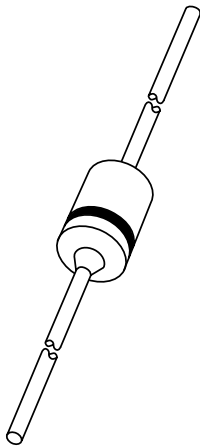


# DATA SHEET



## **BAQ800** AM PIN diode

Product specification  
File under Discrete Semiconductors, SC01

1997 Aug 26

# AM PIN diode

# BAQ800

## FEATURES

- Glass passivated
- High maximum operating temperature
- Low leakage current
- Excellent stability
- Available in ammpack.

## APPLICATIONS

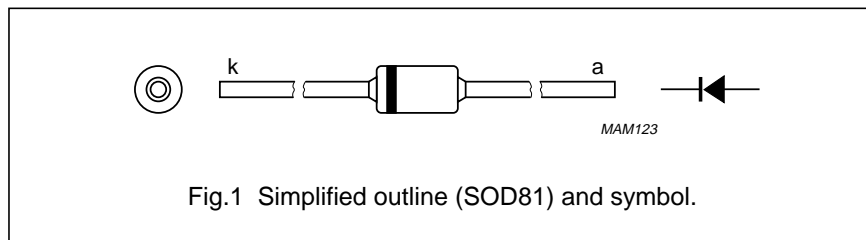
- RF attenuator with low distortion for frequencies above 100 kHz.

## DESCRIPTION

Cavity free cylindrical glass package through Implotec™<sup>(1)</sup> technology. This package is hermetically sealed

and stress free as coefficients of expansion of all used parts are matched.

(1) Implotec is a trademark of Philips.



## LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V <sub>R</sub> RM	repetitive peak reverse voltage		–	100	V
V <sub>R</sub>	continuous reverse voltage		–	100	V
I <sub>F(AV)</sub>	average forward current	T <sub>tp</sub> = 25 °C; lead length = 10 mm; see Fig.2	–	1.25	A
		T <sub>amb</sub> = 60 °C; printed-circuit board mounting (see Fig.17); see Fig.3	–	600	mA
T <sub>stg</sub>	storage temperature		–65	+175	°C
T <sub>j</sub>	junction temperature		–65	+150	°C

## AM PIN diode

## BAQ800

**ELECTRICAL CHARACTERISTICS**

$T_j = 25\text{ °C}$  unless otherwise specified; all characteristics must be tested in the dark because of the light sensitivity of this product.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$V_F$	forward voltage	$I_F = 100\text{ mA}$ ; see Figs 4 and 5	–	0.9	1.1	V
		$I_F = 100\text{ mA}$ ; $T_j = T_{j\text{max}}$ ; see Figs 4 and 5	–	0.7	0.9	V
$I_R$	reverse current	$V_R = 100\text{ V}$ ; see Fig.14	–	–	0.1	$\mu\text{A}$
		$V_R = 100\text{ V}$ ; $T_j = 125\text{ °C}$ ; see Fig.14	–	–	30	$\mu\text{A}$
$\tau$	charge carrier life time	when switched from $I_F = 10\text{ mA}$ to $I_R = 6\text{ mA}$ ; measured at 10% of $I_R$ ; see Fig.15	10	20	–	$\mu\text{s}$
$C_d$	diode capacitance	$f = 1\text{ MHz}$ ; see Figs 6, 7, 8 and 9 $V_R = 0$	–	10	12	pF
		$V_R = 2\text{ V}$	–	5	6	pF
$r_D$	diode forward resistance	$f = 100\text{ kHz}$ ; see Figs 10 and 16 $I_F = 10\text{ }\mu\text{A}$	–	3100	6000	$\Omega$
		$I_F = 100\text{ }\mu\text{A}$	–	380	800	$\Omega$
		$I_F = 1\text{ mA}$	–	42	80	$\Omega$
		$I_F = 10\text{ mA}$	–	5	10	$\Omega$
$r_s$	diode series resistance	$f = 100\text{ kHz}$ ; see Figs 11, 12 and 13 $V_R = 0$	1000	2200	–	k $\Omega$
		$V_R = 2\text{ V}$	5000	11000	–	k $\Omega$
		$f = 1\text{ MHz}$ ; see Figs 11, 12 and 13 $V_R = 0$	25	50	–	k $\Omega$
		$V_R = 2\text{ V}$	100	220	–	k $\Omega$

**THERMAL CHARACTERISTICS**

All characteristics must be tested in the dark because of the light sensitivity of this product.

