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BZV55 series Voltage regulator diodes Rev. 5 — 26 January 2011

Product data sheet

Product profile 1.

1.1 General description

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

1.2 Features and benefits

- Non-repetitive peak reverse power dissipation: \leq 40 W
- Total power dissipation: ≤ 500 mW
- Two tolerance series: ±2 % and ±5 %
- Wide working voltage range: nominal 2.4 V to 75 V (E24 range)
- Low differential resistance
- Small hermetically sealed glass SMD package

1.3 Applications

General regulation functions

1.4 Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Min	Тур	Мах	Unit
V _F	forward voltage	I _F = 10 mA	-	-	0.9	V
P _{ZSM}	non-repetitive peak reverse power dissipation		<u>[1]</u> _	-	40	W

[1] $t_p = 100 \ \mu s$; square wave; $T_i = 25 \ ^{\circ}C$ prior to surge

2. **Pinning information**

Pin	Description	Simplified outline	Graphic symbol
1	cathode	<u>[1]</u>	
2	anode	k a	1 2 006aaa152

[1] The marking band indicates the cathode.



Voltage regulator diodes

3. Ordering information

Type number	Package		
	Name	Description	Version
BZV55-B2V4 to BZV55-C75 ^[1]	-	hermetically sealed glass surface-mounted package; 2 connectors	SOD80C

[1] The series consists of 74 types with nominal working voltages from 2.4 V to 75 V.

4. Marking

Table 4. Marking codes	
Type number	Marking code
BZV55-B2V4 to BZV55-C75	marking band

5. Limiting values

Table 5. Limiting values

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

		0, (,		
Symbol	Parameter	Conditions	Min	Max	Unit
I _F	forward current		-	250	mA
I _{ZSM}	non-repetitive peak reverse current		<u>[1]</u> -	see <u>Table 8</u> and <u>9</u>	
P _{ZSM}	non-repetitive peak reverse power dissipation		<u>[1]</u> -	40	W
P _{tot}	total power dissipation	$T_{amb} \le 50 \ ^{\circ}C$	[2] _	400	mW
		$T_{tp} \le 50 \ ^{\circ}C$	[2] _	500	mW
T _{stg}	storage temperature		-65	+200	°C
Tj	junction temperature		-65	+200	°C

[1] $t_p = 100 \ \mu s$; square wave; $T_j = 25 \ ^\circ C$ prior to surge

[2] Device mounted on a ceramic substrate of $10 \times 10 \times 0.6$ mm.

6. Thermal characteristics

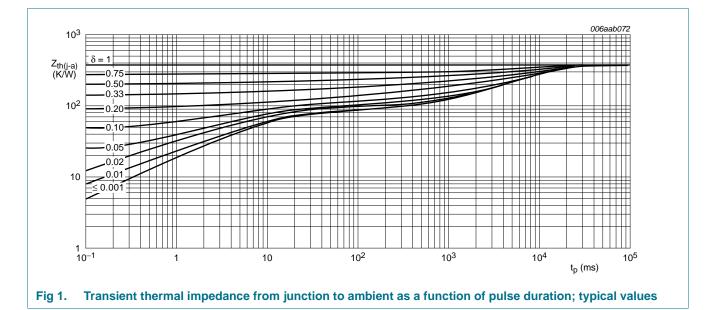
Table 6.	Thermal characteristics					
Symbol	Parameter	Conditions	Min	Тур	Max	Unit
R _{th(j-a)}	thermal resistance from junction to ambient	in free air	<u>[1]</u> -	-	380	K/W
R _{th(j-sp)}	thermal resistance from junction to solder point		-	-	300	K/W

