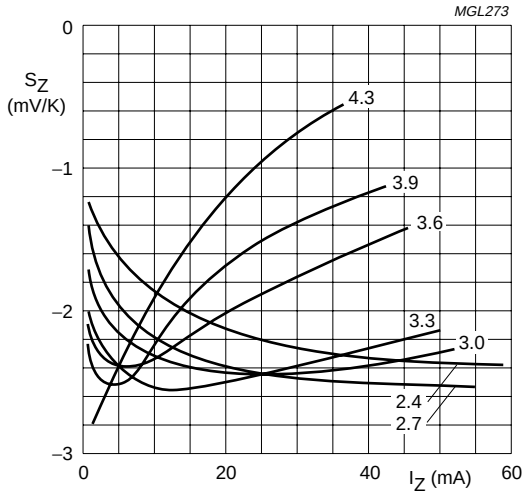


Fig.2 Power derating curve.



T_j = 25 °C.

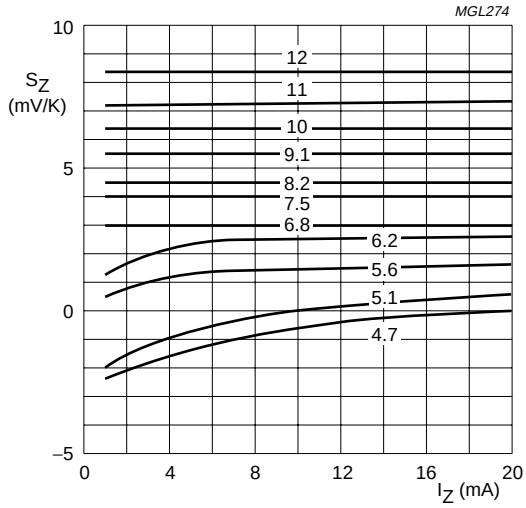
Fig.3 Forward current as a function of forward voltage; typical values.



PDZ2.4B to PDZ4.3B.

T_j = 25 °C to 150 °C.

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



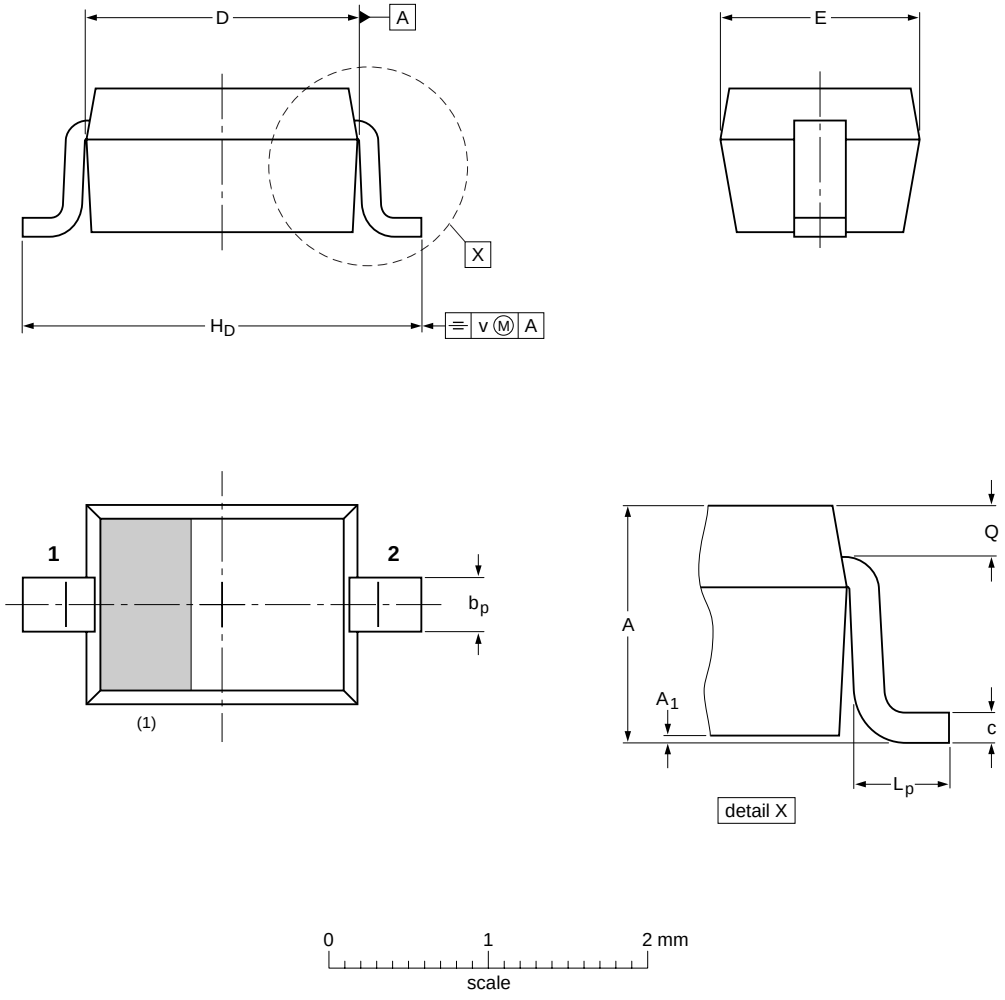
PDZ4.7B to PDZ12B.

T_j = 25 °C to 150 °C.

Fig.5 Temperature coefficient as a function of working current; typical values.

PACKAGE OUTLINE

Plastic surface mounted package; 2 leads **SOD323**



DIMENSIONS (mm are the original dimensions)

UNIT	A	A_1 max	b_p	c	D	E	H_D	L_p	Q	v
mm	1.1 0.8	0.05	0.40 0.25	0.25 0.10	1.8 1.6	1.35 1.15	2.7 2.3	0.45 0.15	0.25 0.15	0.2

Note

1. The marking bar indicates the cathode

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA			
SOD323			SC-76			~~99-09-13~~ 03-12-17

DATA SHEET STATUS

LEVEL	DATA SHEET STATUS(1)	PRODUCT STATUS(2)(3)	DEFINITION
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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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Printed in The Netherlands R76/05/pp9 Date of release: 2004 Mar 22 Document order number: 9397 750 12615

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