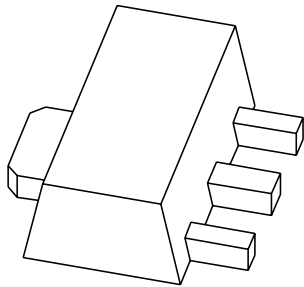


# DATA SHEET



## **BZV49 series** Voltage regulator diodes

Product specification  
Supersedes data of 1996 Oct 28

1999 May 11

# Voltage regulator diodes

# BZV49 series

### FEATURES

- Total power dissipation: max. 1 W
- 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.

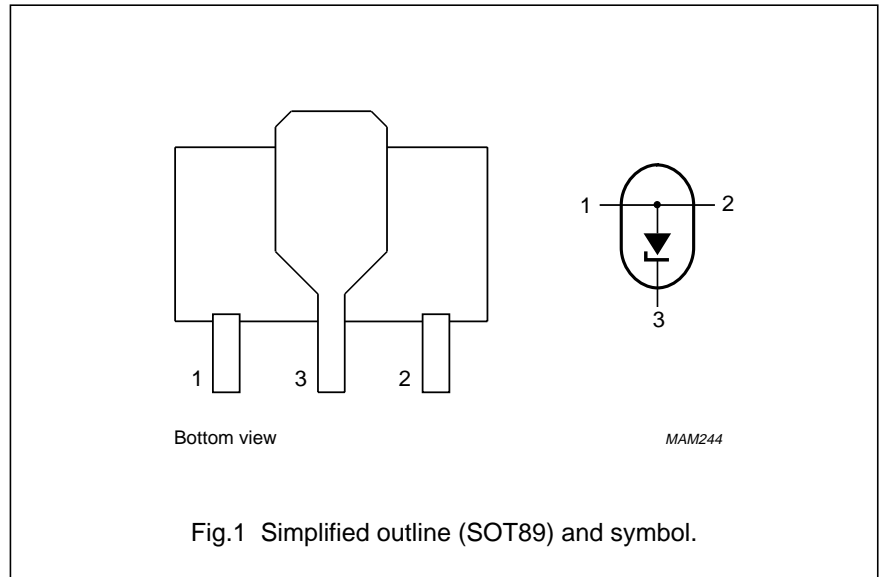
### DESCRIPTION

Medium-power voltage regulator diodes in a SOT89 plastic SMD package.

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 (BZV49-C2V4 to BZV49-C75).

### PINNING

PIN	DESCRIPTION
1	anode
2	anode
3	cathode



### MARKING

TYPE NUMBER	MARKING CODE	TYPE NUMBER	MARKING CODE	TYPE NUMBER	MARKING CODE	TYPE NUMBER	MARKING CODE
BZV49-C2V4	2Y4	BZV49-C6V2	6Y2	BZV49-C16	16Y	BZV49-C43	43Y
BZV49-C2V7	2Y7	BZV49-C6V8	6Y8	BZV49-C18	18Y	BZV49-C47	47Y
BZV49-C3V0	3Y0	BZV49-C7V5	7Y5	BZV49-C20	20Y	BZV49-C51	51Y
BZV49-C3Y3	3Y3	BZV49-C8V2	8Y2	BZV49-C22	22Y	BZV49-C56	56Y
BZV49-C3V6	3Y6	BZV49-C9V1	9Y1	BZV49-C24	24Y	BZV49-C62	62Y
BZV49-C3V9	3Y9	BZV49-C10	10Y	BZV49-C27	27Y	BZV49-C68	68Y
BZV49-C4V3	4Y3	BZV49-C11	11Y	BZV49-C30	30Y	BZV49-C75	75Y
BZV49-C4V7	4Y7	BZV49-C12	12Y	BZV49-C33	33Y	-	-
BZV49-C5V1	5Y1	BZV49-C13	13Y	BZV49-C36	36Y	-	-
BZV49-C5V6	5Y6	BZV49-C15	15Y	BZV49-C39	39Y	-	-

## Voltage regulator diodes

## BZV49 series

**LIMITING VALUES**

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$I_F$	continuous forward current		–	250	mA
$I_{ZSM}$	non-repetitive peak reverse current	$t_p = 100 \mu\text{s}$ ; 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	–	1	W
$P_{ZSM}$	non-repetitive peak reverse power dissipation	$t_p = 100 \mu\text{s}$ ; 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 a ceramic substrate; area = 2.5 cm<sup>2</sup>; thickness = 0.7 mm.

**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.3	1	V

## Voltage regulator diodes

## BZV49 series

## Per type

T<sub>j</sub> = 25 °C unless otherwise specified.

