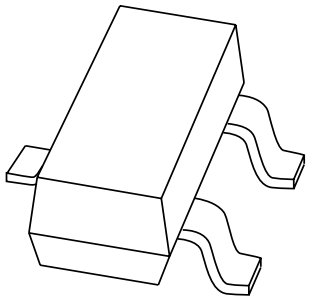
DATA SHEET



BAV199
Low-leakage double diode

Product specification
Supersedes data of 1996 Mar 13

1999 May 11

Philips
Semiconductors

PHILIPS

Low-leakage double diode BAV199

FEATURES

- Plastic SMD package
- Low leakage current: typ. 3 pA
- Switching time: typ. 0.8 µs
- Continuous reverse voltage: max. 75 V
- Repetitive peak reverse voltage: max. 85 V
- Repetitive peak forward current: max. 500 mA.

APPLICATION

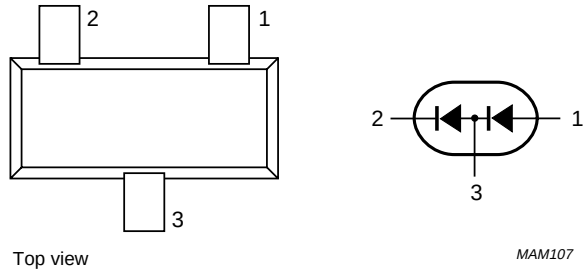
- Low-leakage current applications in surface mounted circuits.

DESCRIPTION

Epitaxial, medium-speed switching, double diode in a small SOT23 plastic SMD package. The diodes are connected in series.

PINNING

PIN	DESCRIPTION
1	anode
2	cathode
3	anode; cathode



Marking code: JYp = made in Hong Kong; JYt = made in Malaysia.

Fig.1 Simplified outline (SOT23) and symbol.

LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
Per diode					
V_{RRM}	repetitive peak reverse voltage		–	85	V
V_R	continuous reverse voltage		–	75	V
I_F	continuous forward current	single diode loaded; note 1; see Fig.2	–	160	mA
		double diode loaded; note 1; see Fig.2	–	140	mA
I_{FRM}	repetitive peak forward current		–	500	mA
I_{FSM}	non-repetitive peak forward current	square wave; T_j = 25 °C prior to surge; see Fig.4			
		t_p = 1 µs	–	4	A
		t_p = 1 ms	–	1	A
		t_p = 1 s	–	0.5	A
P_{tot}	total power dissipation	T_{amb} = 25 °C; note 1	–	250	mW
T_{stg}	storage temperature		–65	+150	°C
T_j	junction temperature		–	150	°C

Note

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

ELECTRICAL CHARACTERISTICS

T_j = 25 °C unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	TYP.	MAX.	UNIT
Per diode					
V_F	forward voltage	see Fig.3			
		I_F = 1 mA	–	900	mV
		I_F = 10 mA	–	1000	mV
		I_F = 50 mA	–	1100	mV
		I_F = 150 mA	–	1250	mV
I_R	reverse current	see Fig.5			
		V_R = 75 V	0.003	5	nA
		V_R = 75 V; T_j = 150 °C	3	80	nA
C_d	diode capacitance	f = 1 MHz; V_R = 0; see Fig.6	2	–	pF
t_{rr}	reverse recovery time	when switched from I_F = 10 mA to I_R = 10 mA; R_L = 100 Ω; measured at I_R = 1 mA; see Fig.7	0.8	3	µs

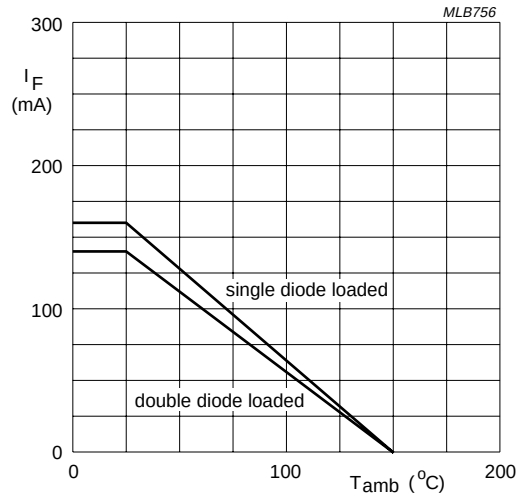
THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j\text{-}tp}$	thermal resistance from junction to tie-point		360	K/W
$R_{th\ j\text{-}a}$	thermal resistance from junction to ambient	note 1	500	K/W

