



**THE DATASHEET OF
BZV90-C3V9,115**



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Team Nexperia

DATA SHEET



BZV90 series Voltage regulator diodes

Product data sheet
Supersedes data of 1996 Oct 25

1999 May 17

Voltage regulator diodes

BZV90 series

FEATURES

- Total power dissipation: max. 1500 mW
- Tolerance series: approx. $\pm 5\%$
- Working voltage range: nom. 2.4 to 75 V (E24 range)
- Non-repetitive peak reverse power dissipation: max. 40 W.

APPLICATIONS

- General regulation functions.

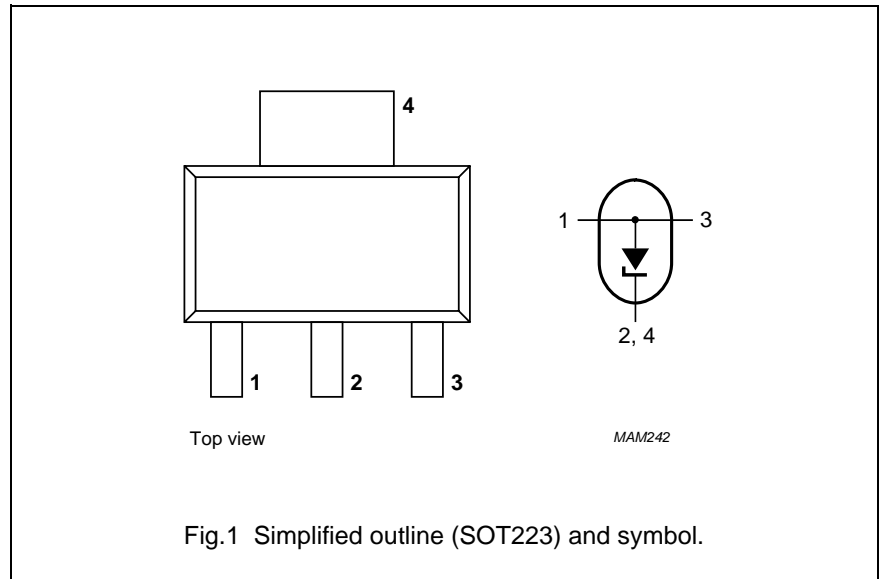
DESCRIPTION

Medium-power voltage regulator diodes in SOT223 plastic SMD packages.

The diodes are available in the normalized E24 approx. $\pm 5\%$ tolerance range. The series consists of 37 types with nominal working voltages from 2.4 to 75 V (BZV90-C2V4 to C75).

PINNING

PIN	DESCRIPTION
1	anode
2, 4	cathode
3	anode



LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
I_F	continuous forward current		–	400	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 Table "Per type"		
P_{tot}	total power dissipation	$T_{amb} = 25 \text{ }^\circ\text{C}$; note 1	–	1500	mW
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; see Fig.2	–	40	W
T_{stg}	storage temperature		–65	+150	$^\circ\text{C}$
T_j	junction temperature		–	150	$^\circ\text{C}$

Note

1. Device mounted on an FR4 double-sided copper-clad printed circuit-board; copper area = 2 cm².

ELECTRICAL CHARACTERISTICS

Total series

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_F	forward voltage	$I_F = 50 \text{ mA}$; see Fig.3	–	1.0	V

Per type

T_J = 25 °C unless otherwise specified.

