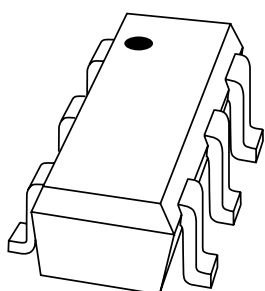


DATA SHEET



BAV99S

High-speed switching diode array

Product specification
Supersedes data of 2001 Mar 02

2001 May 14

High-speed switching diode array

BAV99S

FEATURES

- Small plastic SMD package
- High switching speed
- Two electrically isolated series configuration arrays
- Low capacitance.

APPLICATIONS

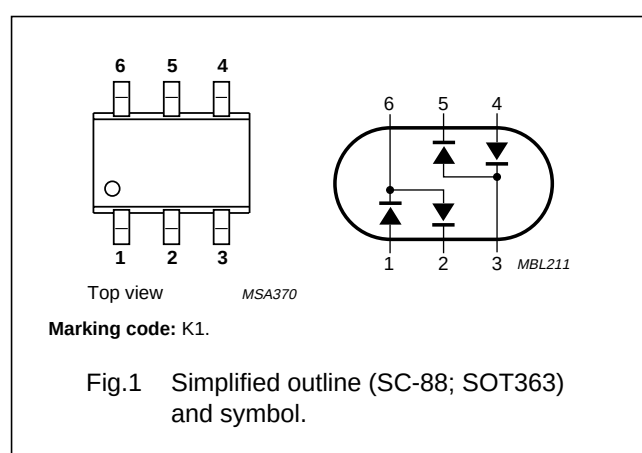
- General purpose switching in e.g. surface mounted circuits.
- Rail to rail (ESD) protection.

DESCRIPTION

The BAV99S consists of four single die high speed switching diodes in two electrically isolated series configurations, encapsulated in the small SMD SC-88 (SOT363) plastic package.

PINNING

PIN	DESCRIPTION
1	anode (a1)
2	cathode (k2)
3	cathode (k3)/anode (a4)
4	anode (a3)
5	cathode (k4)
6	cathode (k1)/anode (a2)



LIMITING VALUES

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

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		–	200	mA
I_{FRM}	repetitive peak forward current		–	450	mA
I_{FSM}	non-repetitive peak forward current	square wave; $T_j = 25\text{ °C}$ prior to surge; see Fig.4 $t = 1\text{ }\mu\text{s}$ $t = 1\text{ ms}$ $t = 1\text{ s}$	– – –	4.5 1 0.5	A A A
P_{tot}	total power dissipation	$T_s \leq 85\text{ °C}$; note 1	–	250	mW
T_{stg}	storage temperature		–65	+150	°C
T_j	junction temperature		–65	+150	°C

Note

1. Solder points at pins: 2, 3, 5 and 6.

High-speed switching diode array

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ELECTRICAL CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MAX.	UNIT
Per diode				
V_F	forward voltage	see Fig.3 $I_F = 1\text{ mA}$	715	mV
		$I_F = 10\text{ mA}$	855	mV
		$I_F = 50\text{ mA}$	1	V
		$I_F = 150\text{ mA}$	1.25	V
I_R	reverse current	see Fig.5 $V_R = 75\text{ V}$	1	μA
		$V_R = 25\text{ V}; T_j = 150\text{ }^{\circ}\text{C}$	30	μA
		$V_R = 75\text{ V}; T_j = 150\text{ }^{\circ}\text{C}$	50	μA
C_d	diode capacitance	$V_R = 0; f = 1\text{ MHz};$ see Fig.6	1.5	pF
t_{rr}	reverse recovery time	when switched from $I_F = 10\text{ mA}$ to $I_R = 10\text{ mA};$ $R_L = 100\text{ }\Omega;$ measured at $I_R = 1\text{ mA};$ see Fig.7	4	ns
V_{fr}	forward recovery voltage	when switched to $I_F = 10\text{ mA}; t_r = 20\text{ ns};$ see Fig.8	1.75	V

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\text{ j-s}}$	thermal resistance from junction to soldering point	note 1	≤ 260	K/W