Note

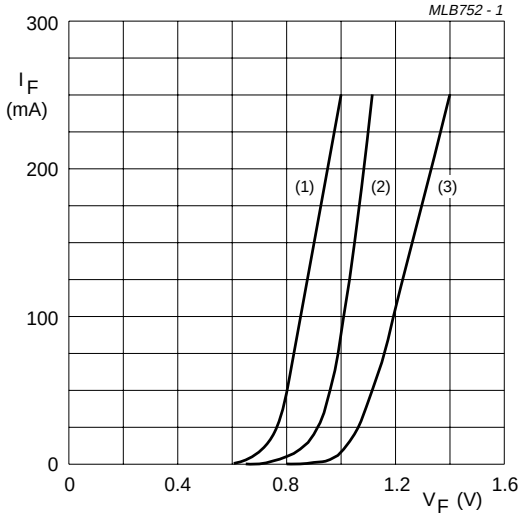
1. Device mounted on a FR4 printed-circuit board.

GRAPHICAL DATA



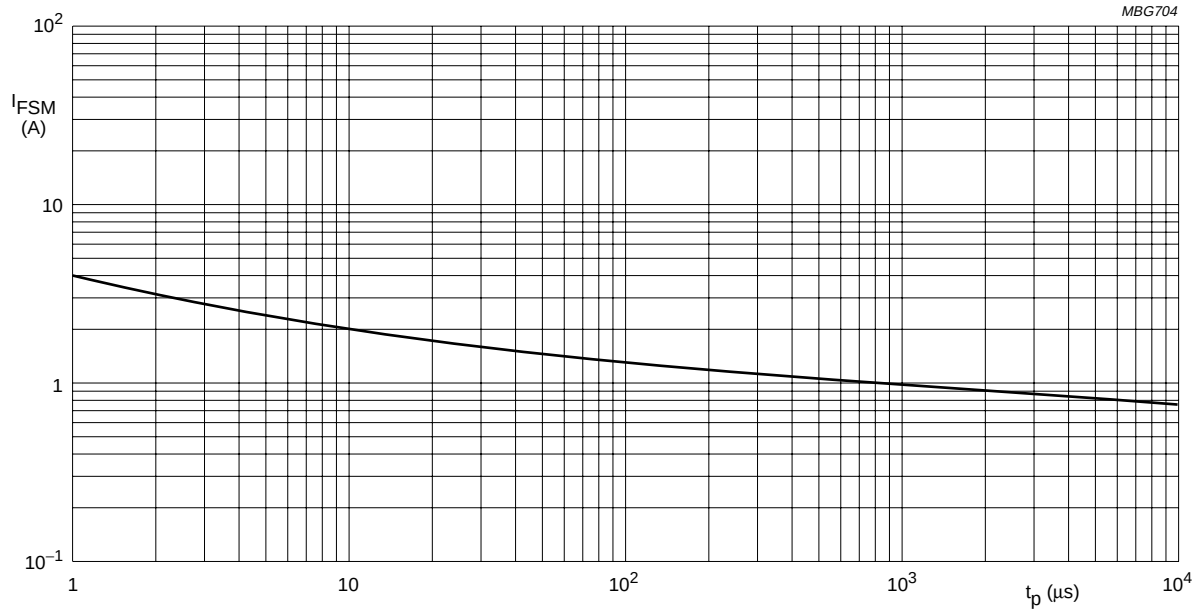
Device mounted on a FR4 printed-circuit board.

Fig.2 Maximum permissible continuous forward current as a function of ambient temperature.



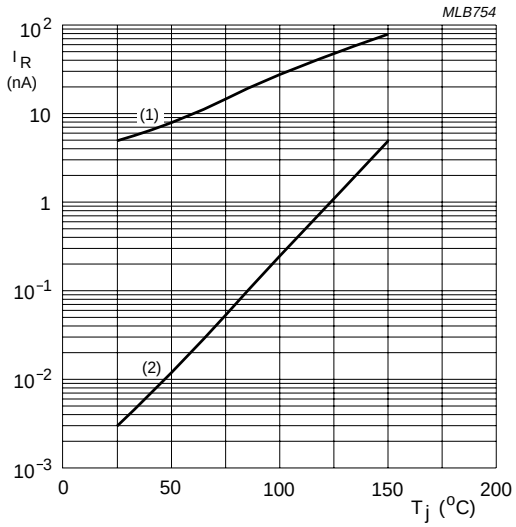
(1) T_j = 150 °C; typical values.
(2) T_j = 25 °C; typical values.
(3) T_j = 25 °C; maximum values.

