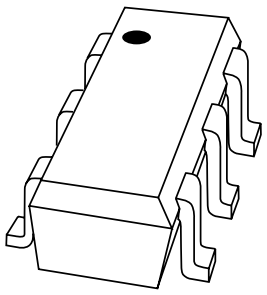
DATA SHEET



BAW101S
High voltage double diode

Product specification

2003 May 13

Philips
Semiconductors

PHILIPS

High voltage double diode BAW101S

FEATURES

- Small plastic SMD package
- High switching speed: max. 50 ns
- High continuous reverse voltage: 300 V
- Electrically insulated diodes.

APPLICATIONS

- High voltage switching
- Automotive
- Communication.

DESCRIPTION

The BAW101S is a high-speed switching diode array with two separate dice, fabricated in planar technology and encapsulated in a small SOT363 plastic SMD package.

MARKING

TYPE NUMBER	MARKING CODE(1)
BAW101S	K2∗

Note

1. ∗ = p: Made in Hong Kong.
   ∗ = t: Made in Malaysia.
   ∗ = W: Made in China.

PINNING

PIN	DESCRIPTION
1	anode 1
2	n.c.
3	cathode 2
4	anode 2
5	n.c.
6	cathode 1

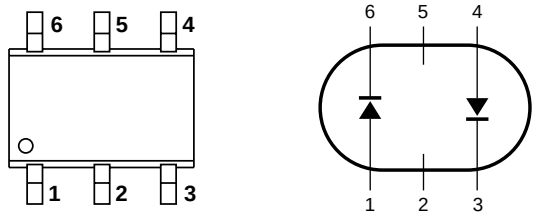


Fig.1 Simplified outline (SOT363) and symbol.

LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
Per diode					
V_R	continuous reverse voltage		–	300	V
		series connection	–	600	V
V_{RRM}	repetitive peak reverse voltage		–	300	V
		series connection	–	600	V
I_F	continuous forward current	single diode loaded; note 1; see Fig.2	–	250	mA
		double diode loaded; note 1; see Fig.2	–	140	mA
I_{FRM}	repetitive peak forward current		–	625	mA
I_{FSM}	non-repetitive peak forward current	square wave; T_j = 25 °C prior to surge; t = 1 μs	–	4.5	A
P_{tot}	total power dissipation	T_{amb} = 25 °C; note 1	–	350	mW
T_{stg}	storage temperature		–65	+150	°C
T_j	junction temperature		–	150	°C
T_{amb}	operating ambient temperature		–65	+150	°C

Note

1. Device mounted on an FR4 printed-circuit board, cathode-lead mounting pad = 1 cm^2.

ELECTRICAL CHARACTERISTICS

T_j = 25 °C unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
Per diode					
$V_{BR(R)}$	reverse breakdown voltage	I_R = 100 μA	300	–	V
V_F	forward voltage	I_F = 100 mA; note 1	–	1.1	V
I_R	reverse current	V_R = 250 V	–	150	nA
		V_R = 250 V; T_{amb} = 150 °C	–	50	μA
t_{rr}	reverse recovery time	when switched from I_F = 30 mA to I_R = 30 mA; R_L = 100 Ω; measured at I_R = 3 mA	–	50	ns
C_d	diode capacitance	V_R = 0 V; f = 1 MHz	–	2	pF

Note

1. Pulse test: pulse width = 300 μs; δ = 0.02.

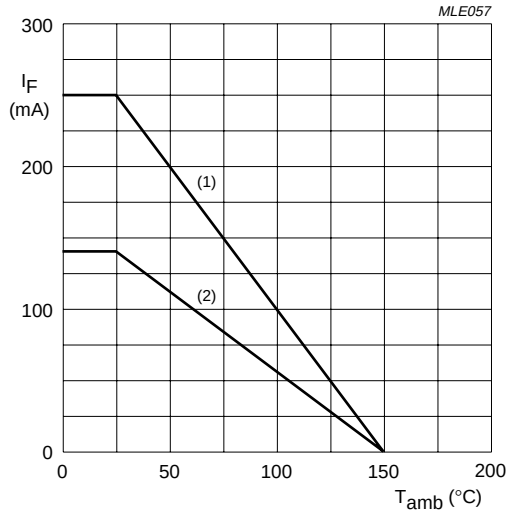
THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j\text{-}s}$	thermal resistance from junction to soldering point	note 1	255	K/W
$R_{th\ j\text{-}a}$	thermal resistance from junction to ambient	note 2	357	K/W

Notes

1. One or more diodes loaded.
2. Device mounted on an FR4 printed-circuit board, cathode-lead mounting pad = 1 cm^2.

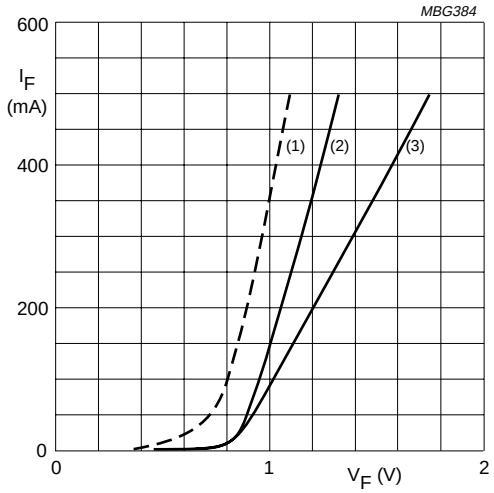
GRAPHICAL DATA



(1) Single diode loaded. (2) Double diode loaded.

