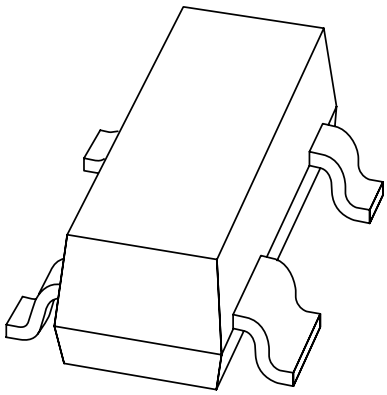
DATA SHEET



BAW101
High voltage double diode

Product data sheet

2003 May 13

NXP founded by Philips

High voltage double diode BAW101

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 BAW101 is a high-speed switching diode array with two separate dice, fabricated in planar technology and encapsulated in a small SOT143B plastic SMD package.

MARKING

TYPE NUMBER	MARKING CODE(1)
BAW101	∗AB

Note

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

PINNING

PIN	DESCRIPTION
1	cathode 1
2	cathode 2
3	anode 2
4	anode 1

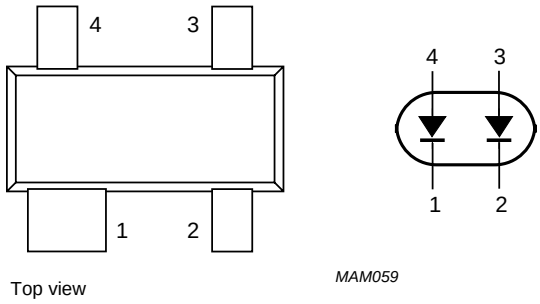


Fig.1 Simplified outline (SOT143B) and symbol.

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.

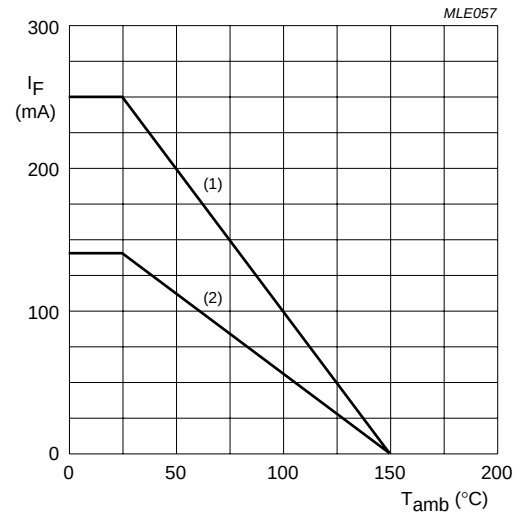
THERMAL CHARACTERISTICS

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.

