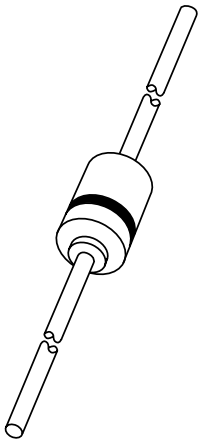
DATA SHEET



BZV85 series
Voltage regulator diodes

Product specification
Supersedes data of 1996 Apr 26

1999 May 11

Philips
Semiconductors

PHILIPS

Voltage regulator diodes BZV85 series

FEATURES

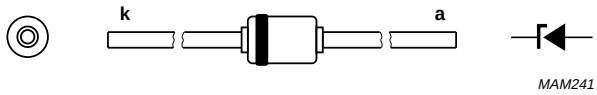
- Total power dissipation: max. 1.3 W
- Tolerance series: approx. ±5%
- Working voltage range: nom. 3.6 to 75 V (E24 range)
- Non-repetitive peak reverse power dissipation: max. 60 W.

APPLICATIONS

- Stabilization purposes.

DESCRIPTION

Medium-power voltage regulator diodes in hermetically sealed leaded glass SOD66 (DO-41) packages. The diodes are available in the normalized E24 approx. ±5% tolerance range. The series consists of 33 types with nominal working voltages from 3.6 to 75 V (BZV85-C3V6 to BZV85-C75).



The diodes are type branded.

Fig.1 Simplified outline (SOD66; DO-41) and symbol.

LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
I_F	continuous forward current		–	500	mA
I_{ZSM}	non-repetitive peak reverse current	t_p = 100 µs; square wave; T_j = 25 °C prior to surge; see Fig.3	see Table “Per type”		
		t_p = 10 ms; half sinewave; T_j = 25 °C prior to surge	see Table “Per type”		
P_{tot}	total power dissipation	T_{amb} = 25 °C; lead length 10 mm; note 1	–	1	W
		note 2	–	1.3	W
P_{ZSM}	non-repetitive peak reverse power dissipation	t_p = 100 µs; square wave; T_j = 25 °C prior to surge	–	60	W
T_{stg}	storage temperature		–65	+200	°C
T_j	junction temperature		–	200	°C

Notes

1. Device mounted on a printed circuit-board with 1 cm^2 copper area per lead.
2. If the leads are kept at T_{tp} = 55 °C at 4 mm from body.

ELECTRICAL CHARACTERISTICS

Total series

T_j = 25 °C unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MAX.	UNIT
V_F	forward voltage	I_F = 50 mA; see Fig.4	1	V

Per type

T_j = 25 °C unless otherwise specified.