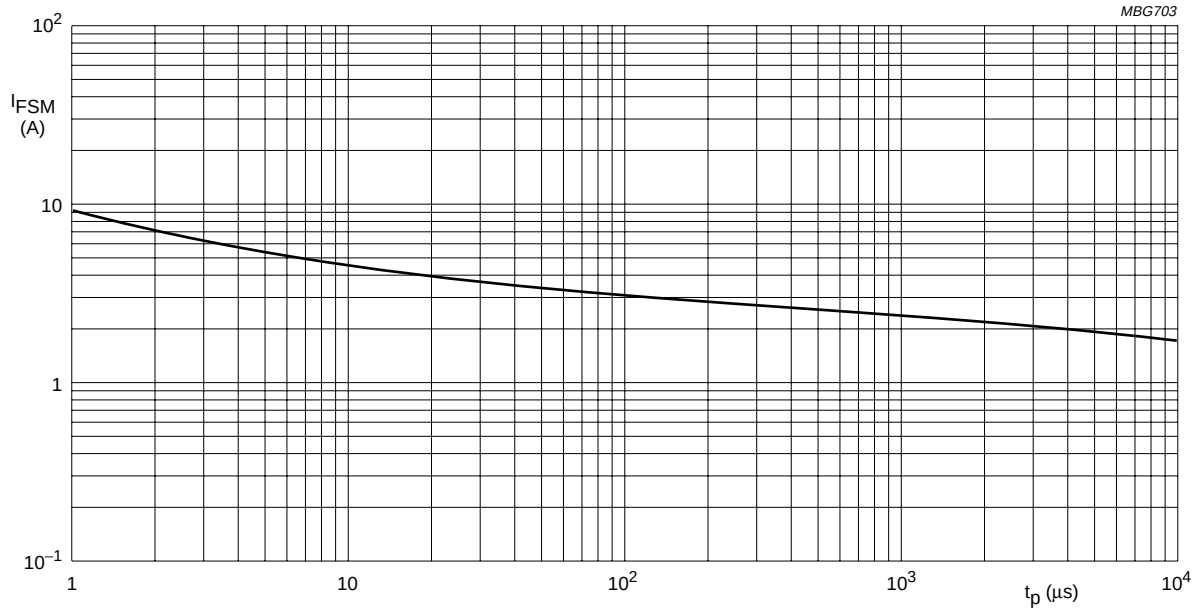
Device mounted on an FR4 printed-circuit board.
Cathode-lead mounting pad = 1 cm^2.

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



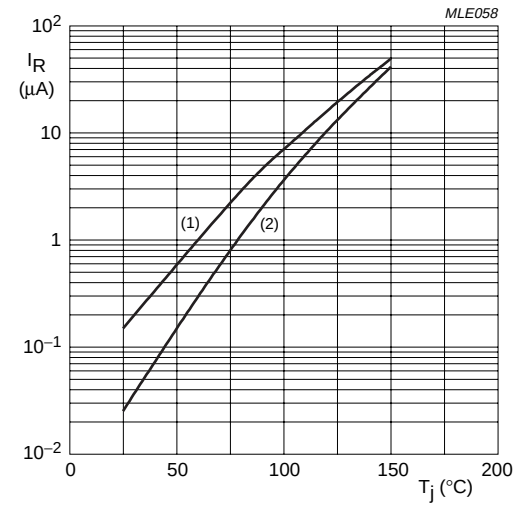
(1) T_j = 150 °C; typical values.
(2) T_j = 25 °C; typical values.
(3) T_j = 25 °C; maximum values.

Fig.3 Forward current as a function of forward voltage.



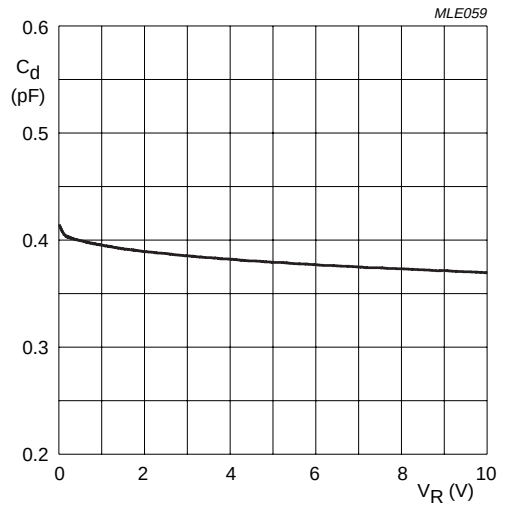
Based on square wave currents.
T_j = 25 °C prior to surge.