BZV49-CXXX	WORKING VOLTAGE V <sub>Z</sub> (V) at I <sub>Ztest</sub>		DIFFERENTIAL RESISTANCE r <sub>diff</sub> (Ω) at I <sub>Ztest</sub>		TEMP. COEFF. S <sub>Z</sub> (mV/K) at I <sub>Ztest</sub> see Figs 4 and 5			TEST CURRENT I <sub>Ztest</sub> (mA)	DIODE CAP. C <sub>d</sub> (pF) at f = 1 MHz; at V <sub>R</sub> = 0 V	REVERSE CURRENT at REVERSE VOLTAGE		NON-REPETITIVE PEAK REVERSE CURRENT I <sub>ZSM</sub> (A) at t <sub>p</sub> = 100 μs; T <sub>amb</sub> = 25 °C
	MIN.	MAX.	TYP.	MAX.	MIN.	TYP.	MAX.			I <sub>R</sub> (μA)	V <sub>R</sub> (V)	
										MAX.	MAX.	
2V4	2.2	2.6	70	100	-3.5	-1.6	0	5	450	50	1.0	6.0
2V7	2.5	2.9	75	100	-3.5	-2.0	0	5	450	20	1.0	6.0
3V0	2.8	3.2	80	95	-3.5	-2.1	0	5	450	10	1.0	6.0
3V3	3.1	3.5	85	95	-3.5	-2.4	0	5	450	5	1.0	6.0
3V6	3.4	3.8	85	90	-3.5	-2.4	0	5	450	5	1.0	6.0
3V9	3.7	4.1	85	90	-3.5	-2.5	0	5	450	3	1.0	6.0
4V3	4.0	4.6	80	90	-3.5	-2.5	0	5	450	3	1.0	6.0
4V7	4.4	5.0	50	80	-3.5	-1.4	+0.2	5	300	3	2.0	6.0
5V1	4.8	5.4	40	60	-2.7	-0.8	+1.2	5	300	2	2.0	6.0
5V6	5.2	6.0	15	40	-2.0	+1.2	+2.5	5	300	1	2.0	6.0
6V2	5.8	6.6	6	10	0.4	2.3	3.7	5	200	3	4.0	6.0
6V8	6.4	7.2	6	15	1.2	3.0	4.5	5	200	2	4.0	6.0
7V5	7.0	7.9	6	15	2.5	4.0	5.3	5	150	1	5.0	4.0
8V2	7.7	8.7	6	15	3.2	4.6	6.2	5	150	0.7	5.0	4.0
9V1	8.5	9.6	6	15	3.8	5.5	7.0	5	150	0.5	6.0	3.0
10	9.4	10.6	8	20	4.5	6.4	8.0	5	90	0.2	7.0	3.0
11	10.4	11.6	10	20	5.4	7.4	9.0	5	85	0.1	8.0	2.5
12	11.4	12.7	10	25	6.0	8.4	10.0	5	85	0.1	8.0	2.5
13	12.4	14.1	10	30	7.0	9.4	11.0	5	80	0.1	8.0	2.5
15	13.8	15.6	10	30	9.2	11.4	13.0	5	75	0.05	10.5	2.0
16	15.3	17.1	10	40	10.4	12.4	14.0	5	75	0.05	11.2	1.5
18	16.8	19.1	10	45	12.4	14.4	16.0	5	70	0.05	12.6	1.5
20	18.8	21.2	15	55	14.4	16.4	18.0	5	60	0.05	14.0	1.5

## Voltage regulator diodes

## BZV49 series

BZV49- CXXX	WORKING VOLTAGE $V_Z$ (V) at $I_{Ztest}$		DIFFERENTIAL RESISTANCE $r_{dif}$ ( $\Omega$ ) 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		NON-REPETITIVE PEAK REVERSE CURRENT $I_{ZSM}$ (A) at $t_p = 100 \mu s$ ; $T_{amb} = 25^\circ C$	
	MIN.	MAX.	TYP.	MAX.	MIN.	TYP.	MAX.			MAX.	$I_R$ ( $\mu A$ )		$V_R$ (V)
											MAX.		MAX.
22	20.8	23.3	20	55	16.4	18.4	20.0	5	60	0.05	15.4	1.25	
24	22.8	25.6	25	70	18.4	20.4	22.0	5	55	0.05	16.8	1.25	
27	25.1	28.9	25	80	21.4	23.4	25.3	2	50	0.05	18.9	1.0	
30	28.0	32.0	30	80	24.4	26.6	29.4	2	50	0.05	21.0	1.0	
33	31.0	35.0	35	80	27.4	29.7	33.4	2	45	0.05	23.1	0.9	
36	34.0	38.0	35	90	30.4	33.0	37.4	2	45	0.05	25.2	0.8	
39	37.0	41.0	40	130	33.4	36.4	41.2	2	45	0.05	27.3	0.7	
43	40.0	46.0	45	150	37.6	41.2	46.6	2	40	0.05	30.1	0.6	
47	44.0	50.0	50	170	42.0	46.1	51.8	2	40	0.05	32.9	0.5	
51	48.0	54.0	60	180	46.6	51.0	57.2	2	40	0.05	35.7	0.4	
56	52.0	60.0	70	200	52.2	57.0	63.8	2	40	0.05	39.2	0.3	
62	58.0	66.0	80	215	58.8	64.4	71.6	2	35	0.05	43.4	0.3	
68	64.0	72.0	90	240	65.6	71.7	79.8	2	35	0.05	47.6	0.25	
75	70.0	79.0	95	255	73.4	80.2	88.6	2	35	0.05	52.5	0.2	