BZV85-CXXX	WORKING VOLTAGE V_Z (V) at I_{Ztest}		DIFFERENTIAL RESISTANCE r_{dif} (Ω) at I_{Ztest}	TEMP. COEFF. S_Z (mV/K) at I_{Ztest} see Figs 5 and 6		TEST CURRENT I_{Ztest} (mA)	DIODE CAP. C_d (pF) at f = 1 MHz; V_R = 0 V	REVERSE CURRENT at REVERSE VOLTAGE		NON-REPETITIVE PEAK REVERSE CURRENT I_{ZSM}	
								I_R (μA)	V_R (V)	at t_p = 100 μs; T_{amb} = 25 °C	at t_p = 10 ms; T_{amb} = 25 °C
	MIN.	MAX.	MAX.	MIN.	MAX.		MAX.	MAX.		MAX. (A)	MAX. (mA)
3V6	3.4	3.8	15	–3.5	–1.0	60	450	50	1.0	8.0	2000
3V9	3.7	4.1	15	–3.5	–1.0	60	450	10	1.0	8.0	1950
4V3	4.0	4.6	13	–2.7	0	50	450	5	1.0	8.0	1850
4V7	4.4	5.0	13	–2.0	+0.7	45	300	3	1.0	8.0	1800
5V1	4.8	5.4	10	–0.5	+2.2	45	300	3	2.0	8.0	1750
5V6	5.2	6.0	7	0	2.7	45	300	2	2.0	8.0	1700
6V2	5.8	6.6	4	0.6	3.6	35	200	2	3.0	7.0	1620
6V8	6.4	7.2	3.5	1.3	4.3	35	200	2	4.0	7.0	1550
7V5	7.0	7.9	3	2.5	5.5	35	150	1	4.5	5.0	1500
8V2	7.7	8.7	5	3.1	6.1	25	150	0.7	5.0	5.0	1400
9V1	8.5	9.6	5	3.8	7.2	25	150	0.7	6.5	4.0	1340
10	9.4	10.6	8	4.7	8.5	25	90	0.2	7.0	4.0	1200
11	10.4	11.6	10	5.3	9.3	20	85	0.2	7.7	3.0	1100
12	11.4	12.7	10	6.3	10.8	20	85	0.2	8.4	3.0	1000
13	12.4	14.1	10	7.4	12.0	20	80	0.2	9.1	3.0	900
15	13.8	15.6	15	8.9	13.6	15	75	0.05	10.5	2.5	760
16	15.3	17.1	15	10.7	15.4	15	75	0.05	11.0	1.75	700
18	16.8	19.1	20	11.8	17.1	15	70	0.05	12.5	1.75	600
20	18.8	21.2	24	13.6	19.1	10	60	0.05	14.0	1.75	540
22	20.8	23.3	25	16.6	22.1	10	60	0.05	15.5	1.5	500
24	22.8	25.6	30	18.3	24.3	10	55	0.05	17	1.5	450
27	25.1	28.9	40	20.1	27.5	8	50	0.05	19	1.2	400
30	28.0	32.0	45	22.4	32.0	8	50	0.05	21	1.2	380

BZV85-CXXX	WORKING VOLTAGE V_Z (V) at I_{Ztest}		DIFFERENTIAL RESISTANCE r_{dif} (Ω) at I_{Ztest}	TEMP. COEFF. S_Z (mV/K) at I_{Ztest} see Figs 5 and 6		TEST CURRENT I_{Ztest} (mA)	DIODE CAP. C_d (pF) at f = 1 MHz; V_R = 0 V	REVERSE CURRENT at REVERSE VOLTAGE		NON-REPETITIVE PEAK REVERSE CURRENT I_{ZSM}	
								I_R (μA)	V_R (V)	at t_p = 100 μs; T_{amb} = 25 °C	at t_p = 10 ms; T_{amb} = 25 °C
	MIN.	MAX.	MAX.	MIN.	MAX.		MAX.	MAX.		MAX. (A)	MAX. (mA)
33	31.0	35.0	45	24.8	35.0	8	45	0.05	23	1.0	350
36	34.0	38.0	50	27.2	39.9	8	45	0.05	25	0.9	320
39	37.0	41.0	60	29.6	43.0	6	45	0.05	27	0.8	296
43	40.0	46.0	75	34.0	48.3	6	40	0.05	30	0.7	270
47	44.0	50.0	100	37.4	52.5	4	40	0.05	33	0.6	246
51	48.0	54.0	125	40.8	56.5	4	40	0.05	36	0.5	226
56	52.0	60.0	150	46.8	63.0	4	40	0.05	39	0.4	208
62	58.0	66.0	175	52.2	72.5	4	35	0.05	43	0.4	186
68	64.0	72.0	200	60.5	81.0	4	35	0.05	48	0.35	171
75	70.0	80.0	225	66.5	88.0	4	35	0.05	53	0.3	161

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j\text{-}tp}$	thermal resistance from junction to tie-point	lead length 4 mm; see Fig.2	110	K/W
$R_{th\ j\text{-}a}$	thermal resistance from junction to ambient	lead length10 mm; note 1	175	K/W