Fig.3 Forward current as a function of forward voltage; per diode.



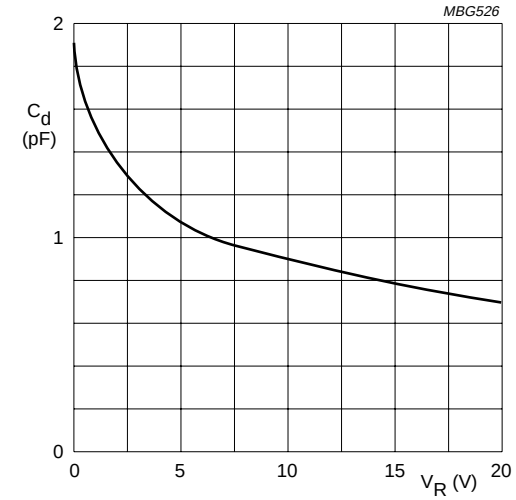
Based on square wave currents; T_j = 25 °C prior to surge.

Fig.4 Maximum permissible non-repetitive peak forward current as a function of pulse duration per diode.



V_R = 75 V.
(1) Maximum values.
(2) Typical values.

Fig.5 Reverse current as a function of junction temperature; per diode.



f = 1 MHz; T_j = 25 °C.

Fig.6 Diode capacitance as a function of reverse voltage; per diode; typical values.

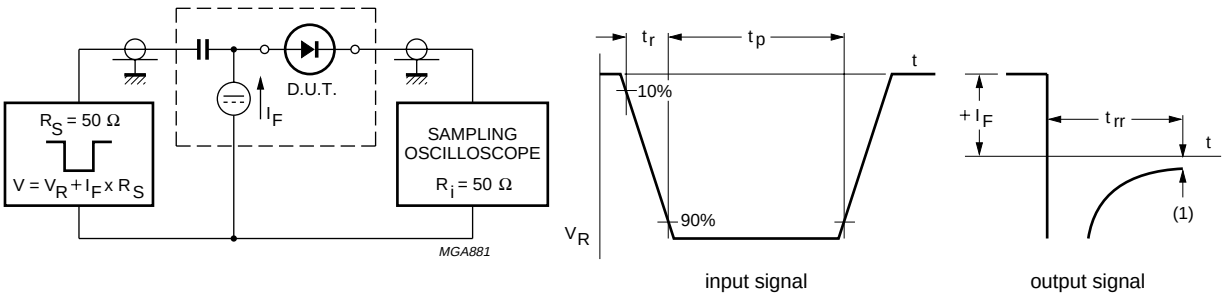
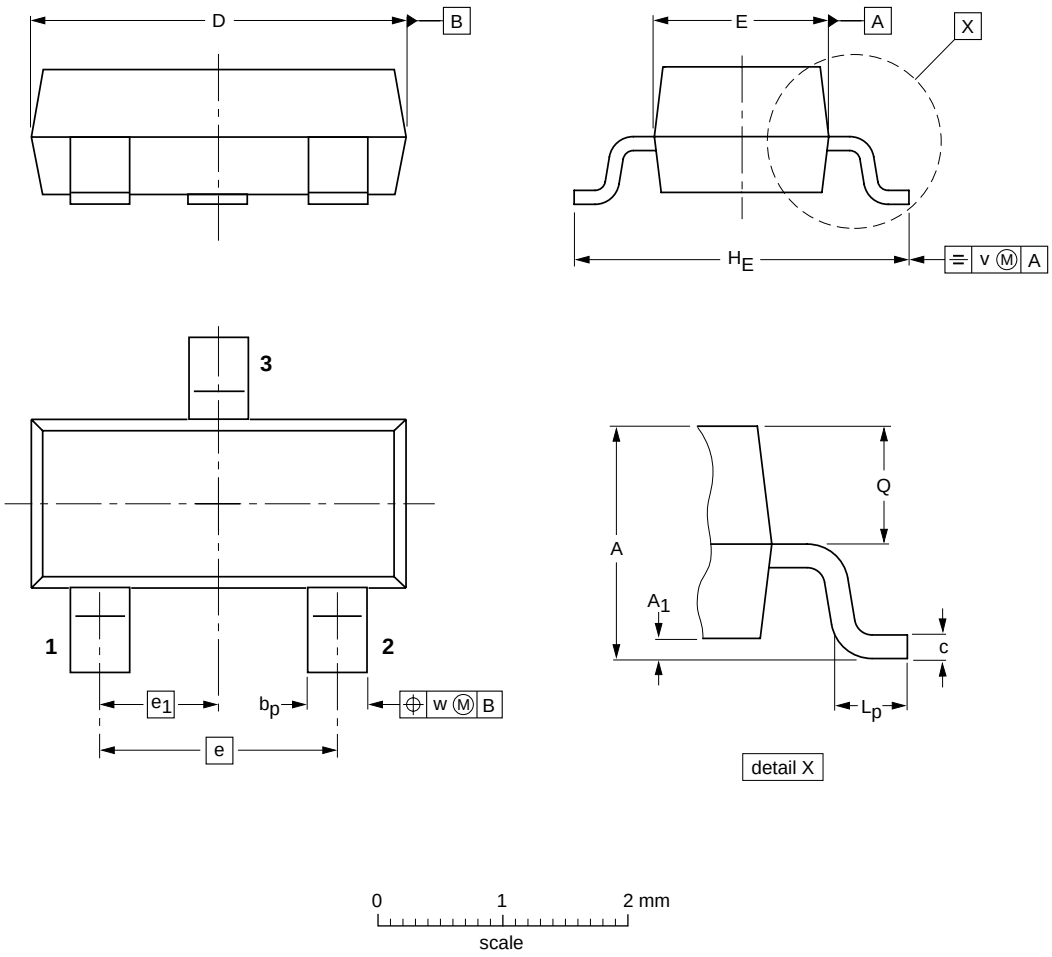