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j-tp}$	thermal resistance from junction to tie-point	lead length = 10 mm	60	K/W
$R_{th\ j-a}$	thermal resistance from junction to ambient	note 1	120	K/W

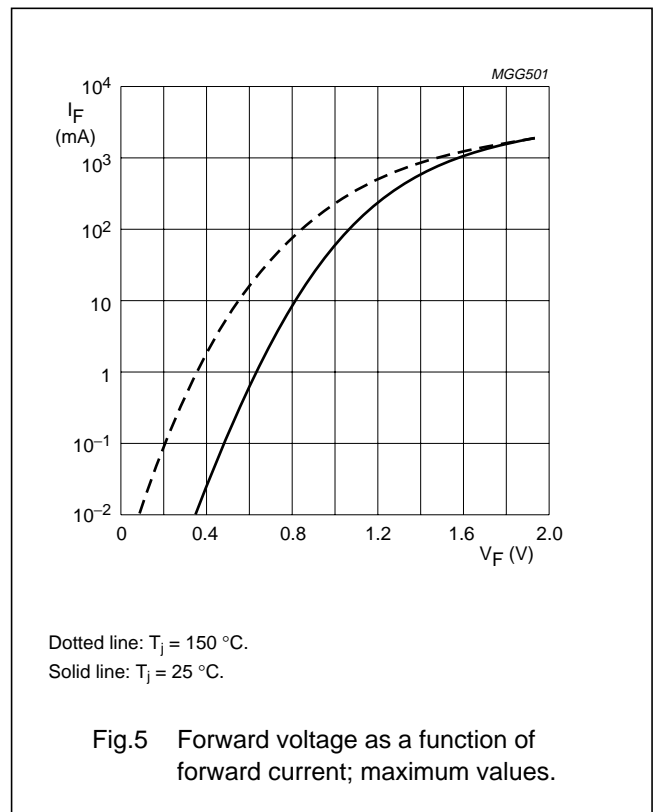
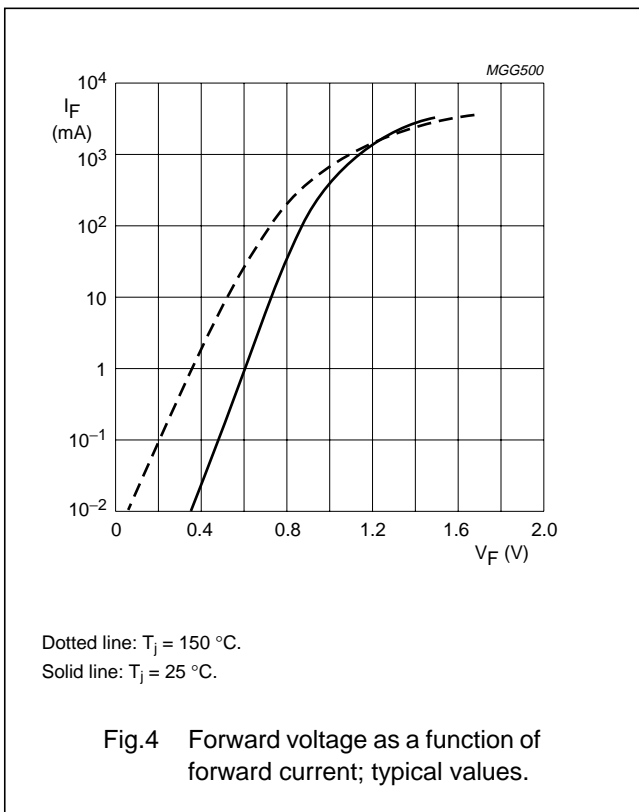
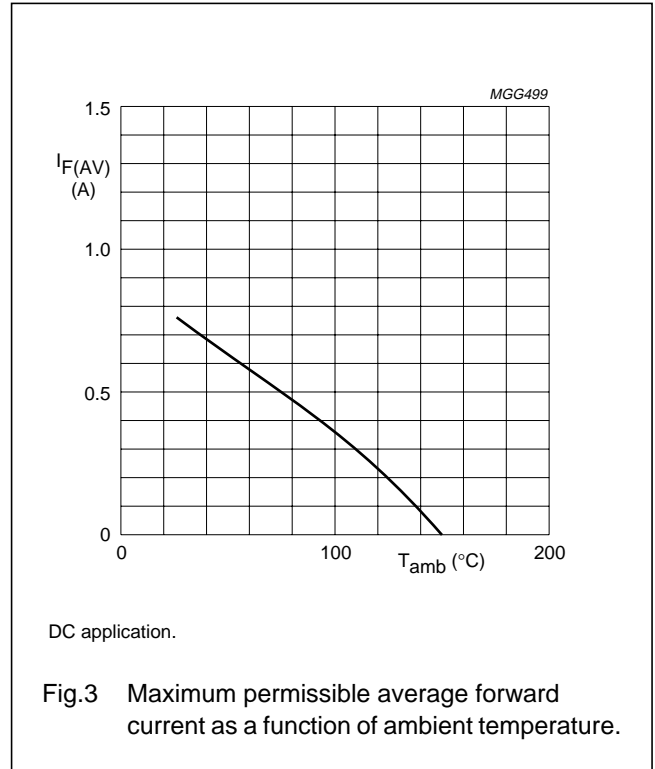
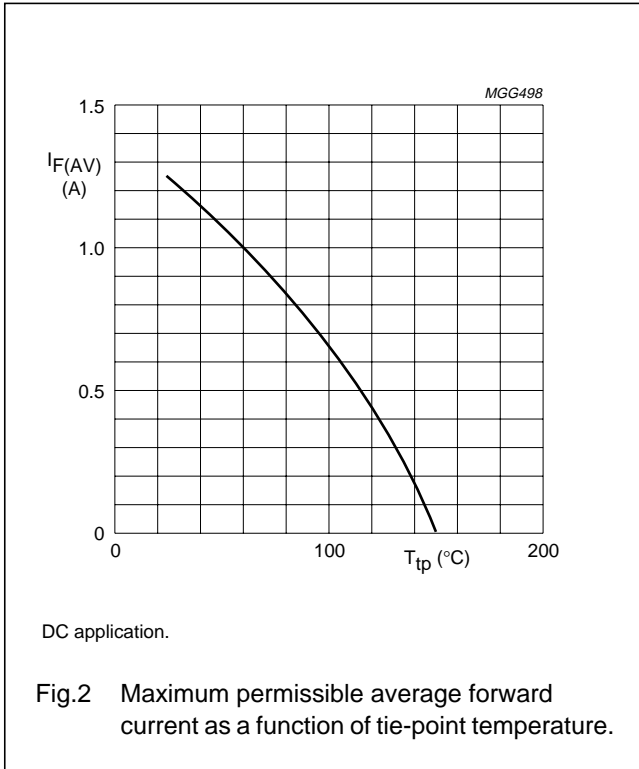
**Note**

