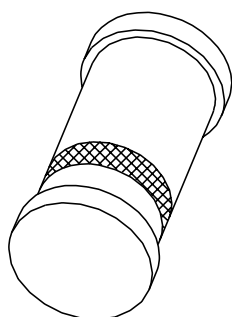


DATA SHEET



BZV55 series Voltage regulator diodes

Product specification
Supersedes data of 1999 May 21

2002 Feb 28

Voltage regulator diodes

BZV55 series

FEATURES

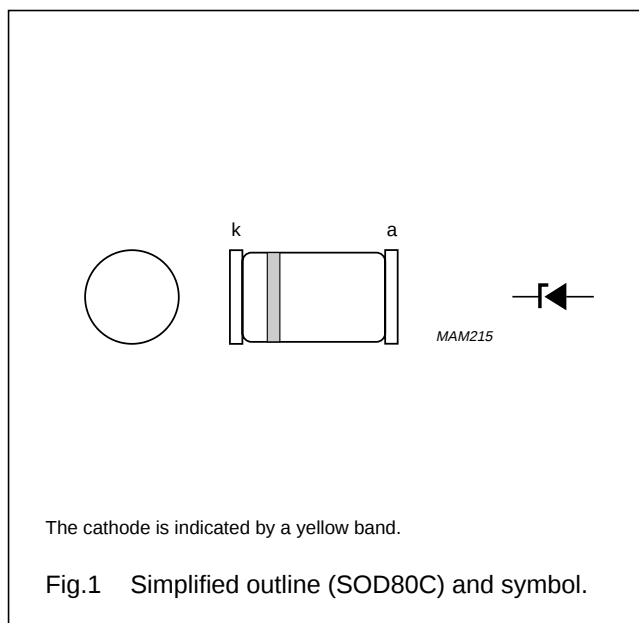
- Total power dissipation: max. 500 mW
- Two tolerance series: $\pm 2\%$, and approx. $\pm 5\%$
- Working voltage range: nom. 2.4 to 75 V (E24 range)
- Non-repetitive peak reverse power dissipation: max. 40 W.

APPLICATIONS

- Low voltage stabilizers or voltage references.

DESCRIPTION

Low-power voltage regulator diodes in small hermetically sealed glass SOD80C SMD packages. The diodes are available in the normalized E24 $\pm 2\%$ (BZV55-B) and approx. $\pm 5\%$ (BZV55-C) tolerance range. The series consists of 37 types with nominal working voltages from 2.4 to 75 V.



LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 60134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
I_F	continuous forward current		–	250	mA
I_{ZSM}	non-repetitive peak reverse current	$t_p = 100 \mu s$; square wave; $T_j = 25^\circ C$ prior to surge	see Tables 1 and 2		A
P_{tot}	total power dissipation	$T_{amb} \leq 50^\circ C$; note 1	–	400	mW
		tie-point $\leq 50^\circ C$; note 1	–	500	mW
P_{ZSM}	non-repetitive peak reverse power dissipation	$t_p = 100 \mu s$; square wave; $T_j = 25^\circ C$ prior to surge; see Fig.3	–	40	W
T_{stg}	storage temperature		–65	+200	$^\circ C$
T_j	junction temperature		–65	+200	$^\circ C$