Note

1. Device mounted on a printed circuit-board with 1 cm^2 copper area per lead.

GRAPHICAL DATA

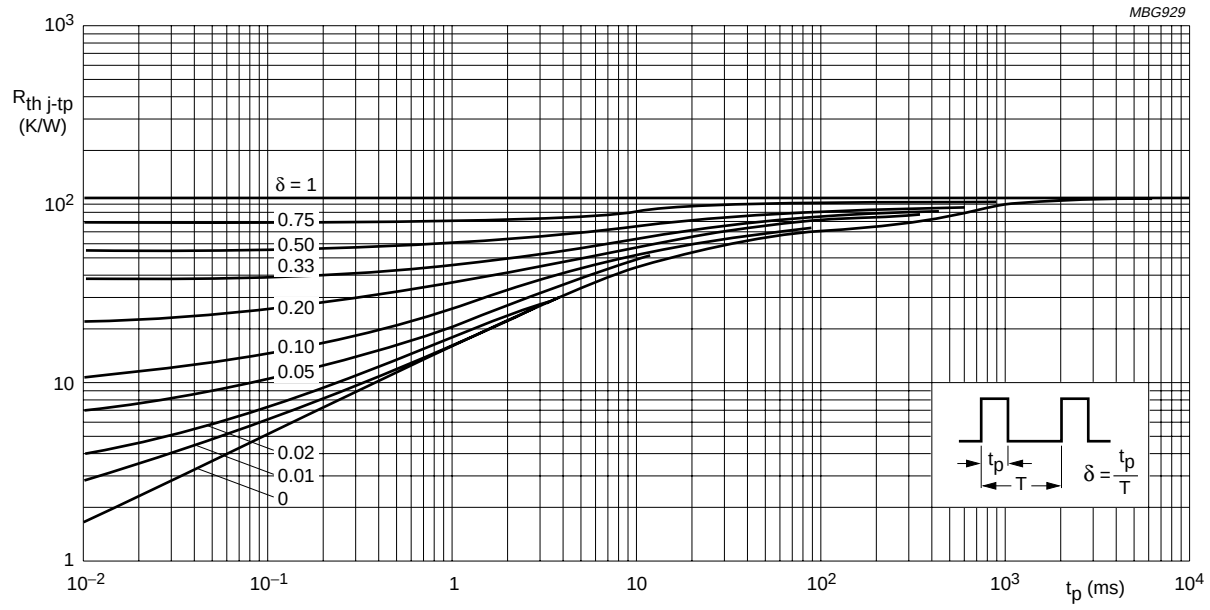
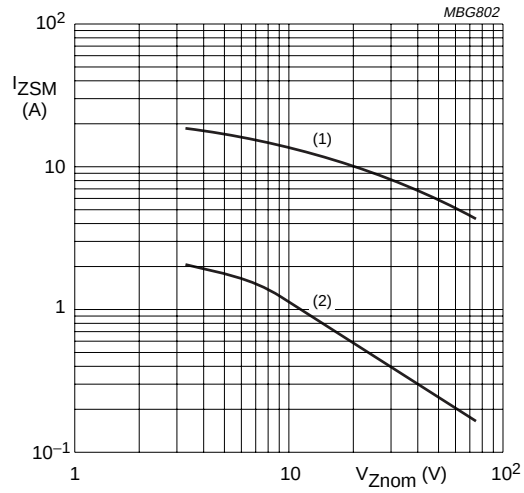
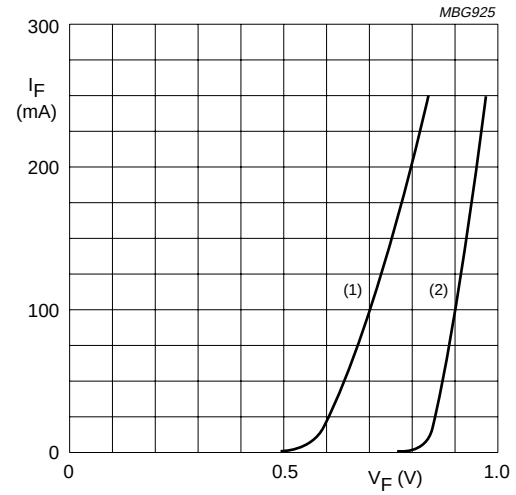


Fig.2 Thermal resistance from junction to tie-point with a lead length of 4 mm.



