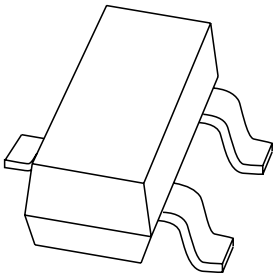
DATA SHEET



PMBZ5226B to PMBZ5257B
Voltage regulator diodes

Product specification
Supersedes data of 2001 Feb 09

2004 Jan 20

Philips
Semiconductors

PHILIPS

Voltage regulator diodes PMBZ5226B to PMBZ5257B

FEATURES

- Total power dissipation: max. 250 mW
- Tolerance series: ±5%
- Working voltage range: nominal 3.3 to 33 V
- Non-repetitive peak reverse power dissipation: max. 40 W.

APPLICATIONS

- General regulation functions.

DESCRIPTION

Low-power voltage regulator diodes in small SOT23 plastic SMD packages.

The series consists of 32 types with nominal working voltages from 3.3 to 33 V.

PINNING

PIN	DESCRIPTION
1	anode
2	not connected
3	cathode

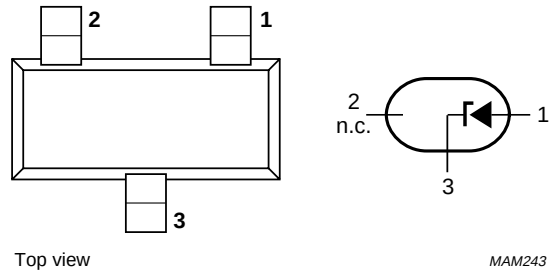


Fig.1 Simplified outline (SOT23) and symbol.

MARKING

TYPE NUMBER	MARKING CODE(1)	TYPE NUMBER	MARKING CODE(1)	TYPE NUMBER	MARKING CODE(1)	TYPE NUMBER	MARKING CODE(1)
PMBZ5226B	*8A	PMBZ5234B	*8J	PMBZ5242B	*8S	PMBZ5250B	81A or *9T
PMBZ5227B	*8B	PMBZ5235B	*8K	PMBZ5243B	*8T	PMBZ5251B	81B or *9U
PMBZ5228B	*8C	PMBZ5236B	*8L	PMBZ5244B	*8U	PMBZ5252B	81C or *9V
PMBZ5229B	*8D	PMBZ5237B	*8M	PMBZ5245B	*8V	PMBZ5253B	81D or *9X
PMBZ5230B	*8E	PMBZ5238B	*8N	PMBZ5246B	*8W	PMBZ5254B	81E or *9Y
PMBZ5231B	*8F	PMBZ5239B	*8P	PMBZ5247B	*8X	PMBZ5255B	81F or *D1
PMBZ5232B	*8G	PMBZ5240B	*8Q	PMBZ5248B	*8Y	PMBZ5256B	81G or *D2
PMBZ5233B	*8H	PMBZ5241B	*8R	PMBZ5249B	*8Z	PMBZ5257B	81H or *9Z

Note

1. * = p : Made in Hong Kong.
   * = t : Made in Malaysia.
   * = W : Made in China.

ORDERING INFORMATION

TYPE NUMBER	PACKAGE		
	NAME	DESCRIPTION	VERSION
PMBZ5226B to PMBZ5257B	–	plastic surface mounted package; 3 leads	SOT23

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_j = 25 °C prior to surge	see Table “Per type”		
P_{tot}	total power dissipation	T_{amb} = 25 °C; note 1	–	300	mW
		T_{amb} = 25 °C; note 2	–	250	mW
P_{ZSM}	non-repetitive peak reverse power dissipation	t_p = 100 μs; square wave; T_j = 25 °C prior to surge; see Fig.2	–	40	W
T_{stg}	storage temperature		–65	+150	°C
T_j	junction temperature		–	150	°C

Notes

1. Device mounted on a ceramic substrate of $8 \times 10 \times 0.7$ mm.
2. Device mounted on an FR4 printed-circuit board.

CHARACTERISTICS

Total series

T_j = 25 °C unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MAX.	UNIT
V_F	forward voltage	I_F = 200 mA; see Fig.3	1.1	V

Per type

T_j = 25 °C unless otherwise specified.

