

BZV55 series

Voltage regulator diodes Rev. 5 — 26 January 2011

Product data sheet

Product profile

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: ≤ 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	Max	Unit
V_{F}	forward voltage	$I_F = 10 \text{ mA}$	-	-	0.9	V
P _{ZSM}	non-repetitive peak reverse power dissipation		[1] -	-	40	W

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

2. **Pinning information**

Table 2. **Pinning**

Pin	Description	Simplified outline	Graphic symbol
1	cathode	[1]	
2	anode	k	1 2 006aaa152

^[1] The marking band indicates the cathode.



3. Ordering information

Table 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).

Symbol	Parameter	Conditions	Min	Max	Unit
I _F	forward current		-	250	mA
I _{ZSM}	non-repetitive peak reverse current		[1] -	see Table 8 and 9	
P _{ZSM}	non-repetitive peak reverse power dissipation		<u>[1]</u> -	40	W
P _{tot}	total power dissipation	$T_{amb} \le 50 ^{\circ}C$	<u>[2]</u> _	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

6. Thermal characteristics

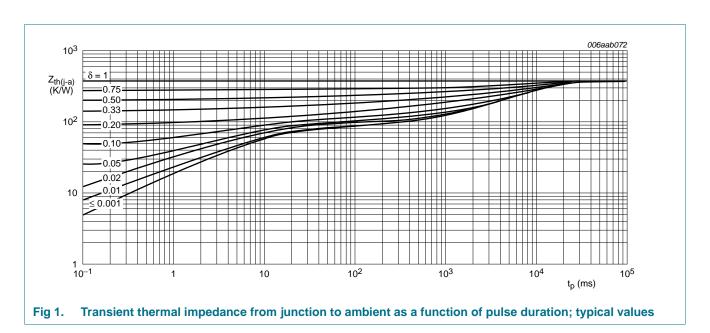
Table 6. Thermal characteristics

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.

BZV55_SER

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



7. Characteristics

Table 7. Characteristics

 $T_i = 25$ °C unless otherwise specified.

Symbol	Parameter	Conditions	Min	Тур	Max	Unit
V_{F}	forward voltage	$I_F = 10 \text{ mA}$	-	-	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	μΑ
	BZV55-B/C3V9	$V_R = 1 V$	-	-	3	μΑ
	BZV55-B/C4V3	$V_R = 1 V$	-	-	3	μΑ
	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	$V_R = 0.7V_{Z(nom)}$	-	-	50	nA

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

BZV55- xxx	Sel	Worki voltag V _Z (V)	e	Differ	ential r	esistar	nce	Temp coeffi S _Z (m			Diode capacitance C _d (pF)[1]	Non-repetitive peak reverse current
		$I_Z = 5$	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	Max	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
0) (0	С	5.2	6.0		450		4.0					
6V2	В	6.08	6.32	40	150	6	10	0.4	2.3	3.7	200	6.0
6) (6	С	5.8	6.6	00	00	0	45	4.0	0.0	4.5	000	0.0
6V8	В	6.66	6.94	30	80	6	15	1.2	3.0	4.5	200	6.0
7V5	В	6.4	7.2	30	80	6	15	2.5	4.0	5.3	150	4.0
CVI	С	7.35 7.0	7.65 7.9	30	60	6	10	2.5	4.0	ა.ა	150	4 .U
8V2	В	8.04	8.36	40	80	6	15	3.2	4.6	6.2	150	4.0
0 4 2	С	7.7	8.7	-1 0	00	U	13	J.Z	4.0	0.2	150	1 .∪
9V1	В	8.92	9.28	40	100	6	15	3.8	5.5	7.0	150	3.0
JVI	С	8.5	9.26	-1 0	100	U	13	5.0	5.5	1.0	150	3.0
10	В	9.8	10.2	50	150	8	20	4.5	6.4	8.0	90	3.0
10	С	9.4	10.2		130	U	20	٦.٥	U. 4	0.0	50	5.0
11	В	10.8	11.2	50	150	10	20	5.4	7.4	9.0	85	2.5
11	С	10.4	11.6		100	10	20	J. T	7.7	5.0	55	2.0
12	В	11.8	12.2	50	150	10	25	6.0	8.4	10.0	85	2.5
	С	11.4	12.7		100		20	0.0	0.4	10.0	55	2.0
	0		14.1									

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

 $T_i = 25$ °C unless otherwise specified.