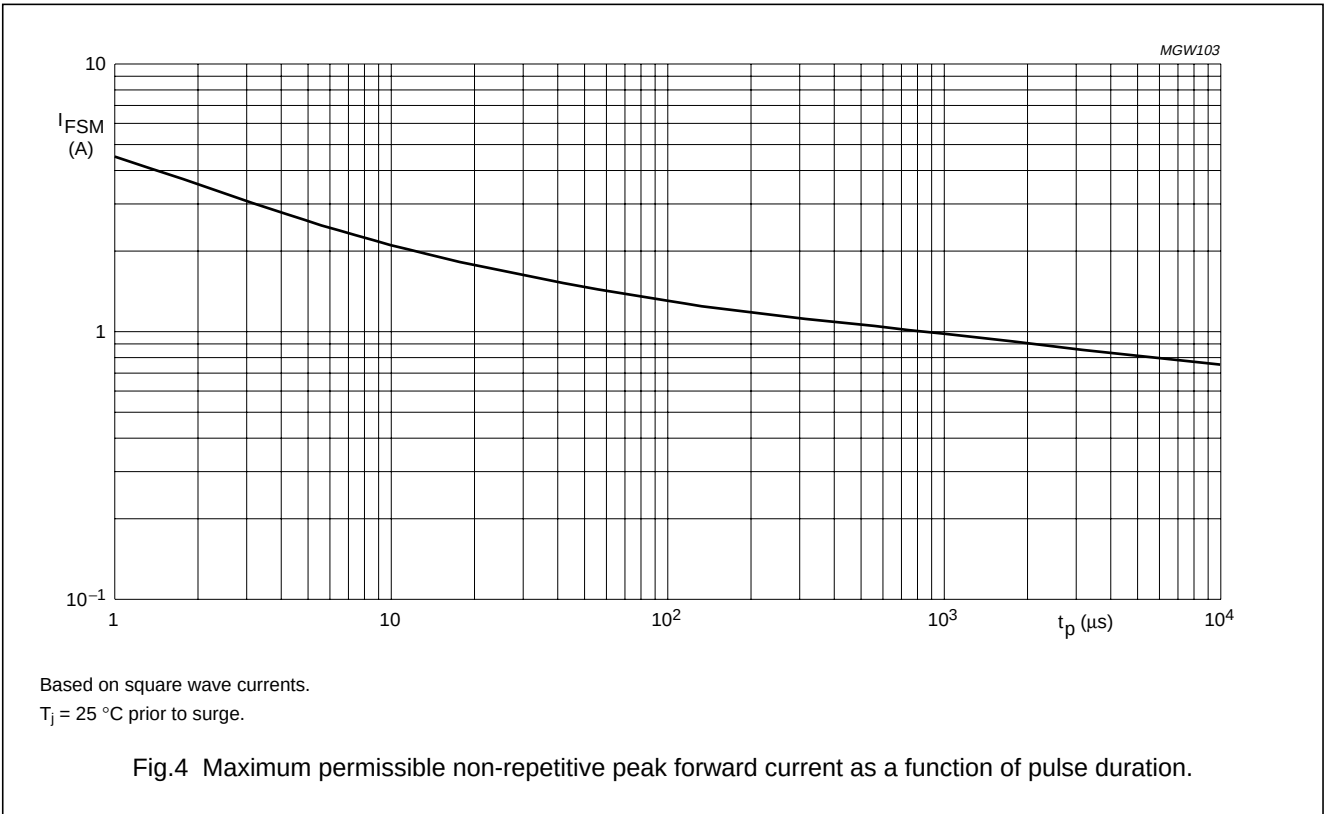
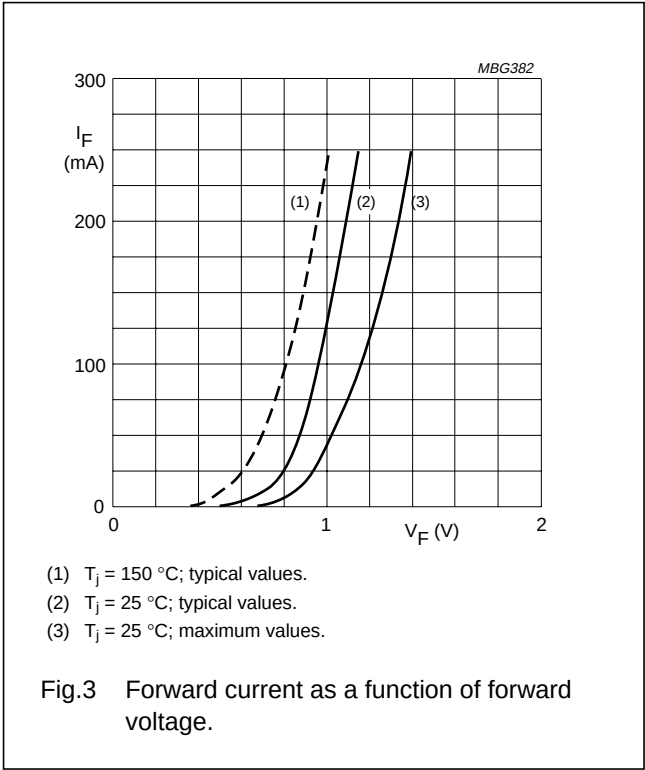
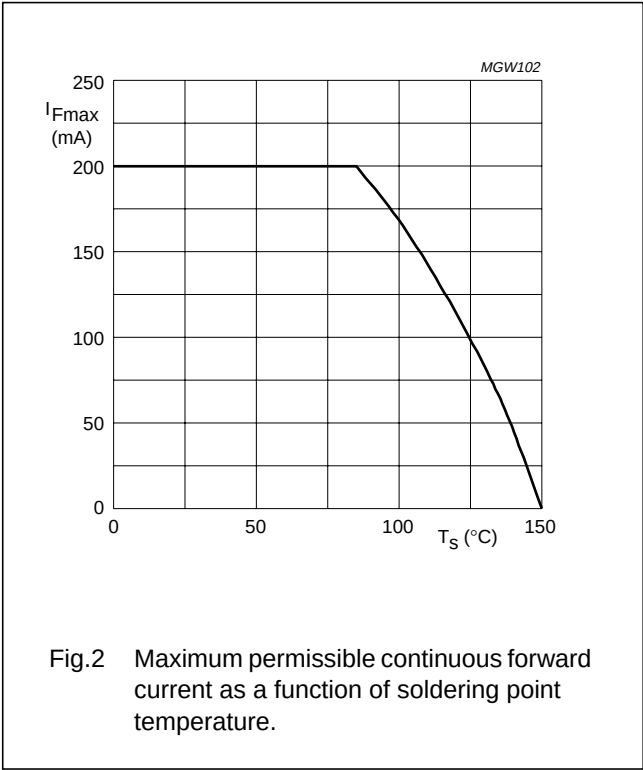
Note