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

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BZV55 series

Voltage regulator diodes



7. Characteristics

Table 7.Characteristics

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

Symbol	Parameter	Conditions	Min	Тур	Max	Unit
V _F	forward voltage	I _F = 10 mA	-	-	0.9	V
I _R	reverse current					
	BZV55-B/C2V4	$V_R = 1 V$	-	-	50	μΑ
	BZV55-B/C2V7	$V_R = 1 V$	-	-	20	μΑ
	BZV55-B/C3V0	$V_R = 1 V$	-	-	10	μΑ
	BZV55-B/C3V3	$V_R = 1 V$	-	-	5	μΑ
	BZV55-B/C3V6	$V_R = 1 V$	-	-	5	μA
	BZV55-B/C3V9	$V_R = 1 V$	-	-	3	μΑ
	BZV55-B/C4V3	$V_R = 1 V$	-	-	3	μA
	BZV55-B/C4V7	$V_R = 2 V$	-	-	3	μΑ
	BZV55-B/C5V1	$V_R = 2 V$	-	-	2	μΑ
	BZV55-B/C5V6	$V_R = 2 V$	-	-	1	μΑ
	BZV55-B/C6V2	$V_R = 4 V$	-	-	3	μΑ
	BZV55-B/C6V8	$V_R = 4 V$	-	-	2	μΑ
	BZV55-B/C7V5	$V_R = 5 V$	-	-	1	μΑ
	BZV55-B/C8V2	$V_R = 5 V$	-	-	700	nA
	BZV55-B/C9V1	$V_R = 6 V$	-	-	500	nA
	BZV55-B/C10	$V_R = 7 V$	-	-	200	nA
	BZV55-B/C11	V _R = 8 V	-	-	100	nA
	BZV55-B/C12	V _R = 8 V	-	-	100	nA
	BZV55-B/C13	V _R = 8 V	-	-	100	nA
	BZV55-B/C15 to BZV55-B/C75	$V_R = 0.7 V_{Z(nom)}$	-	-	50	nA

Voltage regulator diodes

BZV55- xxx	Sel	Worki voltag V _Z (V)	je	r _{dif} (Ω				coeffi S _Z (m	V/K)		Diode capacitance C _d (pF) ^[1]	Non-repetitive peak reverse current
		l _Z = 5		I _Z = 1		I _Z = 5		I _Z = 5		_		I _{ZSM} (A) ^[2]
		Min	Max	Тур	Max	Тур	Max	Min	Тур	Мах	Мах	Max
2V4	В	2.35	2.45	275	600	70	100	-3.5	-1.6	0	450	6.0
	С	2.2	2.6									
2V7	В	2.65	2.75	300	600	75	100	-3.5	-2.0	0	450	6.0
	С	2.5	2.9									
3V0	В	2.94	3.06	325	600	80	95	-3.5	-2.1	0	450	6.0
	С	2.8	3.2									
3V3	В	3.23	3.37	350	600	85	95	-3.5	-2.4	0	450	6.0
	С	3.1	3.5									
3V6	В	3.53	3.67	375	600	85	90	-3.5	-2.4	0	450	6.0
	С	3.4	3.8									
3V9	В	3.82	3.98	400	600	85	90	-3.5	-2.5	0	450	6.0
	С	3.7	4.1									
4V3	В	4.21	4.39	410	600	80	90	-3.5	-2.5	0	450	6.0
	С	4.0	4.6									
4V7	В	4.61	4.79	425	500	50	80	-3.5	-1.4	0.2	300	6.0
	С	4.4	5.0									
5V1	В	5.0	5.2	400	480	40	60	-2.7	-0.8	1.2	300	6.0
	С	4.8	5.4									
5V6	В	5.49	5.71	80	400	15	40	-2.0	1.2	2.5	300	6.0
	С	5.2	6.0									
6V2	В	6.08	6.32	40	150	6	10	0.4	2.3	3.7	200	6.0
	С	5.8	6.6									
6V8	В	6.66	6.94	30	80	6	15	1.2	3.0	4.5	200	6.0
	С	6.4	7.2									
7V5	В	7.35	7.65	30	80	6	15	2.5	4.0	5.3	150	4.0
	С	7.0	7.9									
8V2	В	8.04	8.36	40	80	6	15	3.2	4.6	6.2	150	4.0
	С	7.7	8.7									
9V1	В	8.92	9.28	40	100	6	15	3.8	5.5	7.0	150	3.0
	С	8.5	9.6									
10	В	9.8	10.2	50	150	8	20	4.5	6.4	8.0	90	3.0
	С	9.4	10.6									
11	В	10.8	11.2	50	150	10	20	5.4	7.4	9.0	85	2.5
	С	10.4	11.6									
12	В	11.8	12.2	50	150	10	25	6.0	8.4	10.0	85	2.5
	С	11.4	12.7	-		-	-	-				

Table 8.Characteristics per type; BZV55-B2V4 to BZV55-C24 $T_i = 25$ °C unless otherwise specified.