Note

1. Device mounted on a ceramic substrate of $10 \times 10 \times 0.6$ mm.

Voltage regulator diodes

BZV55 series

ELECTRICAL CHARACTERISTICS

Total BZV55-B and BZV55-C series

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

SYMBOL	PARAMETER	CONDITIONS	MAX.	UNIT
V_F	forward voltage	$I_F = 10\text{ mA}$; see Fig.4	0.9	V
I_R	reverse current			
	BZV55-B/C2V4	$V_R = 1\text{ V}$	50	μA
	BZV55-B/C2V7	$V_R = 1\text{ V}$	20	μA
	BZV55-B/C3V0	$V_R = 1\text{ V}$	10	μA
	BZV55-B/C3V3	$V_R = 1\text{ V}$	5	μA
	BZV55-B/C3V6	$V_R = 1\text{ V}$	5	μA
	BZV55-B/C3V9	$V_R = 1\text{ V}$	3	μA
	BZV55-B/C4V3	$V_R = 1\text{ V}$	3	μA
	BZV55-B/C4V7	$V_R = 2\text{ V}$	3	μA
	BZV55-B/C5V1	$V_R = 2\text{ V}$	2	μA
	BZV55-B/C5V6	$V_R = 2\text{ V}$	1	μA
	BZV55-B/C6V2	$V_R = 4\text{ V}$	3	μA
	BZV55-B/C6V8	$V_R = 4\text{ V}$	2	μA
	BZV55-B/C7V5	$V_R = 5\text{ V}$	1	μA
	BZV55-B/C8V2	$V_R = 5\text{ V}$	700	nA
	BZV55-B/C9V1	$V_R = 6\text{ V}$	500	nA
	BZV55-B/C10	$V_R = 7\text{ V}$	200	nA
	BZV55-B/C11	$V_R = 8\text{ V}$	100	nA
	BZV55-B/C12	$V_R = 8\text{ V}$	100	nA
	BZV55-B/C13	$V_R = 8\text{ V}$	100	nA
	BZV55-B/C15 to BZV55-B/C75	$V_R = 0.7V_{Znom}$	50	nA

Voltage regulator diodes

BZV55 series

Table 1 Per type, BZV55-B/C2V4 to BZV55-B/C24 $T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise specified.

BZV55- Bxxx Cxxx	WORKING VOLTAGE V_Z (V) at $I_{Z\text{test}} = 5\text{ mA}$				DIFFERENTIAL RESISTANCE r_{dif} (Ω)				TEMP. COEFF. S_Z (mV/K) at $I_{Z\text{test}} = 5\text{ mA}$ (see Figs 5 and 6)			DIODE CAP. C_d (pF) at $f = 1\text{ MHz}$; $V_R = 0\text{ V}$	NON-REPETITIVE PEAK REVERSE CURRENT I_{ZSM} (A) at $t_p = 100\text{ }\mu\text{s}$; $T_{\text{amb}} = 25\text{ }^{\circ}\text{C}$
	Tol. $\pm 2\%$ (B)		Tol. approx. $\pm 5\%$ (C)		at $I_{Z\text{test}} = 1\text{ mA}$		at $I_{Z\text{test}} = 5\text{ mA}$		MIN.	TYP.	MAX.	MAX.	MAX.
	MIN.	MAX.	MIN.	MAX.	TYP.	MAX.	TYP.	MAX.					
2V4	2.35	2.45	2.2	2.6	275	600	70	100	-3.5	-1.6	0	450	6.0
2V7	2.65	2.75	2.5	2.9	300	600	75	100	-3.5	-2.0	0	450	6.0
3V0	2.94	3.06	2.8	3.2	325	600	80	95	-3.5	-2.1	0	450	6.0
3V3	3.23	3.37	3.1	3.5	350	600	85	95	-3.5	-2.4	0	450	6.0
3V6	3.53	3.67	3.4	3.8	375	600	85	90	-3.5	-2.4	0	450	6.0
3V9	3.82	3.98	3.7	4.1	400	600	85	90	-3.5	-2.5	0	450	6.0
4V3	4.21	4.39	4.0	4.6	410	600	80	90	-3.5	-2.5	0	450	6.0
4V7	4.61	4.79	4.4	5.0	425	500	50	80	-3.5	-1.4	0.2	300	6.0
5V1	5.00	5.20	4.8	5.4	400	480	40	60	-2.7	-0.8	1.2	300	6.0
5V6	5.49	5.71	5.2	6.0	80	400	15	40	-2.0	1.2	2.5	300	6.0
6V2	6.08	6.32	5.8	6.6	40	150	6	10	0.4	2.3	3.7	200	6.0
6V8	6.66	6.94	6.4	7.2	30	80	6	15	1.2	3.0	4.5	200	6.0
7V5	7.35	7.65	7.0	7.9	30	80	6	15	2.5	4.0	5.3	150	4.0
8V2	8.04	8.36	7.7	8.7	40	80	6	15	3.2	4.6	6.2	150	4.0
9V1	8.92	9.28	8.5	9.6	40	100	6	15	3.8	5.5	7.0	150	3.0
10	9.80	10.20	9.4	10.6	50	150	8	20	4.5	6.4	8.0	90	3.0
11	10.80	11.20	10.4	11.6	50	150	10	20	5.4	7.4	9.0	85	2.5
12	11.80	12.20	11.4	12.7	50	150	10	25	6.0	8.4	10.0	85	2.5
13	12.70	13.30	12.4	14.1	50	170	10	30	7.0	9.4	11.0	80	2.5
15	14.70	15.30	13.8	15.6	50	200	10	30	9.2	11.4	13.0	75	2.0
16	15.70	16.30	15.3	17.1	50	200	10	40	10.4	12.4	14.0	75	1.5
18	17.60	18.40	16.8	19.1	50	225	10	45	12.4	14.4	16.0	70	1.5
20	19.60	20.40	18.8	21.2	60	225	15	55	12.3	15.6	18.0	60	1.5
22	21.60	22.40	20.8	23.3	60	250	20	55	14.1	17.6	20.0	60	1.25
24	23.50	24.50	22.8	25.6	60	250	25	70	15.9	19.6	22.0	55	1.25