TYPE NUMBER	WORKING VOLTAGE V_Z (V)(1) at I_{Ztest}	DIFFERENTIAL RESISTANCE r_{dif} (Ω) at I_Z = 0.25 mA	TEMP. COEFF. S_Z (%/K) at I_Z(2)	TEST CURRENT I_{Ztest} (mA)	DIODE CAP. C_d (pF) at f = 1 MHz; at V_R = 0 V	REVERSE CURRENT at REVERSE VOLTAGE		NON-REPETITIVE PEAK REVERSE CURRENT I_{ZSM} (A) at t_p = 100 μs; T_{amb} = 25 °C
						I_R (μA)	V_R (V)	
	NOM.	MAX.	TYP.		MAX.	MAX.		MAX.
PMBZ5226B	3.3	1600	–0.064	20	450	25	1.0	6.0
PMBZ5227B	3.6	1700	–0.065	20	450	15	1.0	6.0
PMBZ5228B	3.9	1900	–0.063	20	450	10	1.0	6.0
PMBZ5229B	4.3	2000	–0.058	20	450	5	1.0	6.0
PMBZ5230B	4.7	2000	–0.047	20	450	5	1.0	6.0
PMBZ5231B	5.1	2000	–0.013	20	300	5	2.0	6.0
PMBZ5232B	5.6	1600	+0.023	20	300	5	3.0	6.0
PMBZ5233B	6.0	1600	+0.023	20	300	5	3.5	6.0
PMBZ5234B	6.2	1000	+0.039	20	200	5	4.0	6.0
PMBZ5235B	6.8	750	+0.040	20	200	3	5.0	6.0
PMBZ5236B	7.5	500	+0.047	20	150	3	6.0	4.0
PMBZ5237B	8.2	500	+0.052	20	150	3	6.5	4.0
PMBZ5238B	8.7	600	+0.053	20	150	3	6.5	3.5
PMBZ5239B	9.1	600	+0.055	20	150	3	7.0	3.0
PMBZ5240B	10	600	+0.055	20	90	3	8.0	3.0
PMBZ5241B	11	600	+0.058	20	85	2	8.4	2.5
PMBZ5242B	12	600	+0.062	20	85	1	9.1	2.5
PMBZ5243B	13	600	+0.065	9.5	80	0.5	9.9	2.5
PMBZ5244B	14	600	+0.067	9.0	80	0.1	10	2.0
PMBZ5245B	15	600	+0.073	8.5	75	0.1	11	2.0
PMBZ5246B	16	600	+0.073	7.8	75	0.1	12	1.5
PMBZ5247B	17	600	+0.073	7.4	75	0.1	13	1.5
PMBZ5248B	18	600	+0.078	7.0	70	0.1	14	1.5
PMBZ5249B	19	600	+0.078	6.6	70	0.1	14	1.5
PMBZ5250B	20	600	+0.080	6.2	60	0.1	15	1.5
PMBZ5251B	22	600	+0.080	5.6	60	0.1	17	1.25

TYPE NUMBER	WORKING VOLTAGE V_Z (V)(1) at I_{Ztest}	DIFFERENTIAL RESISTANCE r_{dif} (Ω) at I_Z = 0.25 mA	TEMP. COEFF. S_Z (%/K) at I_Z(2)	TEST CURRENT I_{Ztest} (mA)	DIODE CAP. C_d (pF) at f = 1 MHz; at V_R = 0 V	REVERSE CURRENT at REVERSE VOLTAGE		NON-REPETITIVE PEAK REVERSE CURRENT I_{ZSM} (A) at t_p = 100 μs; T_{amb} = 25 °C
						I_R (μA)	V_R (V)	
	NOM.	MAX.	TYP.		MAX.	MAX.		MAX.
PMBZ5252B	24	600	+0.081	5.2	55	0.1	18	1.25
PMBZ5253B	25	600	+0.082	5.0	55	0.1	19	1.25
PMBZ5254B	27	600	+0.085	4.6	50	0.1	21	1.0
PMBZ5255B	28	600	+0.085	4.5	50	0.1	21	1.0
PMBZ5256B	30	600	+0.085	4.2	50	0.1	23	1.0
PMBZ5257B	33	700	+0.085	3.8	45	0.1	25	0.9

Notes

1. V_Z is measured with device at thermal equilibrium while mounted on a ceramic substrate of $8 \times 10 \times 0.7$ mm.
2. For types PMBZ5226B to PMBZ5242B the I_Z current is 7.5 mA; for PMBZ5243B and higher $I_Z = I_{Ztest}$. S_Z values valid between 25 °C and 125 °C.

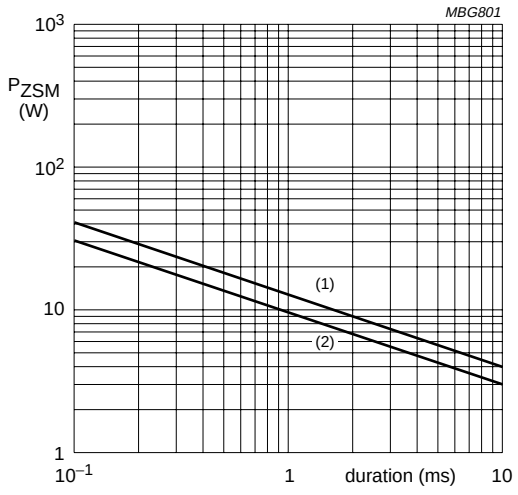
THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th(j-tp)}$	thermal resistance from junction to tie-point		330	K/W
$R_{th(j-a)}$	thermal resistance from junction to ambient	note 1	500	K/W

Note

1. Device mounted on a printed-circuit board.

GRAPHICAL DATA



(1) T_j = 25 °C (prior to surge).
(2) T_j = 150 °C (prior to surge).