BZV55_SER Product data sheet

Voltage regulator diodes

BZV55- xxx	Sel	Worki voltag V _Z (V)	e	Differ r _{dif} (Ω	ential r ?)	esistar	ice	Temp coeffi S _Z (m			Diode capacitance C _d (pF) <u>^[1]</u>	Non-repetitive peak reverse current
		l _Z = 5 I	mA	I _Z = 1	mA	I _Z = 5	mA	I _Z = 5	mA			I _{ZSM} (A) ^[2]
		Min	Max	Тур	Max	Тур	Max	Min	Тур	Max	Мах	Max
13	В	12.7	13.3	50	170	10	30	7.0	9.4	11.0	80	2.5
	С	12.4	14.1									
15	В	14.7	15.3	50	200	10	30	9.2	11.4	13.0	75	2.0
	С	13.8	15.6									
16	В	15.7	16.3	50	200	10	40	10.4	12.4	14.0	75	1.5
	С	15.3	17.1									
18	В	17.6	18.4	50	225	10	45	12.4	14.4	16.0	70	1.5
	С	16.8	19.1									
20	В	19.6	20.4	60	225	15	55	12.3	15.6	18.0	60	1.5
	С	18.8	21.2									
22	В	21.6	22.4	60	250	20	55	14.1	17.6	20.0	60	1.25
	С	20.8	23.3									
24	В	23.5	24.5	60	250	25	70	15.9	19.6	22.0	55	1.25
	С	22.8	25.6									

Table 8. Characteristics per type; BZV55-B2V4 to BZV55-C24 ... continued

[1] $f = 1 \text{ MHz}; V_R = 0 \text{ V}$

[2] $t_p = 100 \ \mu s$; square wave; $T_j = 25 \ ^\circ C$ prior to surge

Voltage regulator diodes

BZV55- xxx	Sel	Worki voltag V _Z (V)	je	Differ r _{dif} (ମ	rential r 2)	esistar	ce	Temp coeffi S _Z (m			Diode capacitance C _d (pF) ^[1]	Non-repetitive peak reverse current
		I _Z = 2	mA	I _Z = 0	.5 mA	I _Z = 2	mA	I _Z = 2	mA			I _{ZSM} (A) ^[2]
		Min	Max	Тур	Max	Тур	Max	Min	Тур	Max	Мах	Max
27	В	26.5	27.5	65	300	25	80	18.0	22.7	25.3	50	1.0
	С	25.1	28.9									
30	В	29.4	30.6	70	300	30	80	20.6	25.7	29.4	50	1.0
	С	28.0	32.0									
33	В	32.3	33.7	75	325	35	80	23.3	28.7	33.4	45	0.9
	С	31.0	35.0									
36	В	35.3	36.7	80	350	35	90	26.0	31.8	37.4	45	0.8
	С	34.0	38.0									
39	В	38.2	39.8	80	350	40	130	28.7	34.8	41.2	45	0.7
	С	37.0	41.0									
43	В	42.1	43.9	85	375	45	150	31.4	38.8	46.6	40	0.6
	С	40.0	46.0									
47	В	46.1	47.9	85	375	50	170	35.0	42.9	51.8	40	0.5
	С	44.0	50.0									
51	В	50.0	52.0	90	400	60	180	38.6	46.9	57.2	40	0.4
	С	48.0	54.0									
56	В	54.9	57.1	100	425	70	200	42.2	52.0	63.8	40	0.3
	С	52.0	60.0									
62	В	60.8	63.2	120	450	80	215	58.8	64.4	71.6	35	0.3
	С	58.0	66.0									
68	В	66.6	69.4	150	475	90	240	65.6	71.7	79.8	35	0.25
	С	64.0	72.0									
75	В	73.5	76.5	170	500	95	255	73.4	80.2	88.6	35	0.2
	С	70.0	79.0									

