### DISCRETE SEMICONDUCTORS



Product specification Supersedes data of 1999 May 11 2001 Oct 15



MARKING

Note

**TYPE NUMBER** 

BAV99

1. \* = p: Made in Hong Kong.

\* = t: Made in Malaysia.

\* = W: Made in China.

#### FEATURES

- Small plastic SMD package
- High switching speed: max. 4 ns
- Continuous reverse voltage: max. 75 V
- Repetitive peak reverse voltage: max. 85 V
- Repetitive peak forward current: max. 450 mA.

#### **APPLICATIONS**

• High-speed switching in thick and thin-film circuits.

#### DESCRIPTION

The BAV99 consists of two high-speed switching diodes connected in series, fabricated in planar technology, and encapsulated in the small SOT23 plastic SMD package.

#### LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
Per diode			•	•	•
V <sub>RRM</sub>	repetitive peak reverse voltage		-	85	V
V <sub>R</sub>	continuous reverse voltage		-	75	V
l <sub>F</sub>	continuous forward current	single diode loaded; see Fig.2; note 1	-	215	mA
		double diode loaded; see Fig.2; note 1	-	125	mA
I <sub>FRM</sub>	repetitive peak forward current		-	450	mA
I <sub>FSM</sub>	non-repetitive peak forward current	square wave; T <sub>j</sub> = 25 °C prior to surge; see Fig.4			
		t = 1 μs	-	4	A
		t = 1 ms	-	1	A
		t = 1 s	-	0.5	A
P <sub>tot</sub>	total power dissipation	T <sub>amb</sub> = 25 °C; note 1	-	250	mW
T <sub>stg</sub>	storage temperature		-65	+150	°C
Tj	junction temperature		-	150	°C

2

#### Note

1. Device mounted on an FR4 printed-circuit board.

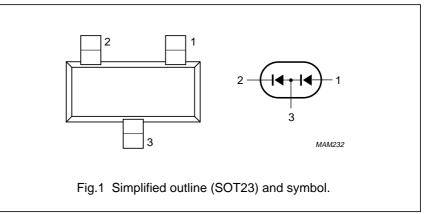
#### PINNING

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CODE<sup>(1)</sup>

A7\*

PIN	DESCRIPTION	
1	anode	
2	cathode	
3	common connection	



### BAV99

BAV99

#### ELECTRICAL CHARACTERISTICS

#### $T_j$ = 25 °C unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MAX.	UNIT
Per diode				
V <sub>F</sub>	forward voltage	see Fig.3		
		I <sub>F</sub> = 1 mA	715	mV
		I <sub>F</sub> = 10 mA	855	mV
		I <sub>F</sub> = 50 mA	1	V
		I <sub>F</sub> = 150 mA	1.25	V
I <sub>R</sub>	reverse current	see Fig.5		
		V <sub>R</sub> = 25 V	30	nA
		V <sub>R</sub> = 75 V	1	μA
		V <sub>R</sub> = 25 V; T <sub>j</sub> = 150 °C	30	μA
		V <sub>R</sub> = 75 V; T <sub>j</sub> = 150 °C	50	μA
C <sub>d</sub>	diode capacitance	$f = 1 \text{ MHz}; V_R = 0; \text{ see Fig.6}$	1.5	pF
t <sub>rr</sub>	reverse recovery time	when switched from $I_F = 10$ mA to	4	ns
		$I_R = 10 \text{ mA}; R_L = 100 \Omega;$ measured		
		at I <sub>R</sub> = 1 mA; see Fig.7		
V <sub>fr</sub>	forward recovery voltage	when switched from $I_F = 10 \text{ mA}$ ;	1.75	V
		t <sub>r</sub> = 20 ns; see Fig.8		

#### THERMAL CHARACTERISTICS

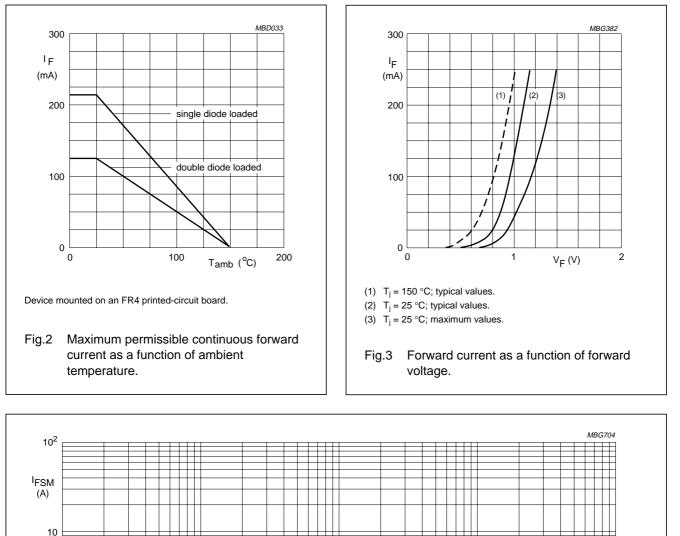
SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
R <sub>th j-tp</sub>	thermal resistance from junction to tie-point		360	K/W
R <sub>th j-a</sub>	thermal resistance from junction to ambient	note 1	500	K/W

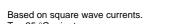
#### Note

1. Device mounted on an FR4 printed-circuit board.

### BAV99

#### **GRAPHICAL DATA**





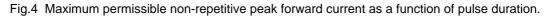
10

 $T_j = 25 \ ^\circ C$  prior to surge.