Fig.2 Maximum permissible non-repetitive peak reverse power dissipation versus duration.

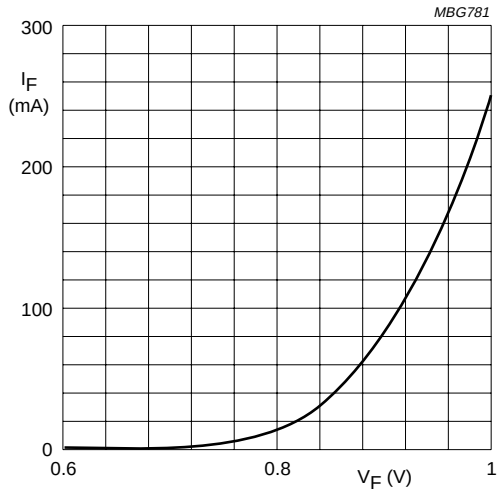
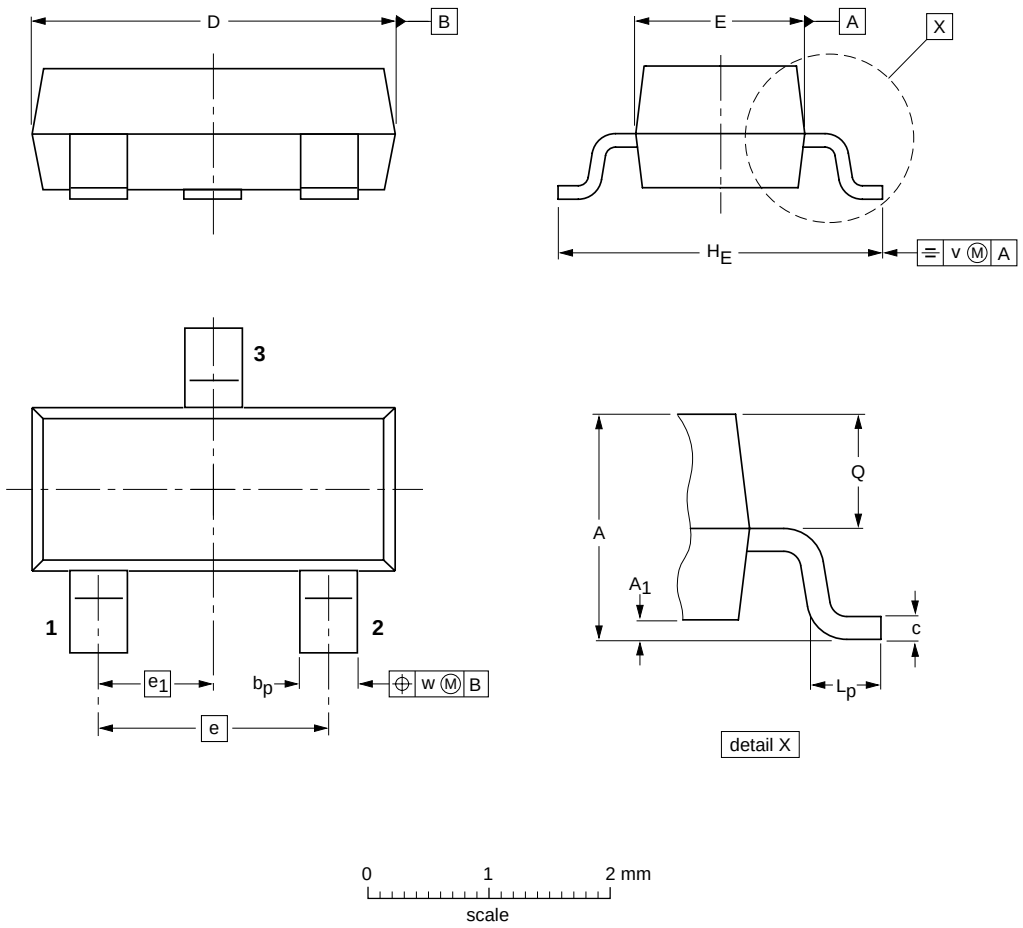


Fig.3 Forward current as a function of forward voltage; typical values.

PACKAGE OUTLINE

Plastic surface mounted package; 3 leads **SOT23**



DIMENSIONS (mm are the original dimensions)

UNIT	A	A_1 max.	b_p	c	D	E	e	e_1	H_E	L_p	Q	v	w
mm	1.1 0.9	0.1	0.48 0.38	0.15 0.09	3.0 2.8	1.4 1.2	1.9	0.95	2.5 2.1	0.45 0.15	0.55 0.45	0.2	0.1

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT23		TO-236AB				~~97-02-28~~ 99-09-13

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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2. The product status of the device(s) described in this data sheet may have changed since this data sheet was published. The latest information is available on the Internet at URL http://www.semiconductors.philips.com.
3. For data sheets describing multiple type numbers, the highest-level product status determines the data sheet status.

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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