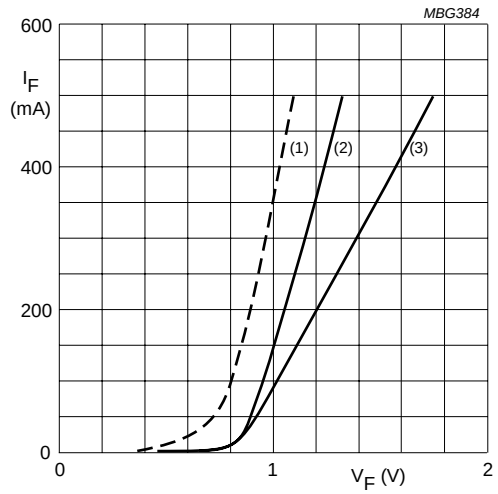
GRAPHICAL DATA



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

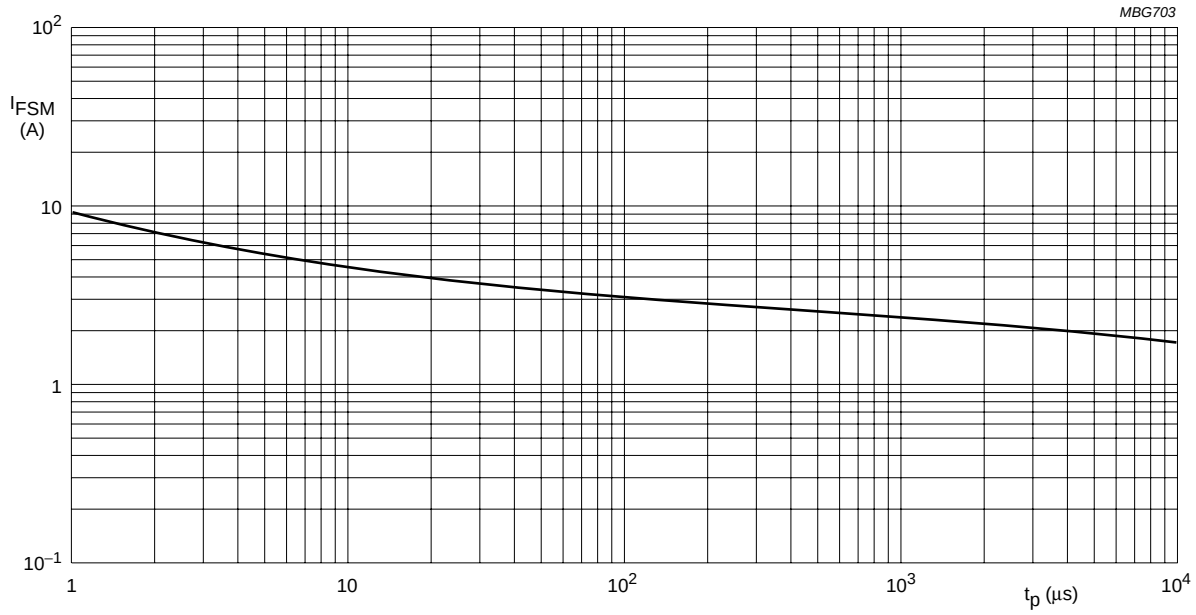
Device mounted on an FR4 printed-circuit board.
Cathode-lead mounting pad = 1 cm^2.

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



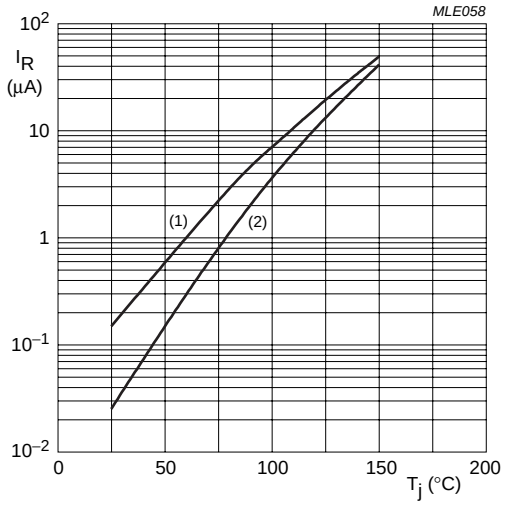
(1) T_j = 150 °C; typical values.
(2) T_j = 25 °C; typical values.
(3) T_j = 25 °C; maximum values.

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



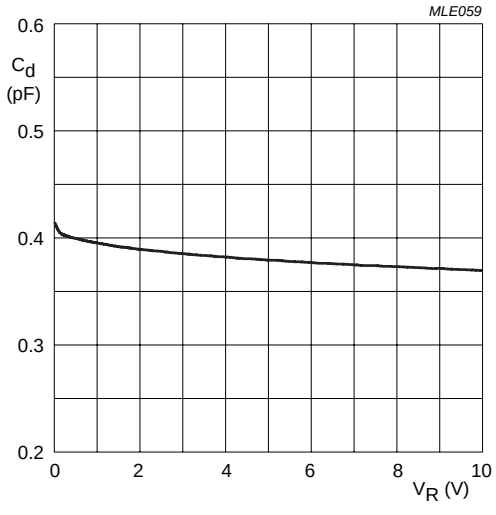
Based on square wave currents.
T_j = 25 °C prior to surge.

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.