1. Solder points at pins: 2, 3, 5 and 6.

High-speed switching diode array

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GRAPHICAL DATA



High-speed switching diode array

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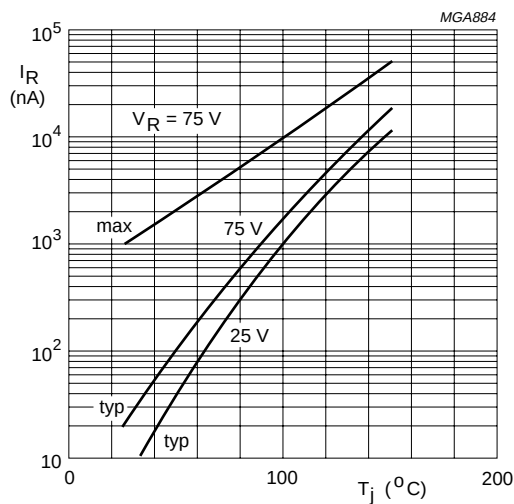
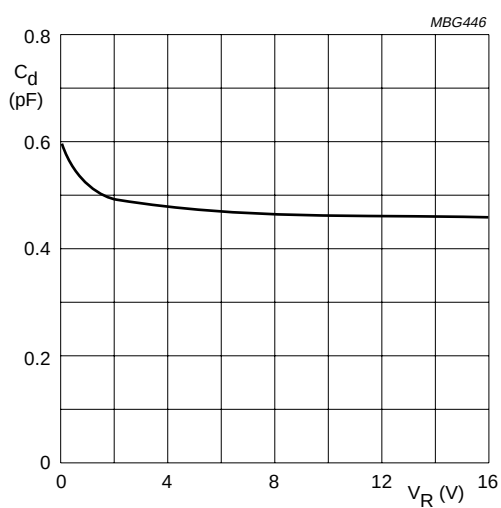