BZV55- xxx	Sel	voltag	Working voltage V _Z (V)		Differential resistance r_{dif} (Ω)			Tempo coeffi S _Z (m			Diode capacitance C _d (pF) ^[1]	Non-repetitive peak reverse current	
		$I_Z = 5 \text{ mA}$		$I_Z = 1 \text{ mA}$ $I_Z = 5 \text{ mA}$		mA	I _Z = 5 mA				I _{ZSM} (A)[2]		
		Min	Max	Тур	Max	Тур	Max	Min	Тур	Max	Max	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	50 200	200 10 30	30	30 9.2	9.2 11.4	11.4 13.0	75	2.0	
	С	13.8	15.6										
16	В	15.7	16.3	50 200	50 200	10	10 40	10.4	12.4	12.4 14.0	75	1.5	
	С	15.3	17.1										
18	В	17.6	18.4	50	225	10	10 45	12.4 14.4 16	12.4 14.4	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	30 250	25	70	15.9	19.6	19.6 22.0	55	1.25	
	С	22.8	25.6										

^[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

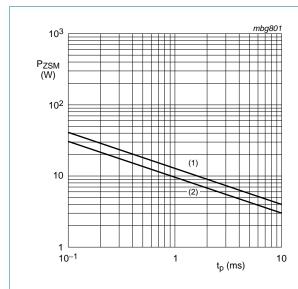
Table 9. Characteristics per type; BZV55-B27 to BZV55-C75

 $T_i = 25$ °C unless otherwise specified.

BZV55- xxx	Sel	Working voltage V _Z (V)			Differential resistance r_{dif} (Ω)			Temp coeffi S _Z (m			Diode capacitance C _d (pF)[1]	Non-repetitive peak reverse current		
		I _Z = 2 mA		$I_Z = 0$	$I_Z = 0.5 \text{ mA}$ $I_Z = 2 \text{ mA}$		I _Z = 2 mA				I _{ZSM} (A)[2]			
		Min	Max	Тур	Max	Тур	Max	Min	Тур	Max	Max	Max		
27	В	26.5	27.5	65	300	25	80	18.0	22.7	25.3	5.3 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 3	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	85 375	5 375	375	50	50 170	35.0	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											

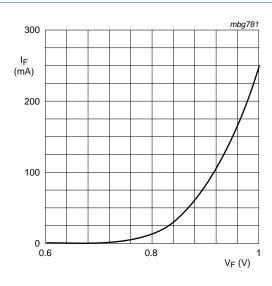
^[1] $f = 1 \text{ MHz}; V_R = 0 \text{ V}$

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



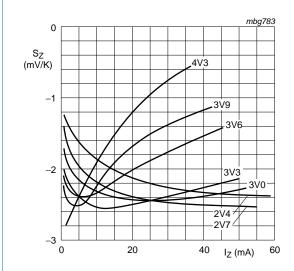
- (1) $T_j = 25 \,^{\circ}\text{C}$ (prior to surge)
- (2) $T_i = 150 \,^{\circ}\text{C}$ (prior to surge)

Fig 2. Non-repetitive peak reverse power dissipation as a function of pulse duration; maximum values



T_j = 25 °C

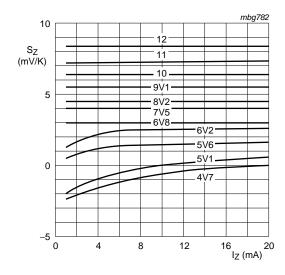
Fig 3. Forward current as a function of forward voltage; typical values