Table 9. Characteristics per type; BZV55-B27 to BZV55-C75

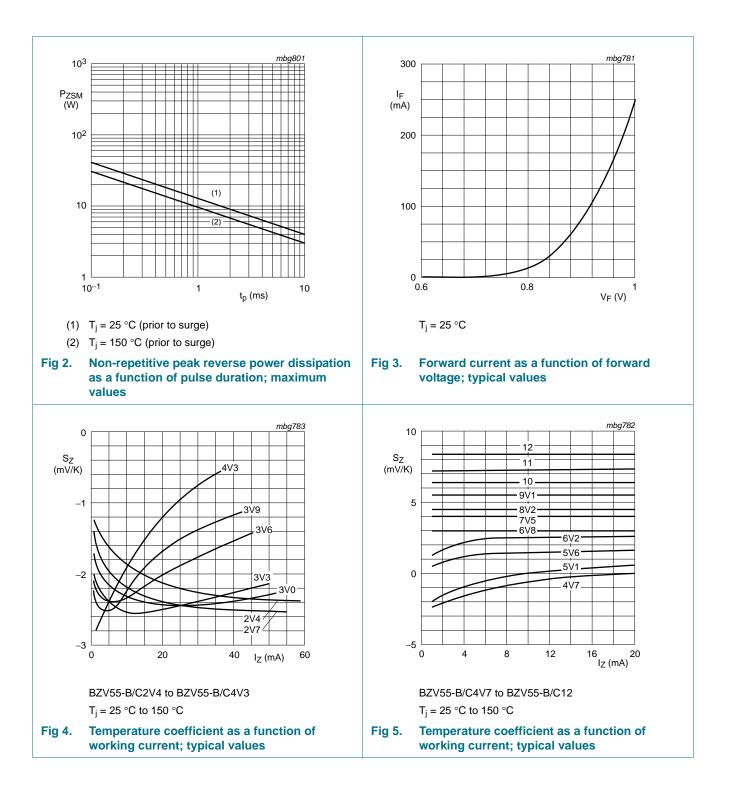
 $[1] \quad f=1 \text{ MHz}; \text{ } \text{V}_{\text{R}}=0 \text{ } \text{V}$

[2] $t_p = 100 \ \mu s$; square wave; $T_j = 25 \ ^\circ C$ prior to surge

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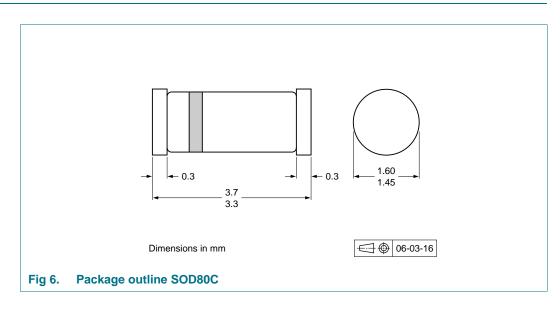
BZV55 series

Voltage regulator diodes



Voltage regulator diodes

8. Package outline



9. Packing information

Table 10. Packing methods

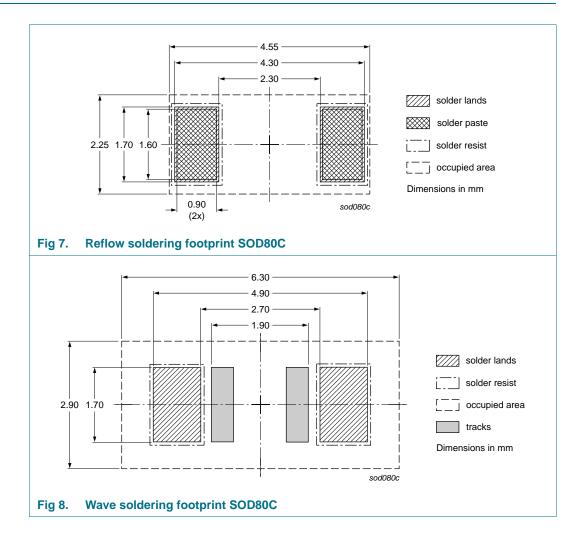
The indicated -xxx are the last three digits of the 12NC ordering code.[1]

Type number	Package	Description	Packing	quantity
			2500	10000
BZV55-B2V4 to BZV55-C75	SOD80C	4 mm pitch, 8 mm tape and reel	-115	-135

[1] For further information and the availability of packing methods, see Section 13.