Voltage regulator diodes

BZV55 series

Table 2 Per type, BZV55-**B/C27** to BZV55-**B/C75**
 $T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise specified.

BZV55- Bxxx Cxxx	WORKING VOLTAGE V_Z (V) at $I_{Z\text{test}} = 2\text{ mA}$				DIFFERENTIAL RESISTANCE r_{dif} (Ω)				TEMP. COEFF. S_Z (mV/K) at $I_{Z\text{test}} = 2\text{ mA}$ (see Figs 5 and 6)			DIODE CAP. C_d (pF) at $f = 1\text{ MHz}$; $V_R = 0\text{ V}$	NON-REPETITIVE PEAK REVERSE CURRENT I_{ZSM} (A) at $t_p = 100\text{ }\mu\text{s}$; $T_{\text{amb}} = 25\text{ }^{\circ}\text{C}$
	Tol. $\pm 2\%$ (B)		Tol. approx. $\pm 5\%$ (C)		at $I_{Z\text{test}} = 0.5\text{ mA}$		at $I_{Z\text{test}} = 2\text{ mA}$		MIN.	TYP.	MAX.	MAX.	MAX.
	MIN.	MAX.	MIN.	MAX.	TYP.	MAX.	TYP.	MAX.					
27	26.50	27.50	25.1	28.9	65	300	25	80	18.0	22.7	25.3	50	1.0
30	29.40	30.60	28.0	32.0	70	300	30	80	20.6	25.7	29.4	50	1.0
33	32.30	33.70	31.0	35.0	75	325	35	80	23.3	28.7	33.4	45	0.9
36	35.30	36.70	34.0	38.0	80	350	35	90	26.0	31.8	37.4	45	0.8
39	38.20	39.80	37.0	41.0	80	350	40	130	28.7	34.8	41.2	45	0.7
43	42.10	43.90	40.0	46.0	85	375	45	150	31.4	38.8	46.6	40	0.6
47	46.10	47.90	44.0	50.0	85	375	50	170	35.0	42.9	51.8	40	0.5
51	50.00	52.00	48.0	54.0	90	400	60	180	38.6	46.9	57.2	40	0.4
56	54.90	57.10	52.0	60.0	100	425	70	200	42.2	52.0	63.8	40	0.3
62	60.80	63.20	58.0	66.0	120	450	80	215	58.8	64.4	71.6	35	0.3
68	66.60	69.40	64.0	72.0	150	475	90	240	65.6	71.7	79.8	35	0.25
75	73.50	76.50	70.0	79.0	170	500	95	255	73.4	80.2	88.6	35	0.2