1. Device mounted on an epoxy-glass printed-circuit board, 1.5 mm thick; thickness of Cu-layer  $\geq 40\text{ }\mu\text{m}$ , see Fig.17. For more information please refer to the "General Part of Handbook SC01".

AM PIN diode

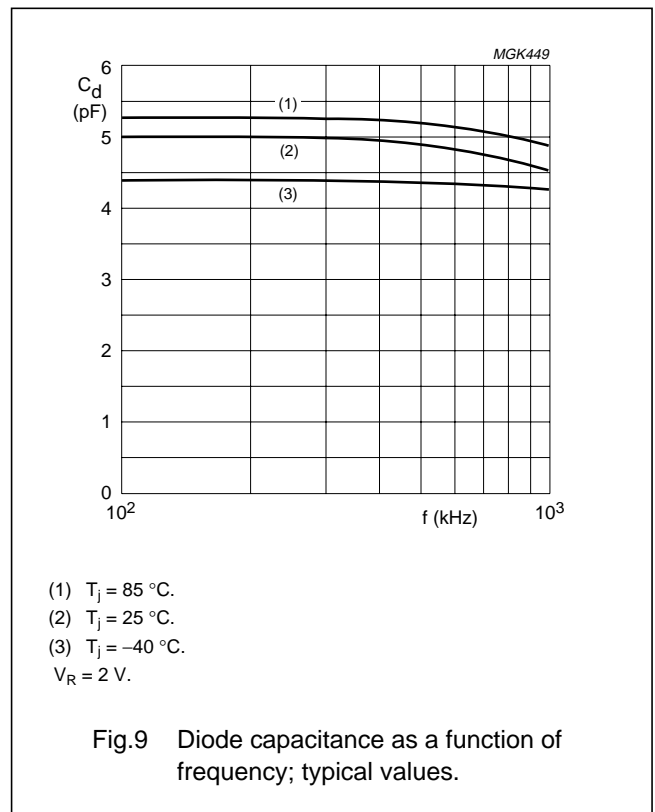
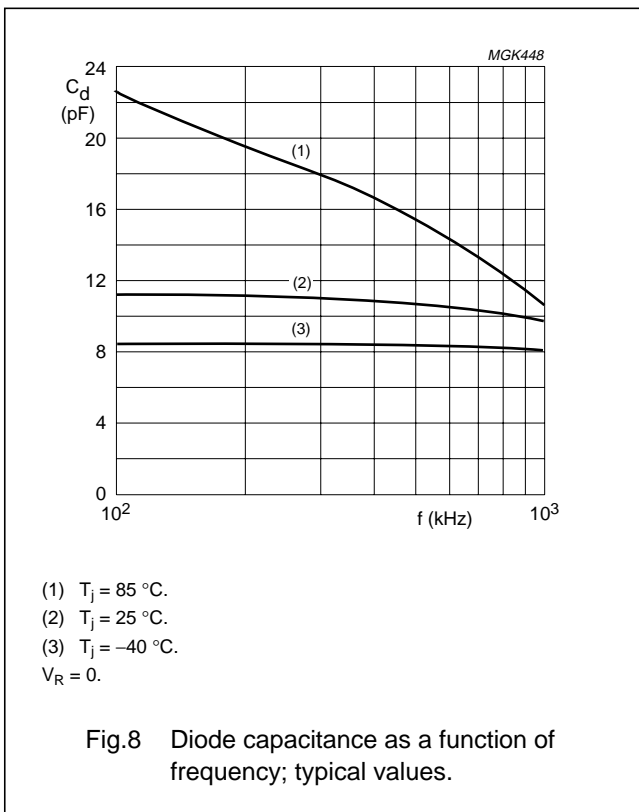
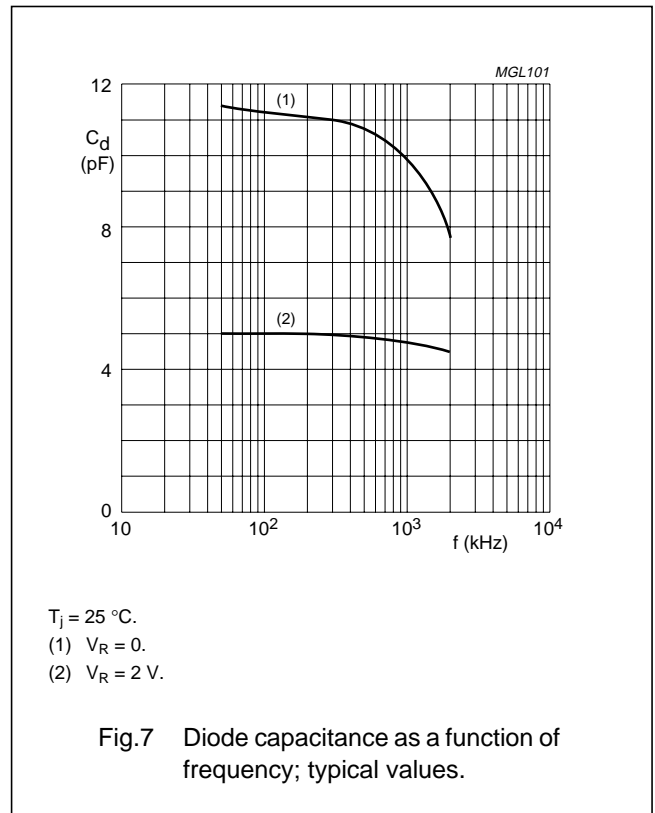
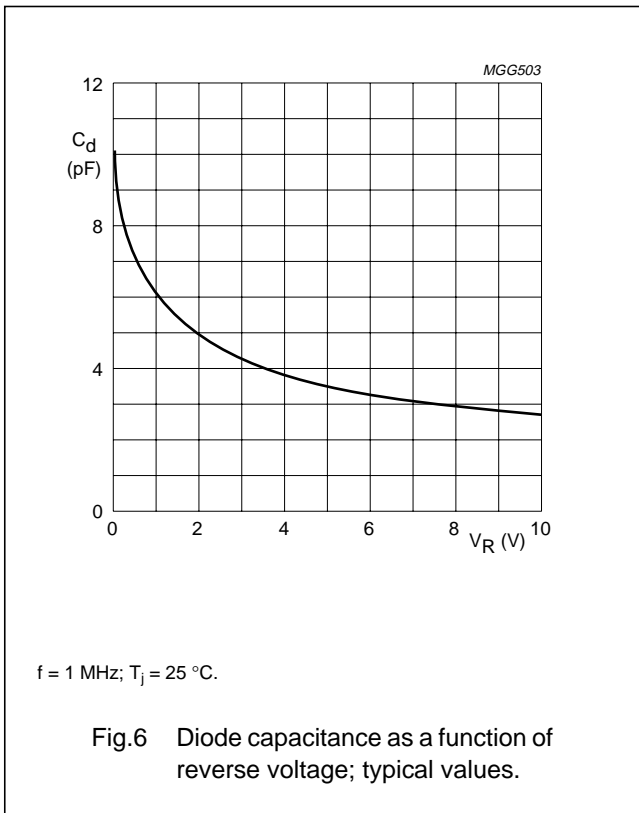
BAQ800