Fig.5 Reverse current as a function of junction temperature.

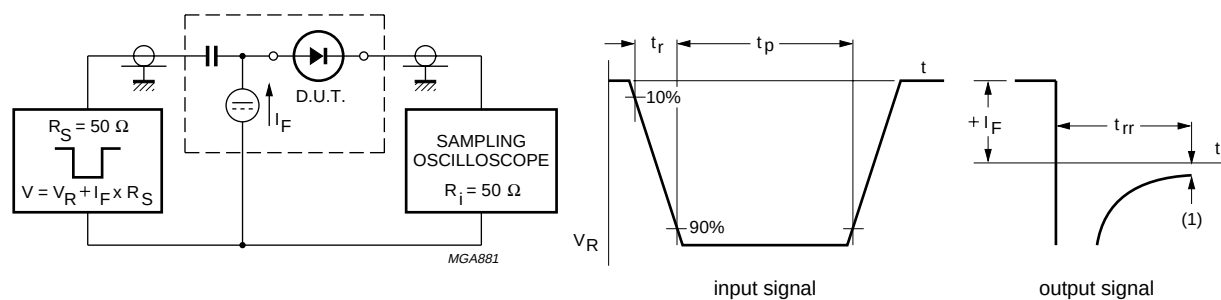


$f = 1\text{ MHz}$; $T_j = 25\text{ }^{\circ}\text{C}$.

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

High-speed switching diode array

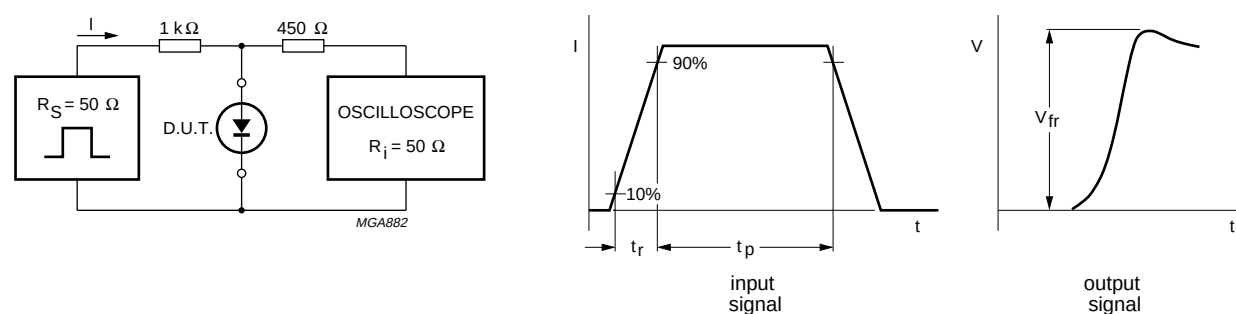
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(1) $I_R = 1 \text{ mA}$.

Input signal: reverse pulse rise time $t_r = 0.6 \text{ ns}$; reverse voltage pulse duration $t_p = 100 \text{ ns}$; duty factor $\delta = 0.05$.
Oscilloscope: rise time $t_r = 0.35 \text{ ns}$.

Fig.7 Reverse recovery voltage test circuit and waveforms.