Voltage regulator diodes

BZV55 series

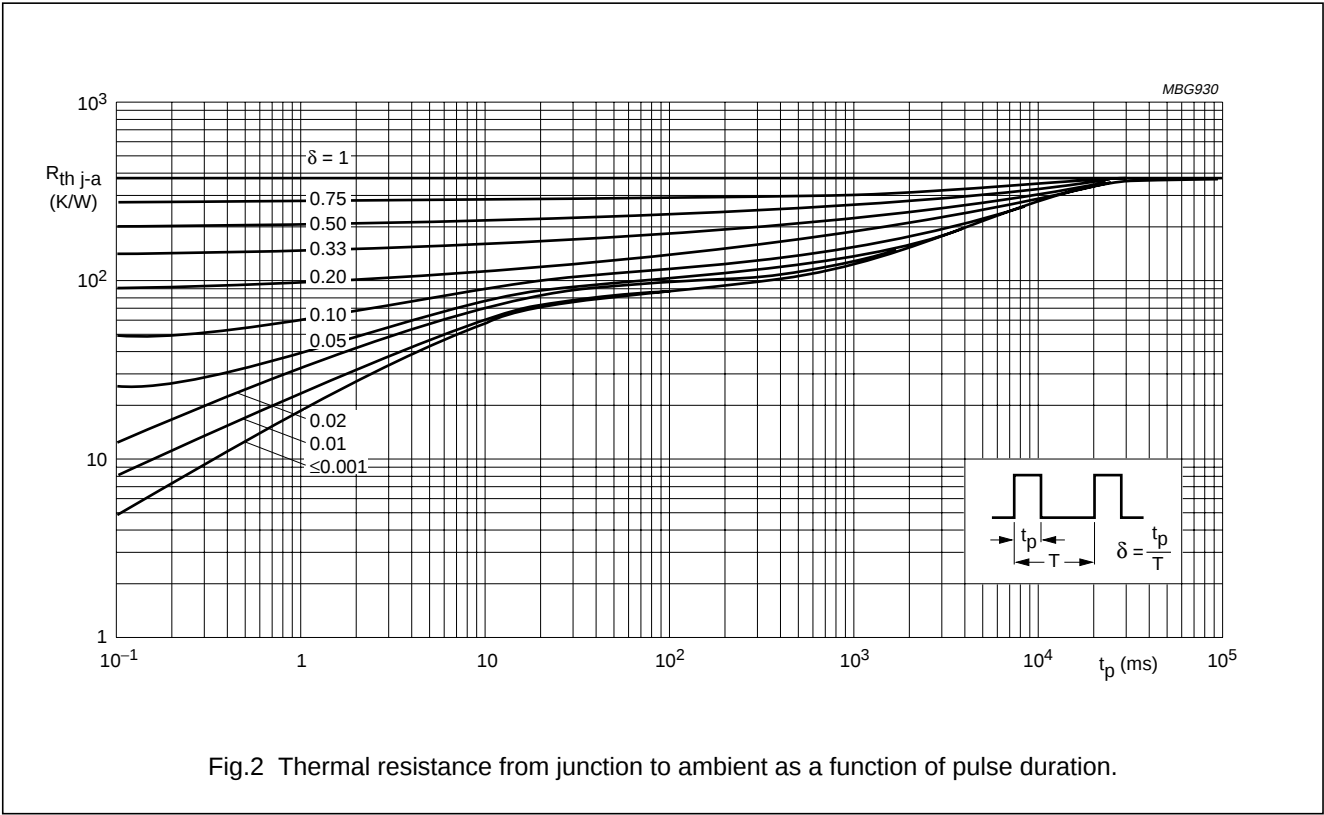
THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j-tp}$	thermal resistance from junction to tie-point		300	K/W
$R_{th\ j-a}$	thermal resistance from junction to ambient	see Fig.2 and note 1	380	K/W

Note

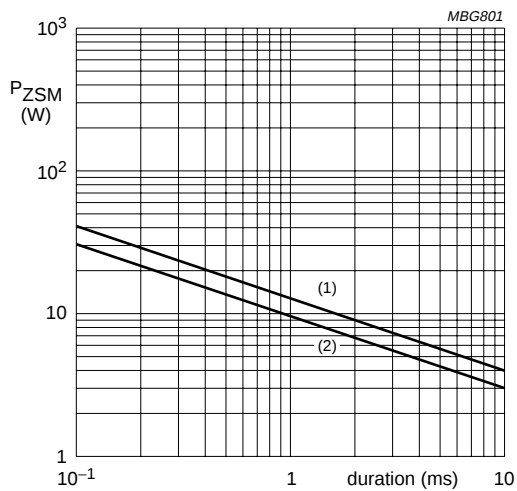
1. Device mounted on a ceramic substrate of $10 \times 10 \times 0.6$ mm.