GRAPHICAL DATA



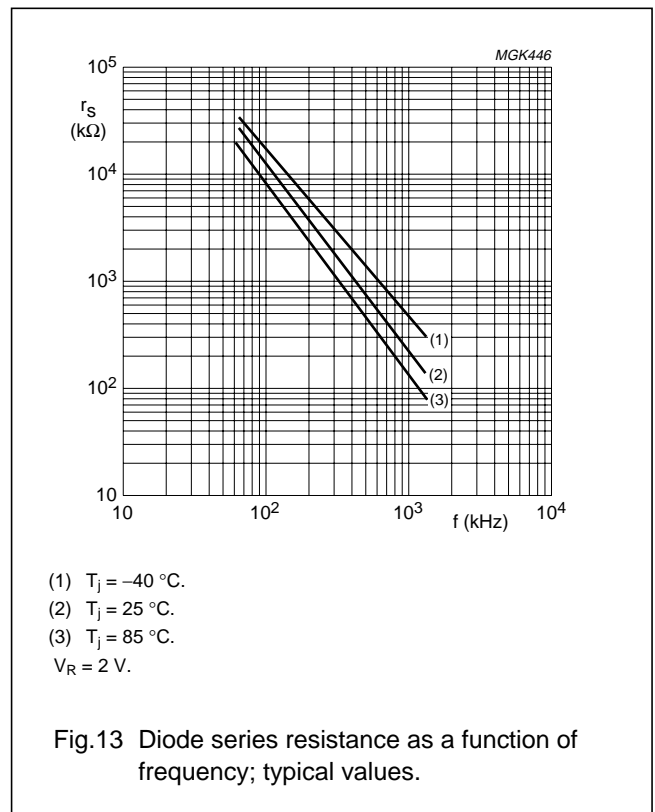
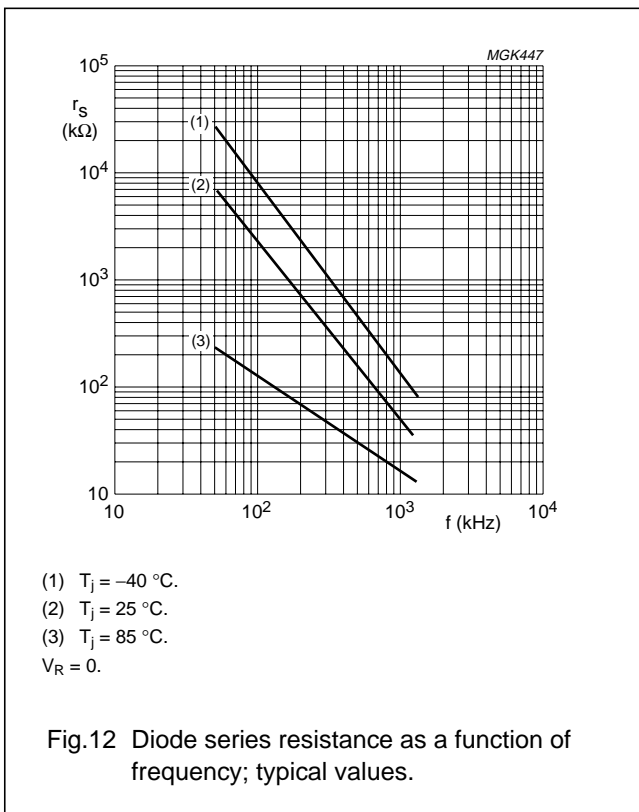