Voltage regulator diodes

10. Soldering



Voltage regulator diodes

11. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes					
BZV55_SER v.5	20110126	Product data sheet	-	BZV55_SER v.4					
Modifications:	 Section 4 "Marking": updated 								
	 <u>Table 6 "Thermal characteristics"</u>: changed R_{th(j-t)} for R_{th(j-sp)} 								
	• Figure 6: superseded by minimized outline drawing								
	 Section 12 "L 	_egal information": updated							
BZV55_SER v.4	20070719	Product data sheet	CPCN200508022F	BZV55 v.3					
BZV55 v.3	20020228	Product specification	-	BZV55 v.2					
BZV55 v.2	19990521	Product specification	-	BZV55 v.1					
BZV55 v.1	19960426	Product specification	-	-					

12. Legal information

12.1 Data sheet status

Document status[1][2]	Product status ^[3]	Definition
Objective [short] data sheet	Development	This document contains data from the objective specification for product development.
Preliminary [short] data sheet	Qualification	This document contains data from the preliminary specification.
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BZV55-B10,115 BZV55-B11,135 BZV55-B11,115 BZV55-B12,135 BZV55-B12,115 BZV55-B13,115 BZV55-B15,115 BZV55-B16,115 BZV55-B18,115 BZV55-B20,135 BZV55-B20,115 BZV55-B22,135 BZV55-B22,115 BZV55-B24,115 BZV55-B27,115 BZV55-B2V4,115 BZV55-B2V7,115 BZV55-B30,115 BZV55-B33,115 BZV55-B36,115 BZV55-B39,115 BZV55-B3V0,115 BZV55-B3V3,115 BZV55-B3V6,115 BZV55-B3V9,115 BZV55-B43,115 BZV55-B47,115 BZV55-B4V3,115 BZV55-B4V7,135 BZV55-B4V7,115 BZV55-B51,115 BZV55-B56,115 BZV55-B5V1,135 BZV55-B5V1,115 BZV55-B5V6,135 BZV55-B5V6,115 BZV55-B62,115 BZV55-B68,135 BZV55-B68,115 BZV55-B6V2,115 BZV55-B6V8,115 BZV55-B75,115 BZV55-B7V5,135 BZV55-B7V5,115 BZV55-B8V2,135 BZV55-B8V2,115 BZV55-B9V1,115 BZV55-C10,135 BZV55-C10,115 BZV55-C11,135 BZV55-C11,115 BZV55-C12,135 BZV55-C12,115 BZV55-C13,135 BZV55-C13,115 BZV55-C15,135 BZV55-C15,115 BZV55-C16,135 BZV55-C16,115 BZV55-C18,135 BZV55-C18,115 BZV55-C20,135 BZV55-C20,115 BZV55-C22,135 BZV55-C22,115 BZV55-C24,135 BZV55-C24,115 BZV55-C27,135 BZV55-C27,115 BZV55-C2V4,135 BZV55-C2V4,115 BZV55-C2V7,135 BZV55-C2V7,115 BZV55-C30,135 BZV55-C30,115 BZV55-C33,135 BZV55-C33,115 BZV55-C36,115 C3V9,115 BZV55-C43,135 BZV55-C43,115 BZV55-C47,115 BZV55-C4V3,135 BZV55-C4V3,115 BZV55-C4V7,135 BZV55-C4V7,115 BZV55-C51,135 BZV55-C51,115 BZV55-C56,115 BZV55-C5V1,135 BZV55-C5V1,115 BZV55-C5V6,135 BZV55-C5V6,115 BZV55-C62,135