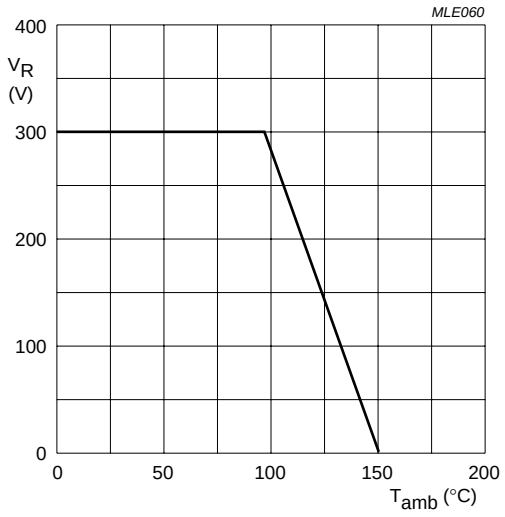
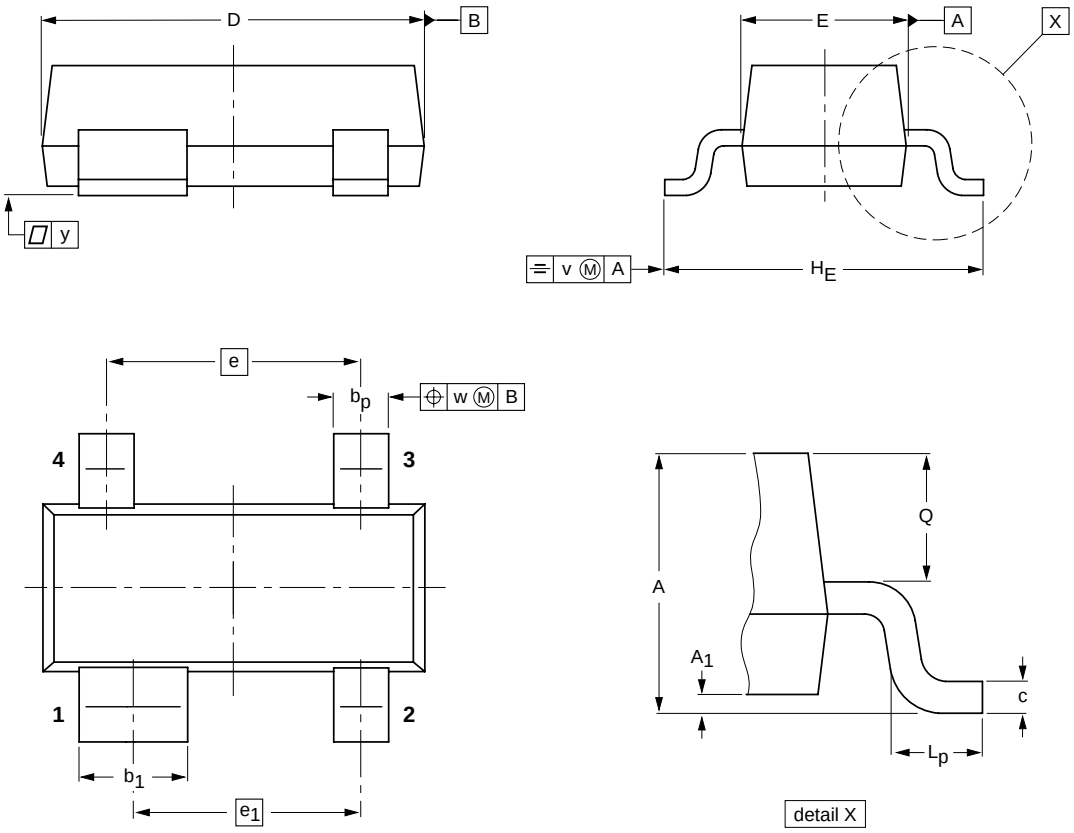


Fig.7 Maximum permissible continuous reverse voltage as a function of ambient temperature.

PACKAGE OUTLINE

Plastic surface mounted package; 4 leads **SOT143B**



DIMENSIONS (mm are the original dimensions)

UNIT	A	A_1 max	b_p	b_1	c	D	E	e	e_1	H_E	L_p	Q	v	w	y
mm	1.1 0.9	0.1	0.48 0.38	0.88 0.78	0.15 0.09	3.0 2.8	1.4 1.2	1.9	1.7	2.5 2.1	0.45 0.15	0.55 0.45	0.2	0.1	0.1

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT143B						97-02-28

DATA SHEET STATUS

DOCUMENT STATUS[1]	PRODUCT STATUS[2]	DEFINITION
Objective data sheet	Development	This document contains data from the objective specification for product development.
Preliminary data sheet	Qualification	This document contains data from the preliminary specification.
Product data sheet	Production	This document contains the product specification.

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