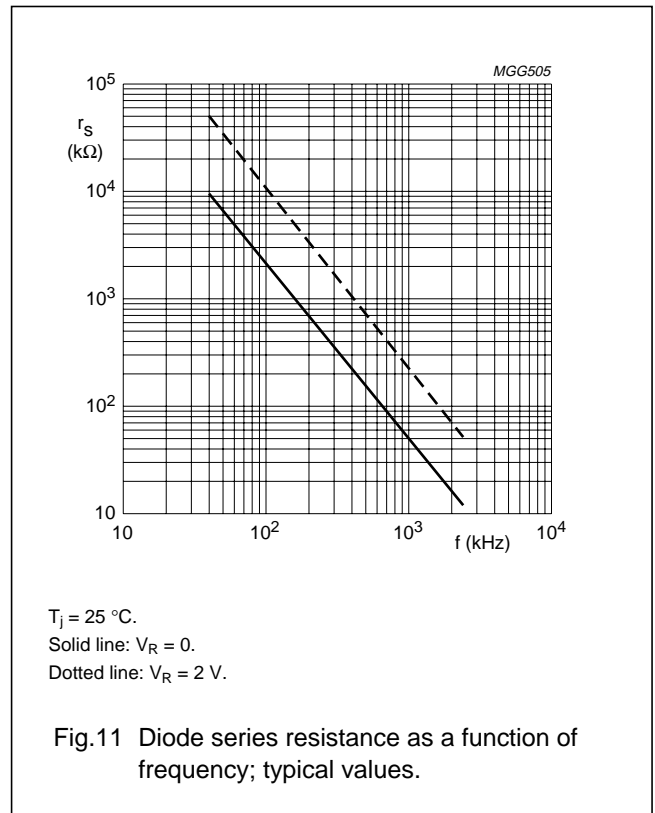
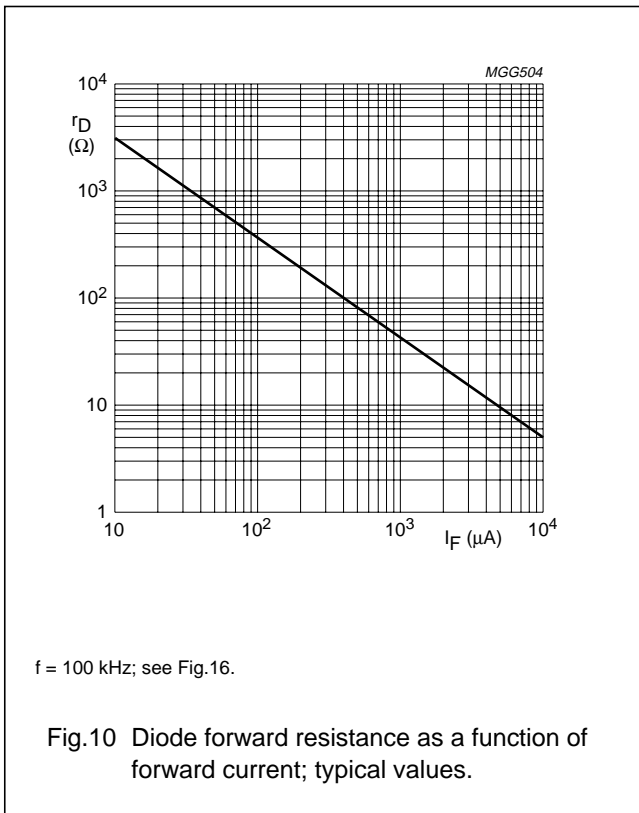
AM PIN diode