BZV90- CXXX	WORKING VOLTAGE V _Z (V) at I _{Ztest}		DIFFERENTIAL RESISTANCE r _{diff} (Ω) at I _{Ztest}		TEMP. COEFF. S _Z (mV/K) at I _{Ztest} see Figs 4 and 5			TEST CURRENT I _{Ztest} (mA)	DIODE CAP. C _d (pF) at f = 1 MHz; at V _R = 0 V	REVERSE CURRENT at REVERSE VOLTAGE	
	MIN.	MAX.	TYP.	MAX.	MIN.	TYP.	MAX.			I _R (μA)	V _R (V)
									MAX.	MAX.	MAX.
2V4	2.2	2.6	70	100	-3.5	-1.6	0	5	450	50	1.0
2V7	2.5	2.9	75	100	-3.5	-2.0	0	5	450	20	1.0
3V0	2.8	3.2	80	95	-3.5	-2.1	0	5	450	10	1.0
3V3	3.1	3.5	85	95	-3.5	-2.4	0	5	450	5	1.0
3V6	3.4	3.8	85	90	-3.5	-2.4	0	5	450	5	1.0
3V9	3.7	4.1	85	90	-3.5	-2.5	0	5	450	3	1.0
4V3	4.0	4.6	80	90	-3.5	-2.5	0	5	450	3	1.0
4V7	4.4	5.0	50	80	-3.5	-1.4	0.2	5	300	3	2.0
5V1	4.8	5.4	40	60	-2.7	-0.8	1.2	5	300	2	2.0
5V6	5.2	6.0	15	40	-2.0	1.2	2.5	5	300	1	2.0
6V2	5.8	6.6	6	10	0.4	2.3	3.7	5	200	3	4.0
6V8	6.4	7.2	6	15	1.2	3.0	4.5	5	200	2	4.0
7V5	7.0	7.9	6	15	2.5	4.0	5.3	5	150	1	5.0
8V2	7.7	8.7	6	15	3.2	4.6	6.2	5	150	0.7	5.0
9V1	8.5	9.6	6	15	3.8	5.5	7.0	5	150	0.5	6.0
10	9.4	10.6	8	20	4.5	6.4	8.0	5	90	0.2	7.0
11	10.4	11.6	10	20	5.4	7.4	9.0	5	85	0.1	8.0
12	11.4	12.7	10	25	6.0	8.4	10.0	5	85	0.1	8.0
13	12.4	14.1	10	30	7.0	9.4	11.0	5	80	0.1	8.0
15	13.8	15.6	10	30	9.2	11.4	13.0	5	75	0.05	10.5
16	15.3	17.1	10	40	10.4	12.4	14.0	5	75	0.05	11.2
18	16.8	19.1	10	45	12.4	14.4	16.0	5	70	0.05	12.6
20	18.8	21.2	15	55	14.4	16.4	18.0	5	60	0.05	14.0

BZV90- CXXX	WORKING VOLTAGE V_Z (V) at I_{Ztest}		DIFFERENTIAL RESISTANCE r_{diff} (Ω) at I_{Ztest}		TEMP. COEFF. S_Z (mV/K) at I_{Ztest} see Figs 4 and 5			TEST CURRENT I_{Ztest} (mA)	DIODE CAP. C_d (pF) at $f = 1$ MHz; at $V_R = 0$ V	REVERSE CURRENT at REVERSE VOLTAGE	
	MIN.	MAX.	TYP.	MAX.	MIN.	TYP.	MAX.			I_R (μ A)	V_R (V)
									MAX.		MAX.
22	20.8	23.3	20	55	16.4	18.4	20.0	5	60	0.05	15.4
24	22.8	25.6	25	70	18.4	20.4	22.0	5	55	0.05	16.8
27	25.0	28.9	25	80	21.4	23.4	25.3	2	50	0.05	18.9
30	28.0	32.0	30	80	24.4	26.6	29.4	2	50	0.05	21.0
33	31.0	35.0	35	80	27.4	29.7	33.4	2	45	0.05	23.1
36	34.0	38.0	35	90	30.4	33.0	37.4	2	45	0.05	25.2
39	37.0	41.0	40	130	33.4	36.4	41.2	2	45	0.05	27.3
43	40.0	46.0	45	150	37.6	41.2	46.6	2	40	0.05	30.1
47	44.0	50.0	50	170	42.0	46.1	51.8	2	40	0.05	32.9
51	48.0	54.0	60	180	46.6	51.0	57.2	2	40	0.05	35.7
56	52.0	60.0	70	200	52.2	57.0	63.8	2	40	0.05	39.2
62	58.0	66.0	80	215	58.8	64.4	71.6	2	35	0.05	43.4
68	64.0	72.0	90	240	65.6	71.7	79.8	2	35	0.05	47.6
75	70.0	79.0	95	255	73.4	80.2	88.6	2	35	0.05	52.5