Voltage regulator diodes

BZV49 series

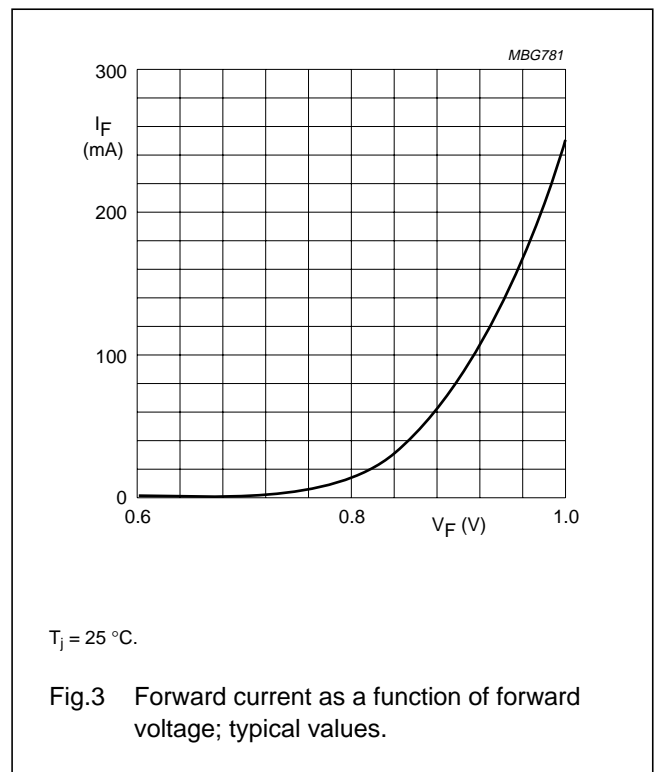
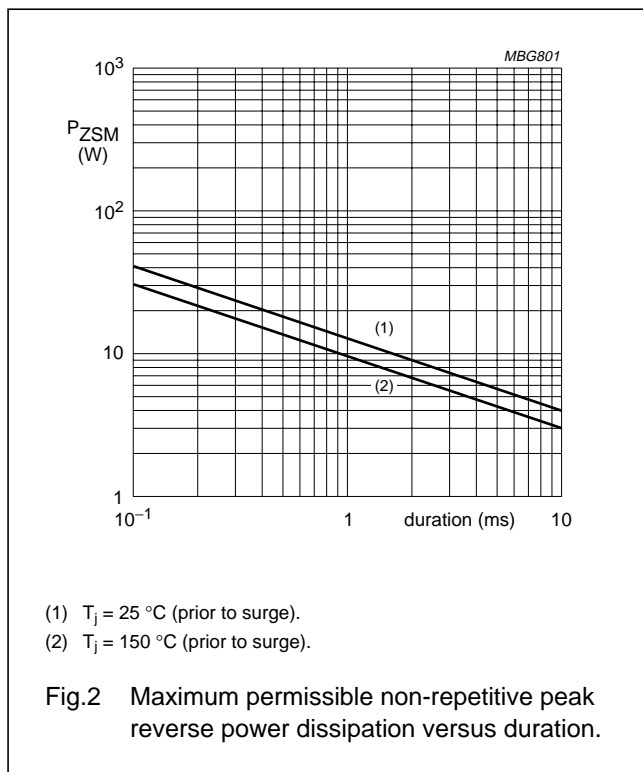
**THERMAL CHARACTERISTICS**

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j-tp}$	thermal resistance from junction to tie-point		15	K/W
$R_{th\ j-a}$	thermal resistance from junction to ambient	note 1	125	K/W