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



(1) $V_R = V_{RMAX}$: maximum values.
(2) $V_R = V_{RMAX}$: typical values.

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



f = 1 MHz; T_j = 25 °C.

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

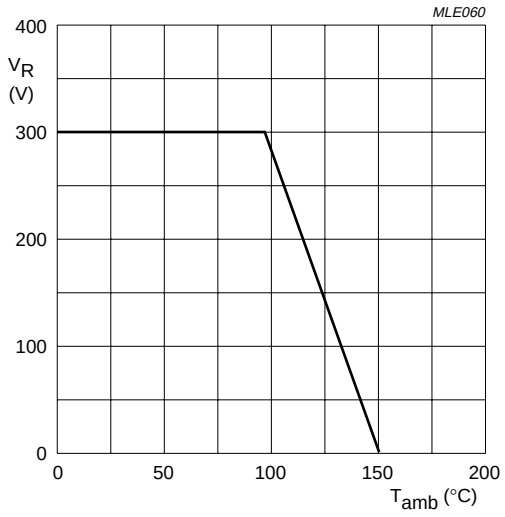
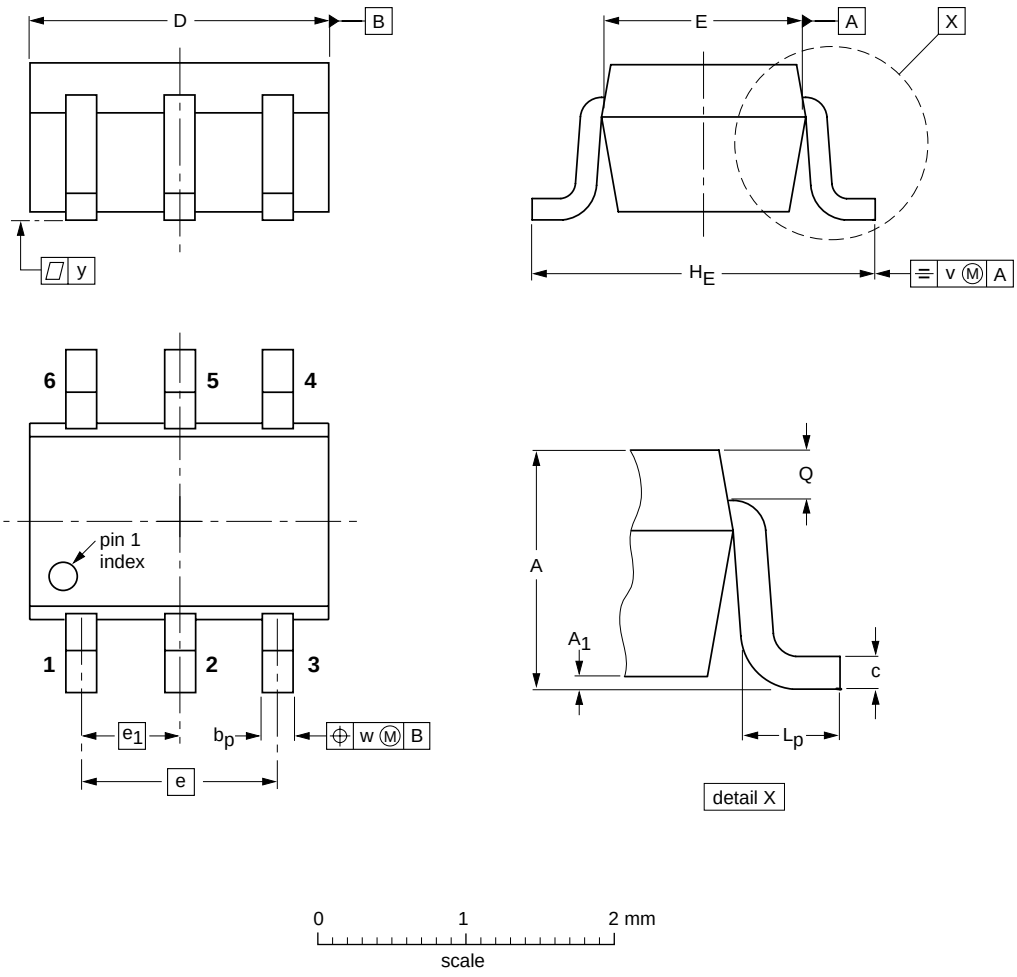


Fig.7 Maximum permissible continuous reverse voltage as a function of ambient temperature.

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

DATA SHEET STATUS

LEVEL	DATA SHEET STATUS(1)	PRODUCT STATUS(2)(3)	DEFINITION
I	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.
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Notes

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2. The product status of the device(s) described in this data sheet may have changed since this data sheet was published. The latest information is available on the Internet at URL http://www.semiconductors.philips.com.
3. For data sheets describing multiple type numbers, the highest-level product status determines the data sheet status.

DEFINITIONS

Short-form specification — The data in a short-form specification is extracted from a full data sheet with the same type number and title. For detailed information see the relevant data sheet or data handbook.

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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