Voltage regulator diodes

BZV90 series

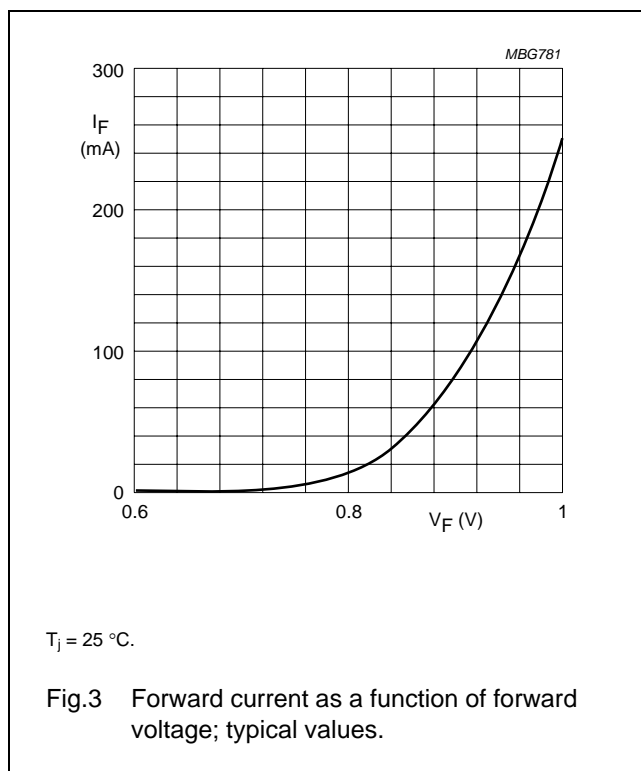
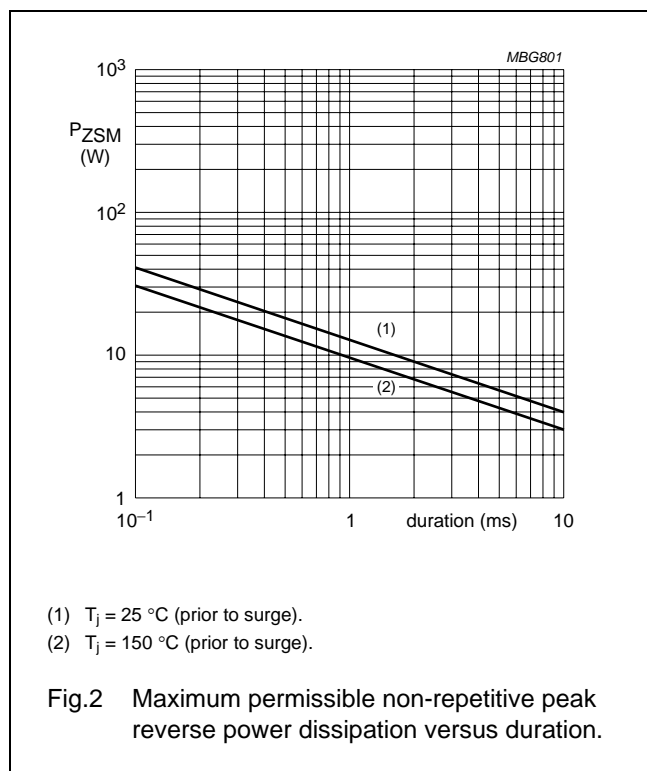
THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j-a}$	thermal resistance from junction to ambient	lead length max.; note 1	83.3	K/W

Note

1. Device mounted on an FR4 double-sided copper-clad printed circuit-board; copper area = 2 cm².

GRAPHICAL DATA



Voltage regulator diodes

BZV90 series



Voltage regulator diodes

BZV90 series

PACKAGE OUTLINE

Plastic surface mounted package; collector pad for good heat transfer; 4 leads

SOT223



DIMENSIONS (mm are the original dimensions)

UNIT	A	A ₁	b _p	b ₁	c	D	E	e	e ₁	H _E	L _p	Q	v	w	y
mm	1.8 1.5	0.10 0.01	0.80 0.60	3.1 2.9	0.32 0.22	6.7 6.3	3.7 3.3	4.6	2.3	7.3 6.7	1.1 0.7	0.95 0.85	0.2	0.1	0.1

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT223			SC-73			97-02-28 99-09-13

Voltage regulator diodes

BZV90 series

DATA SHEET STATUS

DOCUMENT STATUS ⁽¹⁾	PRODUCT STATUS ⁽²⁾	DEFINITION
Objective data sheet	Development	This document contains data from the objective specification for product development.
Preliminary data sheet	Qualification	This document contains data from the preliminary specification.
Product data sheet	Production	This document contains the product specification.

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NXP Semiconductors

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Contact information

For additional information please visit: <http://www.nxp.com>

For sales offices addresses send e-mail to: salesaddresses@nxp.com

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