

DATA SHEET



BZV85 series Voltage regulator diodes

Product specification
Supersedes data of 1996 Apr 26

1999 May 11

Voltage regulator diodes

BZV85 series

FEATURES

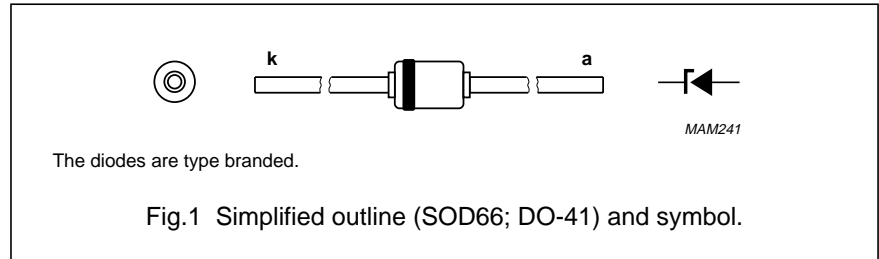
- Total power dissipation: max. 1.3 W
- Tolerance series: approx. $\pm 5\%$
- Working voltage range: nom. 3.6 to 75 V (E24 range)
- Non-repetitive peak reverse power dissipation: max. 60 W.

DESCRIPTION

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

APPLICATIONS

- Stabilization purposes.



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	$t_p = 100 \mu s$; square wave; $T_j = 25 \text{ }^\circ\text{C}$ prior to surge; see Fig.3	see Table "Per type"		
		$t_p = 10 \text{ ms}$; half sinewave; $T_j = 25 \text{ }^\circ\text{C}$ prior to surge	see Table "Per type"		
P_{tot}	total power dissipation	$T_{amb} = 25 \text{ }^\circ\text{C}$; lead length 10 mm; note 1	–	1	W
		note 2	–	1.3	W
P_{ZSM}	non-repetitive peak reverse power dissipation	$t_p = 100 \mu s$; square wave; $T_j = 25 \text{ }^\circ\text{C}$ prior to surge	–	60	W
T_{stg}	storage temperature		–65	+200	$^\circ\text{C}$
T_j	junction temperature		–	200	$^\circ\text{C}$

Notes

1. Device mounted on a printed circuit-board with 1 cm² copper area per lead.
2. If the leads are kept at $T_{tp} = 55 \text{ }^\circ\text{C}$ at 4 mm from body.

ELECTRICAL CHARACTERISTICS

Total series

$T_j = 25 \text{ }^\circ\text{C}$ unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MAX.	UNIT
V_F	forward voltage	$I_F = 50 \text{ mA}$; see Fig.4	1	V

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Per type

$T_j = 25\text{ °C}$ 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 $f = 1\text{ MHz}$; $V_R = 0\text{ V}$	REVERSE CURRENT at REVERSE VOLTAGE		NON-REPETITIVE PEAK REVERSE CURRENT I_{ZSM}	
	MIN.	MAX.	MAX.	MIN.	MAX.			I_R (μ A)	V_R (V)	at $t_p = 100\text{ }\mu$ s; $T_{amb} = 25\text{ °C}$	at $t_p = 10\text{ ms}$; $T_{amb} = 25\text{ °C}$
										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

Voltage regulator diodes

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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}		
	MIN.	MAX.	MAX.	MIN.	MAX.			MAX.	I_R (μ A)	V_R (V)	at $t_p = 100 \mu$ s; $T_{amb} = 25^\circ$ C	at $t_p = 10$ ms; $T_{amb} = 25^\circ$ C
											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	

Voltage regulator diodes

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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 length 10 mm; note 1	175	K/W