BAQ800



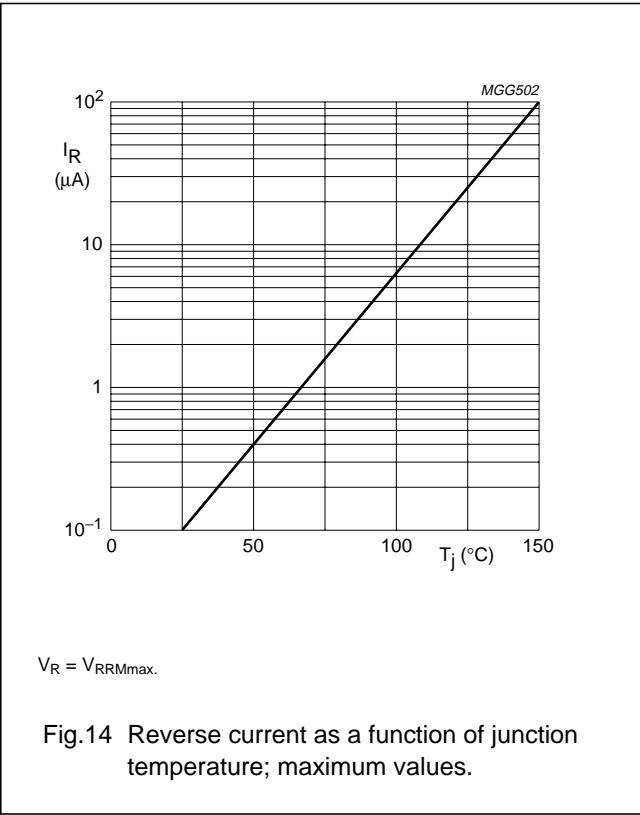
AM PIN diode

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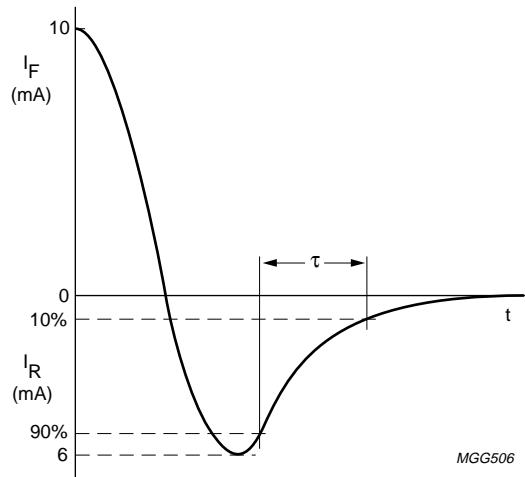
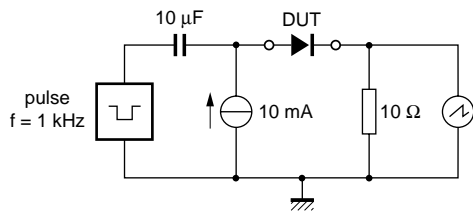
AM PIN diode

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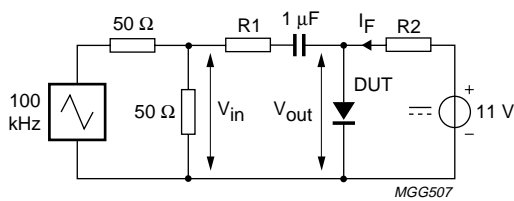
AM PIN diode

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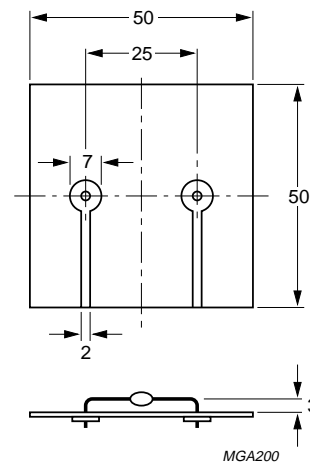
Input impedance of oscilloscope: 1 MΩ, 22 pF;  $t_r \leq 7$  ns.  
 Source impedance: 50 Ω;  $t_r \leq 15$  ns.

Fig.15 Charge carrier life time test circuit and definition.



$I_F$ (mA)	$R1$ (Ω)	$R2$ (kΩ)
0.1	3000	100
1	300	10
10	30	1

Fig.16 Diode forward resistance test circuit.



Dimensions in mm.

Fig.17 Device mounted on a printed-circuit board.



AM PIN diode

BAQ800

PACKAGE OUTLINE

Hermetically sealed glass package;  
Implotec™(1) technology; axial leaded; 2 leads

SOD81

**DIMENSIONS (mm are the original dimensions)**

UNIT	b max.	D max.	G max.	G <sub>1</sub> max.	L min.
mm	0.81	2.15	3.8	5	28

0 1 2 mm scale

**Note**  
 1. Implotec is a trademark of Philips.  
 2. The marking band indicates the cathode.

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOD81						97-06-20

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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AM PIN diode