Fig.7 Reverse recovery time test circuit and waveforms.

PACKAGE OUTLINE

Plastic surface mounted package; 3 leads **SOT23**



DIMENSIONS (mm are the original dimensions)

UNIT	A	A_1 max.	b_p	c	D	E	e	e_1	H_E	L_p	Q	v	w
mm	1.1 0.9	0.1	0.48 0.38	0.15 0.09	3.0 2.8	1.4 1.2	1.9	0.95	2.5 2.1	0.45 0.15	0.55 0.45	0.2	0.1

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT23						97-02-28

DEFINITIONS

Data Sheet Status	
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.
Limiting values	
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.	
Application information	
Where application information is given, it is advisory and does not form part of the specification.	

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Austria: Computerstr. 6, A-1101 WIEN, P.O. Box 213,
Tel. +43 1 60 101 1248, Fax. +43 1 60 101 1210

Belarus: Hotel Minsk Business Center, Bld. 3, r. 1211, Volodarski Str. 6,
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Finland: Sinikalliontie 3, FIN-02630 ESPOO,
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France: 51 Rue Carnot, BP317, 92156 SURESNES Cedex,
Tel. +33 1 4099 6161, Fax. +33 1 4099 6427

Germany: Hammerbrookstraße 69, D-20097 HAMBURG,
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Hungary: see Austria

India: Philips INDIA Ltd, Band Box Building, 2nd floor,
254-D, Dr. Annie Besant Road, Worli, MUMBAI 400 025,
Tel. +91 22 493 8541, Fax. +91 22 493 0966

Indonesia: PT Philips Development Corporation, Semiconductors Division,
Gedung Philips, Jl. Buncit Raya Kav.99-100, JAKARTA 12510,
Tel. +62 21 794 0040 ext. 2501, Fax. +62 21 794 0080

Ireland: Newstead, Clonskeagh, DUBLIN 14,
Tel. +353 1 7640 000, Fax. +353 1 7640 200

Israel: RAPAC Electronics, 7 Kehilat Saloniki St, PO Box 18053,
TEL AVIV 61180, Tel. +972 3 645 0444, Fax. +972 3 649 1007

Italy: PHILIPS SEMICONDUCTORS, Piazza IV Novembre 3,
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Japan: Philips Bldg 13-37, Kohnan 2-chome, Minato-ku,
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Korea: Philips House, 260-199 Itaewon-dong, Yongsan-ku, SEOUL,
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Malaysia: No. 76 Jalan Universiti, 46200 PETALING JAYA, SELANGOR,
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Netherlands: Postbus 90050, 5600 PB EINDHOVEN, Bldg. VB,
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Philippines: Philips Semiconductors Philippines Inc.,
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Poland: Ul. Lukiska 10, PL 04-123 WARSZAWA,
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United Kingdom: Philips Semiconductors Ltd., 276 Bath Road, Hayes,
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