1

 $10^{-1}$ 

1



10<sup>2</sup>

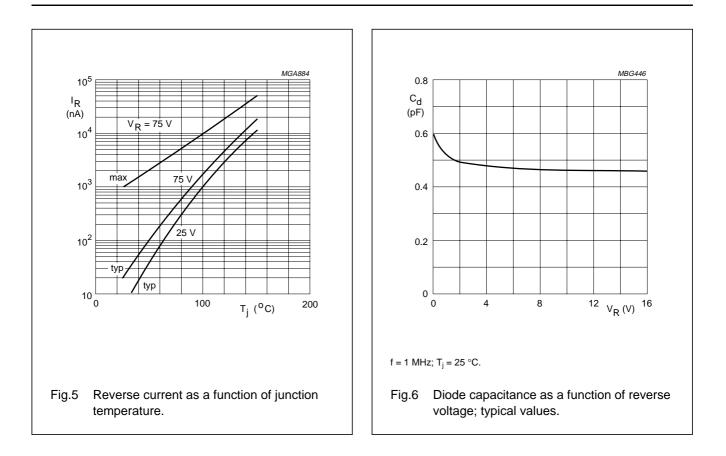
10<sup>3</sup>

10<sup>4</sup>

t<sub>p</sub> (μs)

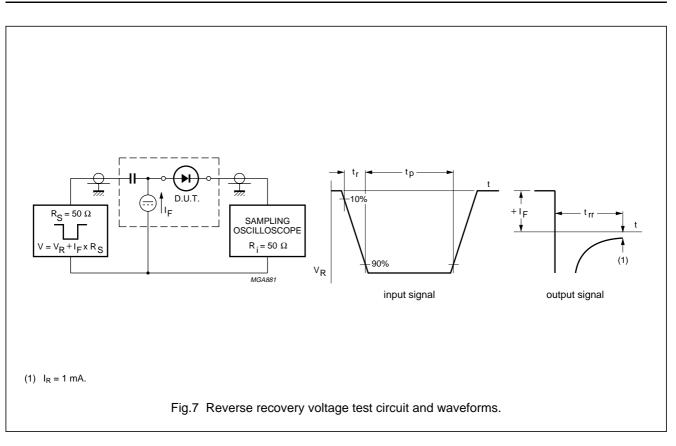
BAV99

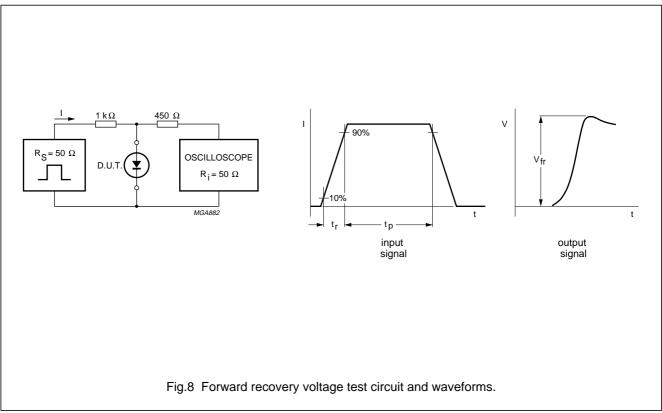
## High-speed double diode



#### 2001 Oct 15

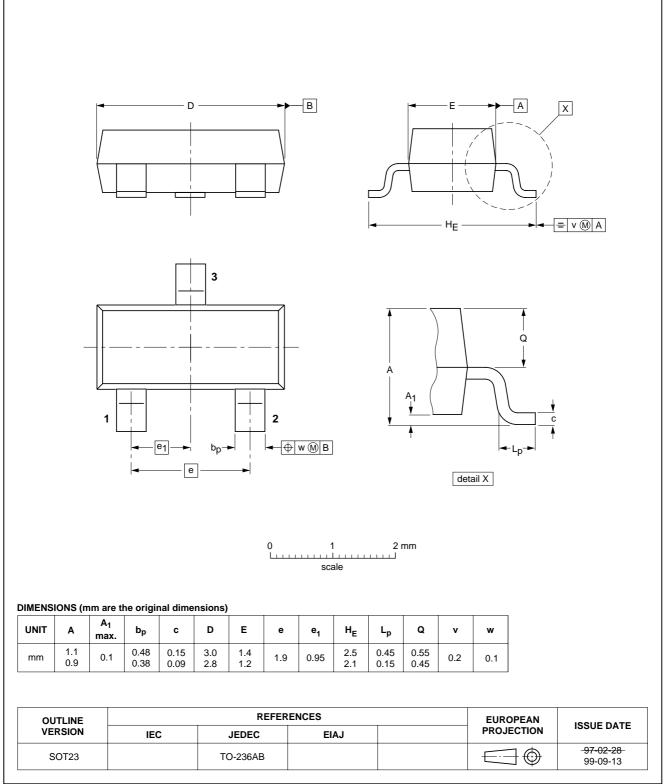
### BAV99





#### PACKAGE OUTLINE





BAV99

SOT23

BAV99

#### DATA SHEET STATUS

DATA SHEET STATUS <sup>(1)</sup>	PRODUCT STATUS <sup>(2)</sup>	DEFINITIONS
Objective data	Development	This data sheet contains data from the objective specification for product development. Philips Semiconductors reserves the right to change the specification in any manner without notice.
Preliminary data	Qualification	This data sheet contains data from the preliminary specification. Supplementary data will be published at a later date. Philips Semiconductors reserves the right to change the specification without notice, in order to improve the design and supply the best possible product.
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#### Notes

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Limiting values definition — Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 60134). 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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