GRAPHICAL DATA



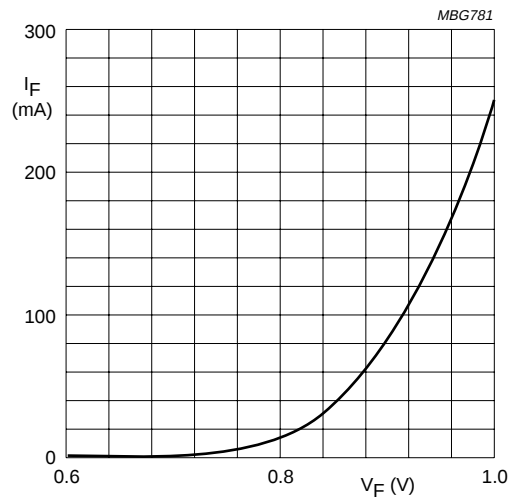
Voltage regulator diodes

BZV55 series



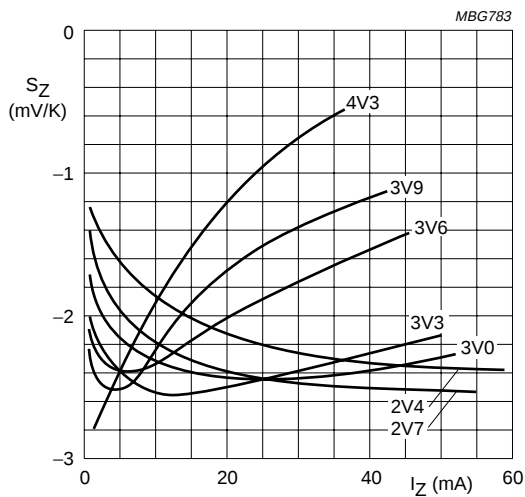
- (1) $T_j = 25\text{ }^{\circ}\text{C}$ (prior to surge).
- (2) $T_j = 150\text{ }^{\circ}\text{C}$ (prior to surge).

Fig.3 Maximum permissible non-repetitive peak reverse power dissipation versus duration.



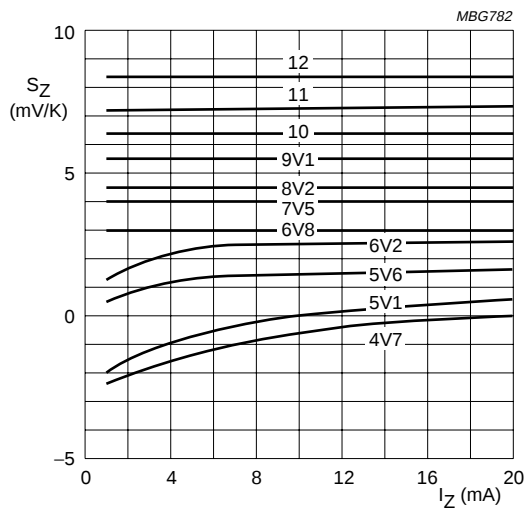
$T_j = 25\text{ }^{\circ}\text{C}$.

Fig.4 Typical forward current as a function of forward voltage.



BZV55-B/C2V4 to BZV55-B/C4V3.
 $T_j = 25\text{ to }150\text{ }^{\circ}\text{C}$.

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



BZV55-B/C4V7 to BZV55-B/C12.
 $T_j = 25\text{ to }150\text{ }^{\circ}\text{C}$.

Fig.6 Temperature coefficient as a function of working current; typical values.

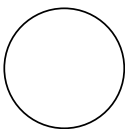
Voltage regulator diodes

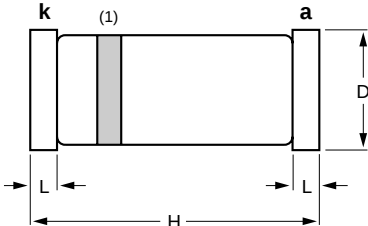
BZV55 series

PACKAGE OUTLINE

Hermetically sealed glass surface mounted package; 2 connectors

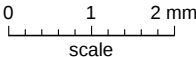
SOD80C





DIMENSIONS (mm are the original dimensions)

UNIT	D	H	L
mm	1.60 1.45	3.7 3.3	0.3



Note

1. The marking band indicates the cathode.

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOD80C	100H01					97-06-20

Voltage regulator diodes

BZV55 series

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Voltage regulator diodes

BZV55 series

NOTES

Voltage regulator diodes

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NOTES

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Printed in The Netherlands

613514/03/pp12

Date of release: 2002 Feb 28

Document order number: 9397 750 09386

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