Input signal: forward pulse rise time $t_r = 20 \text{ ns}$; forward current pulse duration $t_p \geq 100 \text{ ns}$; duty factor $\delta \leq 0.005$.

Fig.8 Forward recovery voltage test circuit and waveforms.

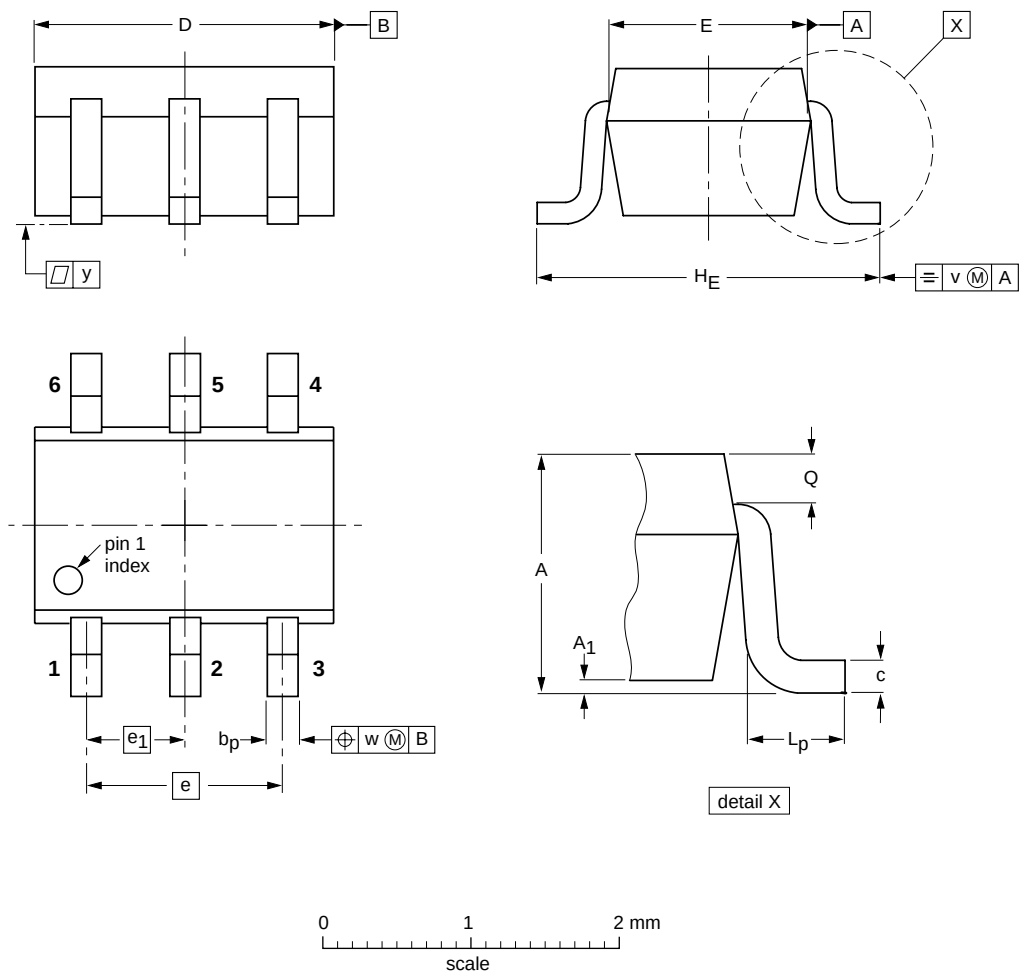
High-speed switching diode array

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PACKAGE OUTLINE

Plastic surface mounted package; 6 leads

SOT363



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	y
mm	1.1 0.8	0.1	0.30 0.20	0.25 0.10	2.2 1.8	1.35 1.15	1.3	0.65	2.2 2.0	0.45 0.15	0.25 0.15	0.2	0.2	0.1

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT363			SC-88			97-02-28

High-speed switching diode array

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DATA SHEET STATUS

DATA SHEET STATUS ⁽¹⁾	PRODUCT STATUS ⁽²⁾	DEFINITIONS
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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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