BAQ800

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**NOTES**

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**NOTES**

# Philips Semiconductors – a worldwide company

**Argentina:** see South America

**Australia:** 34 Waterloo Road, NORTH RYDE, NSW 2113,  
Tel. +61 2 9805 4455, Fax. +61 2 9805 4466

**Austria:** Computerstr. 6, A-1101 WIEN, P.O. Box 213, Tel. +43 160 1010,  
Fax. +43 160 101 1210

**Belarus:** Hotel Minsk Business Center, Bld. 3, r. 1211, Volodarski Str. 6,  
220050 MINSK, Tel. +375 172 200 733, Fax. +375 172 200 773

**Belgium:** see The Netherlands

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**Bulgaria:** Philips Bulgaria Ltd., Energoproject, 15th floor,  
51 James Bourchier Blvd., 1407 SOFIA,  
Tel. +359 2 689 211, Fax. +359 2 689 102

**Canada:** PHILIPS SEMICONDUCTORS/COMPONENTS,  
Tel. +1 800 234 7381

**China/Hong Kong:** 501 Hong Kong Industrial Technology Centre,  
72 Tat Chee Avenue, Kowloon Tong, HONG KONG,  
Tel. +852 2319 7888, Fax. +852 2319 7700

**Colombia:** see South America

**Czech Republic:** see Austria

**Denmark:** Prags Boulevard 80, PB 1919, DK-2300 COPENHAGEN S,  
Tel. +45 32 88 2636, Fax. +45 31 57 0044

**Finland:** Sinikalliontie 3, FIN-02630 ESPOO,  
Tel. +358 9 615800, Fax. +358 9 61580920

**France:** 4 Rue du Port-aux-Vins, BP317, 92156 SURESNES Cedex,  
Tel. +33 1 40 99 6161, Fax. +33 1 40 99 6427

**Germany:** Hammerbrookstraße 69, D-20097 HAMBURG,  
Tel. +49 40 23 53 60, Fax. +49 40 23 536 300

**Greece:** No. 15, 25th March Street, GR 17778 TAVROS/ATHENS,  
Tel. +30 1 4894 339/239, Fax. +30 1 4814 240

**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:** see Singapore

**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,  
20124 MILANO, Tel. +39 2 6752 2531, Fax. +39 2 6752 2557

**Japan:** Philips Bldg 13-37, Kohnan 2-chome, Minato-ku, TOKYO 108,  
Tel. +81 3 3740 5130, Fax. +81 3 3740 5077

**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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**Mexico:** 5900 Gateway East, Suite 200, EL PASO, TEXAS 79905,  
Tel. +9-5 800 234 7381

**Middle East:** see Italy

**Netherlands:** Postbus 90050, 5600 PB EINDHOVEN, Bldg. VB,  
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**New Zealand:** 2 Wagener Place, C.P.O. Box 1041, AUCKLAND,  
Tel. +64 9 849 4160, Fax. +64 9 849 7811

**Norway:** Box 1, Manglerud 0612, OSLO,  
Tel. +47 22 74 8000, Fax. +47 22 74 8341

**Philippines:** Philips Semiconductors Philippines Inc.,  
106 Valero St. Salcedo Village, P.O. Box 2108 MCC, MAKATI,  
Metro MANILA, Tel. +63 2 816 6380, Fax. +63 2 817 3474

**Poland:** Ul. Lukiska 10, PL 04-123 WARSZAWA,  
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Tel. +27 11 470 5911, Fax. +27 11 470 5494

**South America:** Rua do Rocio 220, 5th floor, Suite 51,  
04552-903 São Paulo, SÃO PAULO - SP, Brazil,  
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**Spain:** Balmes 22, 08007 BARCELONA,  
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**Taiwan:** Philips Semiconductors, 6F, No. 96, Chien Kuo N. Rd., Sec. 1,  
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**Turkey:** Talatpasa Cad. No. 5, 80640 GÜLTEPE/ISTANBUL,  
Tel. +90 212 279 2770, Fax. +90 212 282 6707

**Ukraine:** PHILIPS UKRAINE, 4 Patrice Lumumba str., Building B, Floor 7,  
252042 KIEV, Tel. +380 44 264 2776, Fax. +380 44 268 0461

**United Kingdom:** Philips Semiconductors Ltd., 276 Bath Road, Hayes,  
MIDDLESEX UB3 5BX, Tel. +44 181 730 5000, Fax. +44 181 754 8421

**United States:** 811 East Arques Avenue, SUNNYVALE, CA 94088-3409,  
Tel. +1 800 234 7381

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Tel. +381 11 625 344, Fax. +381 11 635 777

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Building BE-p, P.O. Box 218, 5600 MD EINDHOVEN, The Netherlands, Fax. +31 40 27 24825

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