**Note**

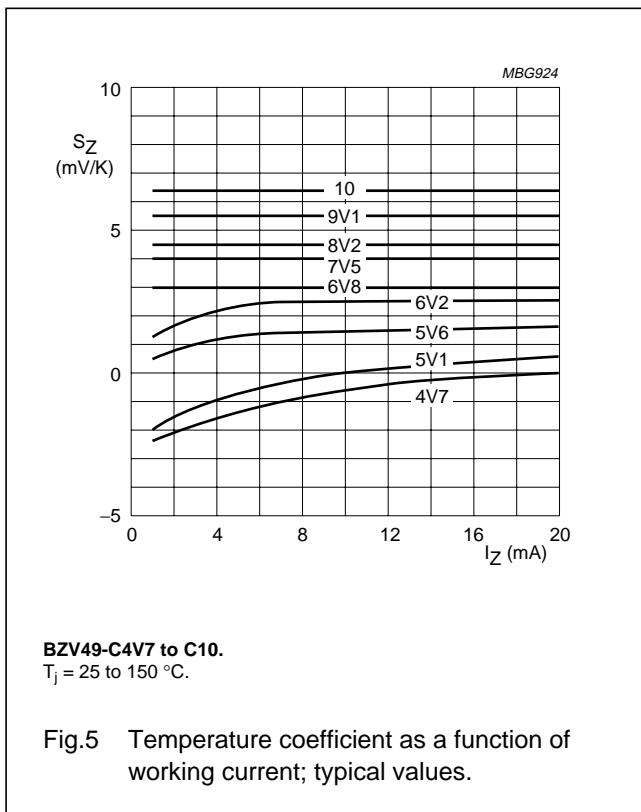
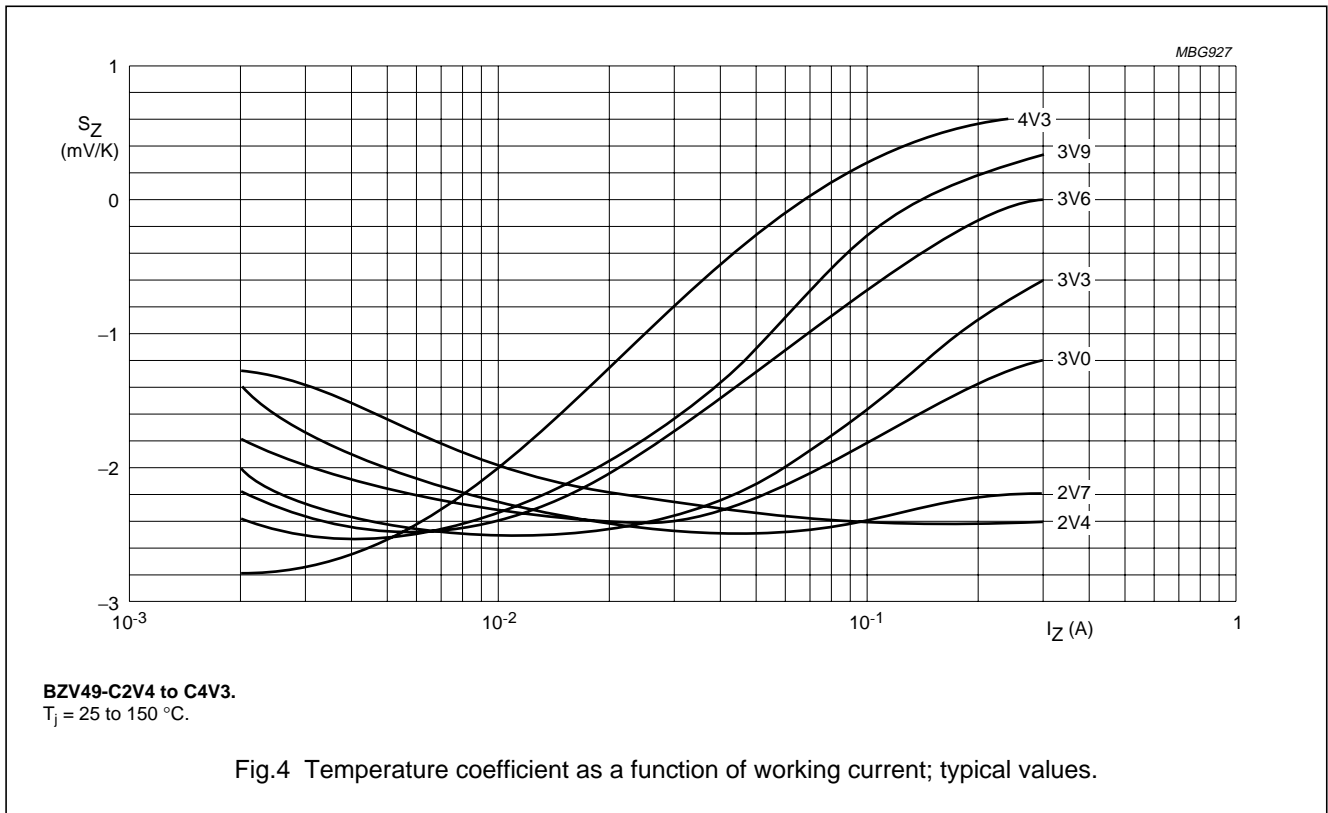
1. Device mounted on a ceramic substrate; area = 2.5 cm<sup>2</sup>; thickness = 0.7 mm.