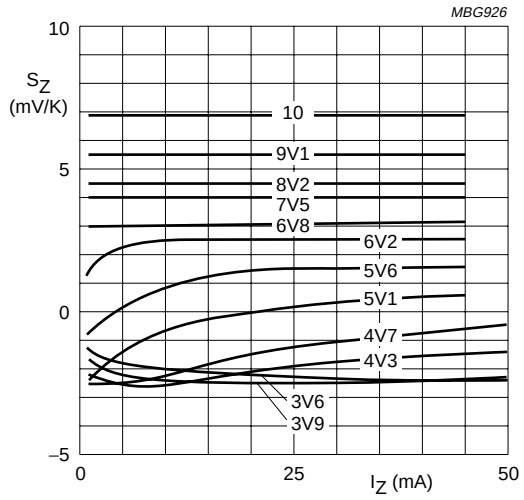
(1) t_p = 10 µs; half sinewave; T_{amb} = 25 °C.
(2) t_p = 10 ms; half sinewave; T_{amb} = 25 °C.

Fig.3 Non-repetitive peak reverse current as a function of the nominal working voltage.



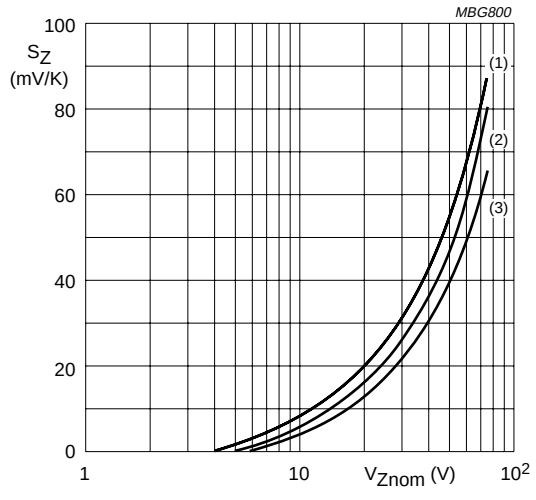
(1) T_j = 200 °C.
(2) T_j = 25 °C.

Fig.4 Forward current as a function of forward voltage; typical values.



BZV85-C3V6 to C10.
T_j = 25 to 150 °C.
For types above 7.5 V the temperature coefficient is independent of current; see Table “Per type”.

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

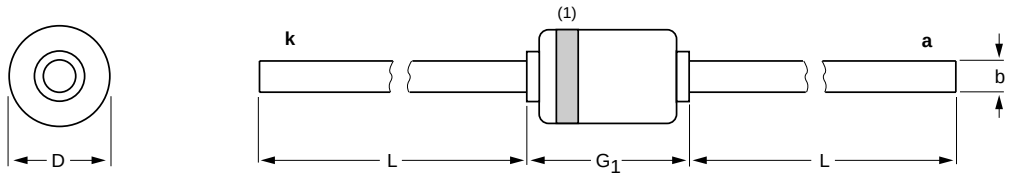


$I_Z = I_{Ztest}$; T_j = 25 to 150 °C.
(1) Maximum values.
(2) Typical values.
(3) Minimum values.

Fig.6 Temperature coefficient as a function of nominal working voltage.

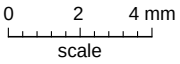
PACKAGE OUTLINE

Hermetically sealed glass package; axial leaded; 2 leads **SOD66**



DIMENSIONS (mm are the original dimensions)

UNIT	b max.	D max.	G_1 max.	L min.
mm	0.81	2.6	4.8	28



Note

1. The marking band indicates the cathode.

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOD66		DO-41				97-06-20

DEFINITIONS

Data sheet status	
Objective specification	This data sheet contains target or goal specifications for product development.
Preliminary specification	This data sheet contains preliminary data; supplementary data may be published later.
Product specification	This data sheet contains final product specifications.
Limiting values	
Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 134). 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.	
Application information	
Where application information is given, it is advisory and does not form part of the specification.	

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