BZV55-B/C2V4 to BZV55-B/C4V3

 $T_j = 25 \,^{\circ}\text{C} \text{ to } 150 \,^{\circ}\text{C}$

Fig 4. Temperature coefficient as a function of working current; typical values

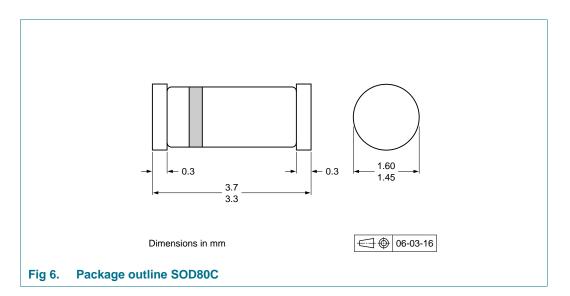


BZV55-B/C4V7 to BZV55-B/C12

 $T_j = 25 \,^{\circ}\text{C}$ to 150 $^{\circ}\text{C}$

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

8. Package outline



9. Packing information

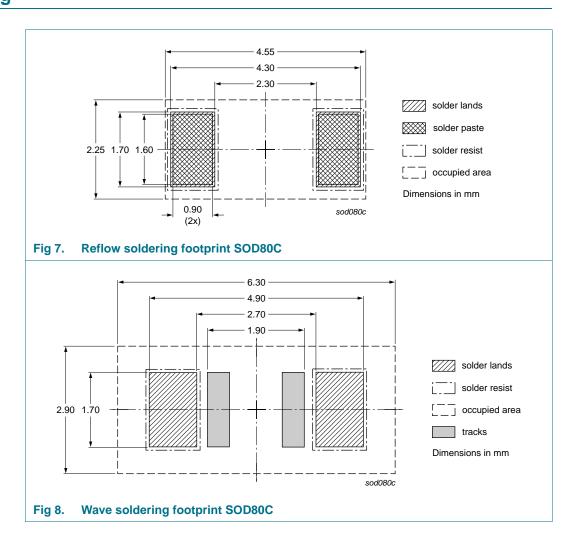
Table 10. Packing methods

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

Type number	Package	Description	Packing (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 $\underline{\text{Section 13}}$.

10. Soldering



11. Revision history

Table 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 "M 	arking": 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 	<u>egal information"</u> : 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.
Product [short] data sheet	Production	This document contains the product specification.

- [1] Please consult the most recently issued document before initiating or completing a design.
- [2] The term 'short data sheet' is explained in section "Definitions"
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Nexperia BZV55 series

Voltage regulator diodes

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BZV55 series

Voltage regulator diodes

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BZV55-B10,115 BZV55-B11,135 BZV55-B11,115 BZV55-B12,135 BZV55-B12,115 BZV55-B13,115 BZ 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-B2V7,115 BZV55-B30,115 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-B7V5,115 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-C22,115 BZV55-C24,135 BZV55-C24,115 BZV55-C27,115 BZV55-C2V4,135 BZV55-C2V4,115 BZV55-C2V7,135 BZV55-C2V7,115 BZV55-C30,115 BZV55-C33,135 BZV55-C33,115 BZV55-C36,115 BZV55-C39,115 BZV55-C3V0,135 BZV55-C3V0,115 BZV55-C3V3,135 BZV55-C3V3,115 BZV55-C3V6,115 BZV55-C3V9,115 BZV55-C43,115 BZV55-C47,115 BZV55-C4V3,135 BZV55-C4V3,115 BZV5-C4V3,115 BZV5-C4V3,115 BZV5-C4V3,115 BZV5-C4V3,1 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 BZV55-C62,115 BZV55-C68,135 BZV55-C68,115 BZV55-C6V2,135 BZV55-C6V2,115 BZV55-C6V8,135