**GRAPHICAL DATA**



Voltage regulator diodes

BZV49 series



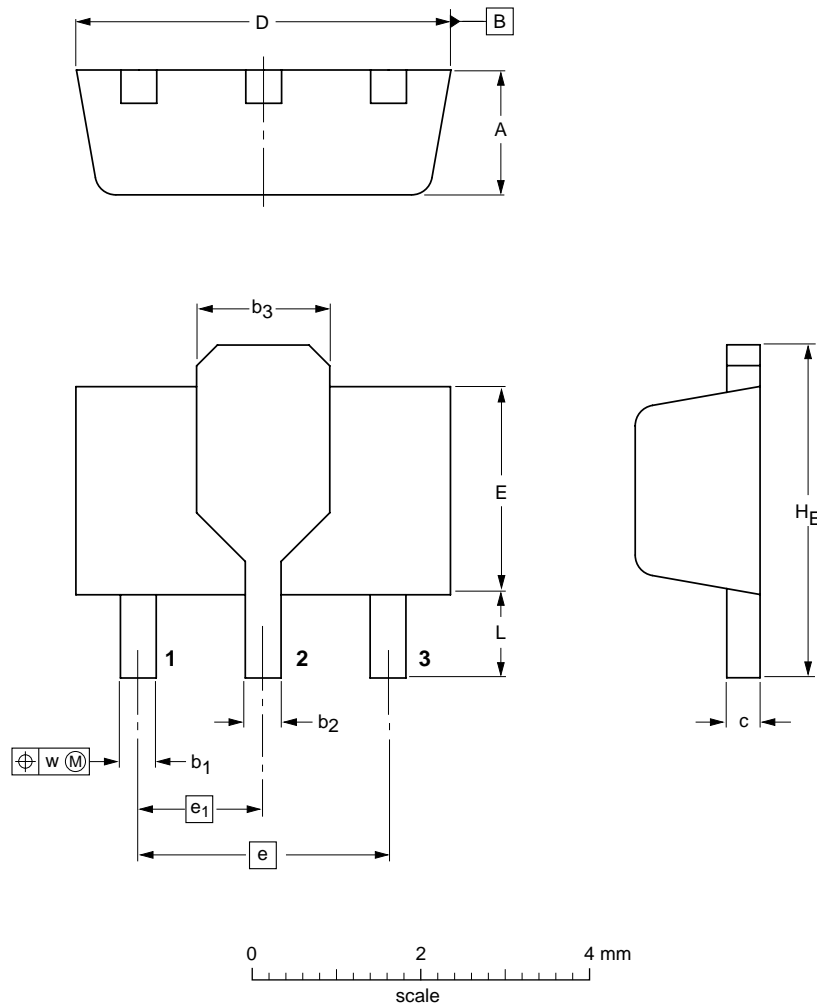
Voltage regulator diodes

BZV49 series

PACKAGE OUTLINE

Plastic surface mounted package; collector pad for good heat transfer; 3 leads

SOT89



DIMENSIONS (mm are the original dimensions)

UNIT	A	b <sub>1</sub>	b <sub>2</sub>	b <sub>3</sub>	c	D	E	e	e <sub>1</sub>	H <sub>E</sub>	L min.	w
mm	1.6 1.4	0.48 0.35	0.53 0.40	1.8 1.4	0.44 0.37	4.6 4.4	2.6 2.4	3.0	1.5	4.25 3.75	0.8	0.13

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT89						97-02-28



## Voltage regulator diodes

## BZV49 series

**DEFINITIONS**

<b>Data sheet status</b>	
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.
<b>Limiting values</b>	
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.	
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Voltage regulator diodes

BZV49 series

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**NOTES**

Voltage regulator diodes

BZV49 series

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**NOTES**

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