Note

1. Device mounted on a printed circuit-board with 1 cm² copper area per lead.

GRAPHICAL DATA

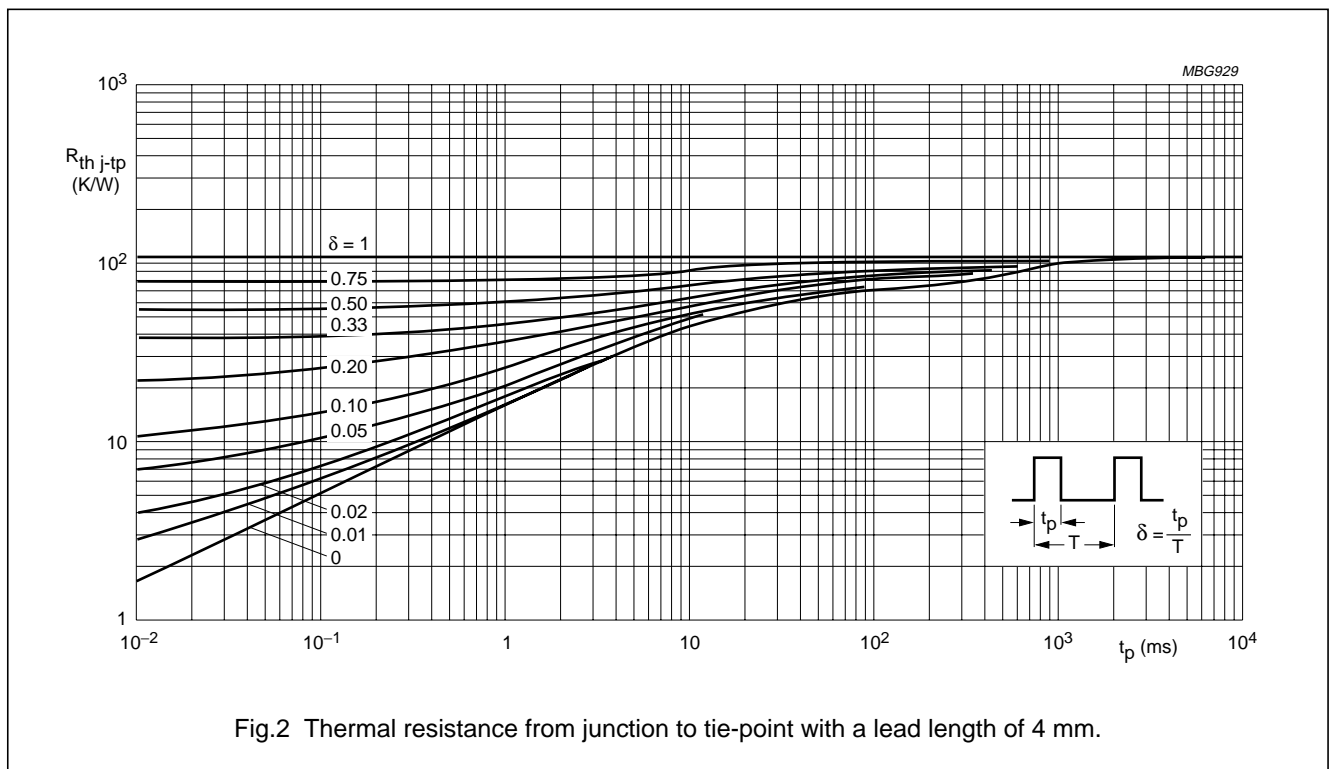
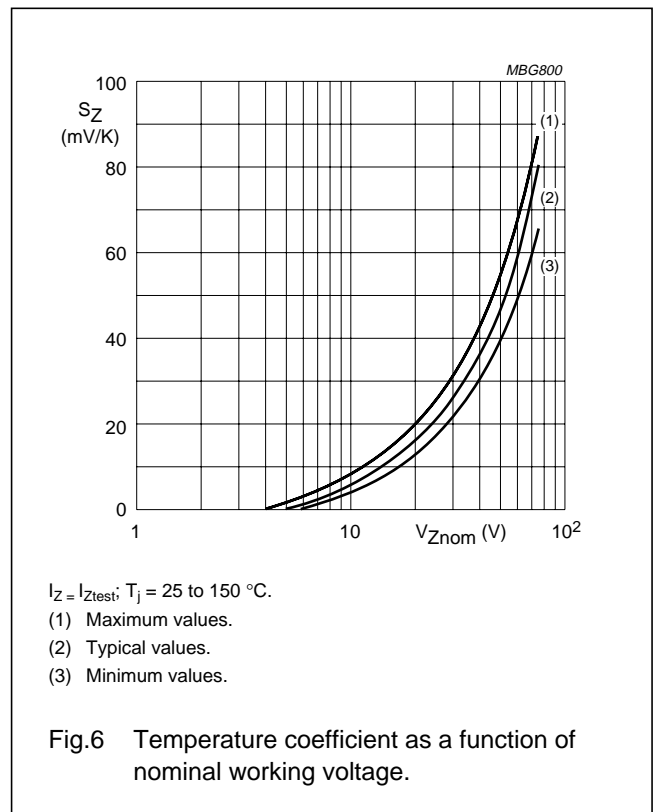
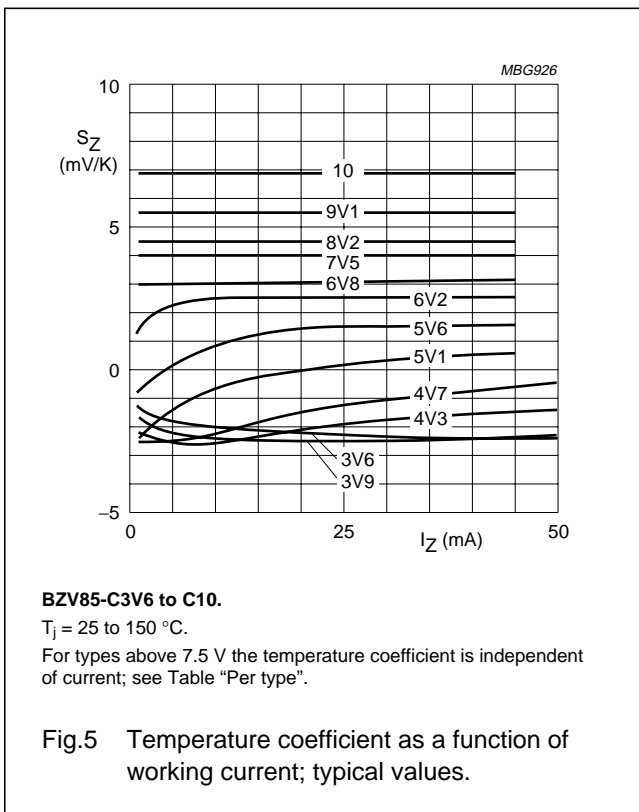
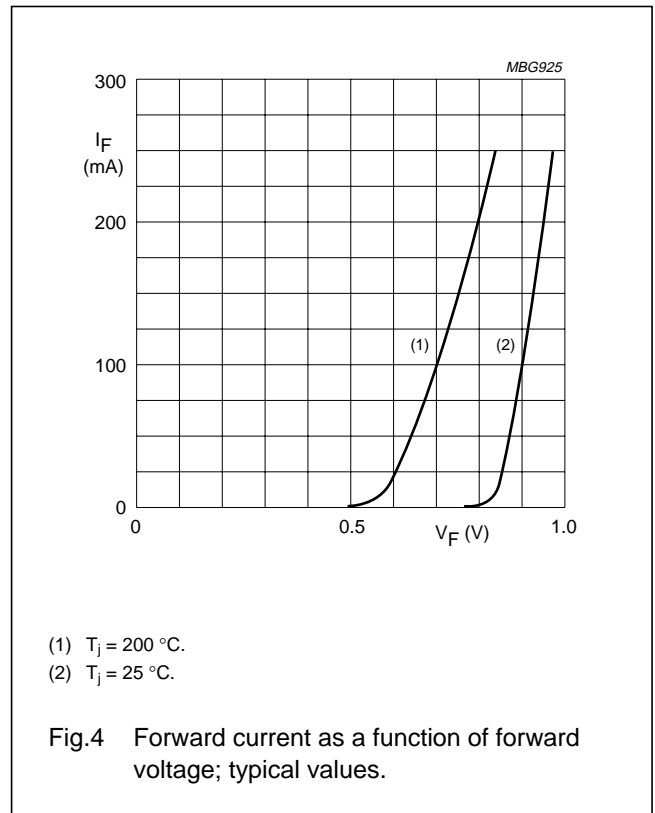
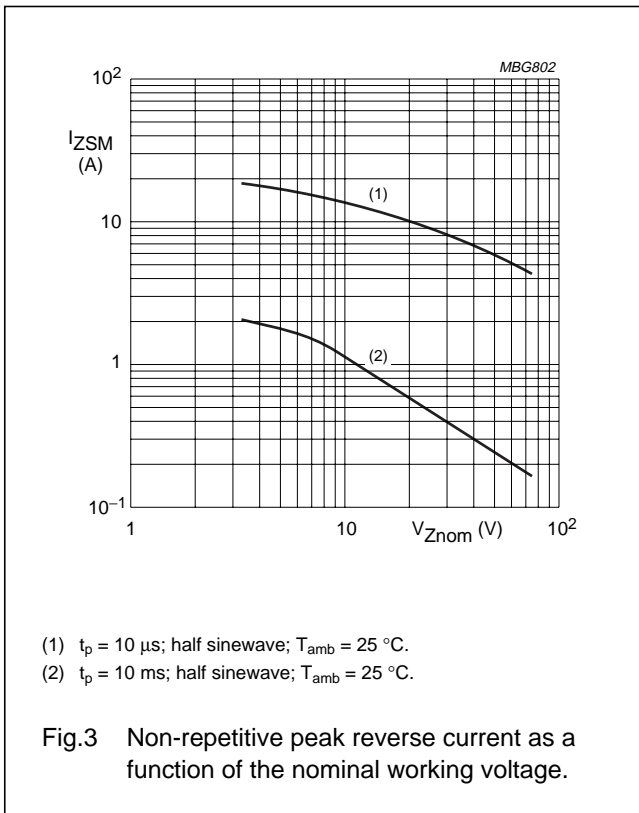


Fig.2 Thermal resistance from junction to tie-point with a lead length of 4 mm.

Voltage regulator diodes

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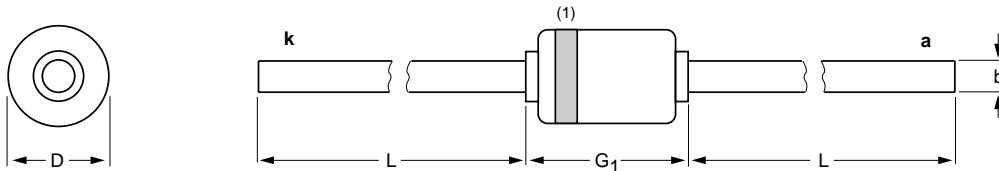
Voltage regulator diodes

BZV85 series

PACKAGE OUTLINE

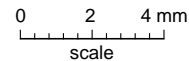
Hermetically sealed glass package; axial leaded; 2 leads

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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