AM PIN Diode

BAQ800

100V/1.25A

DATASHEET

OEM – Philips

Source: Philips Databook 1999

Datasheet Rev. 1.3 – 03/19 – data without warranty / liability

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FEATURES

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

APPLICATIONS

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

DESCRIPTION

Cavity free cylindrical glass package through Implotec™(1) 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.

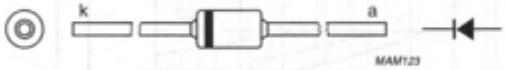

Fig.1 Simplified outline (SOD81) and symbol.

LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{RRM}	repetitive peak reverse voltage		–	100	V
V_R	continuous reverse voltage		–	100	V
$I_{F(AV)}$	average forward current	T_{tp} = 25 °C; lead length = 10 mm; see Fig.2	–	1.25	A
		T_{amb} = 60 °C; printed-circuit board mounting (see Fig.17); see Fig.3	–	600	mA
T_{stg}	storage temperature		−65	+175	°C
T_j	junction temperature		−65	+150	°C

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ELECTRICAL CHARACTERISTICS

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

THERMAL CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\,j\text{-}tp}$	thermal resistance from junction to tie-point	lead length = 10 mm	60	K/W
$R_{th\,j\text{-}a}$	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 ≥40 µm, see Fig.17. For more information please refer to the *"General Part of Handbook SC01"*.

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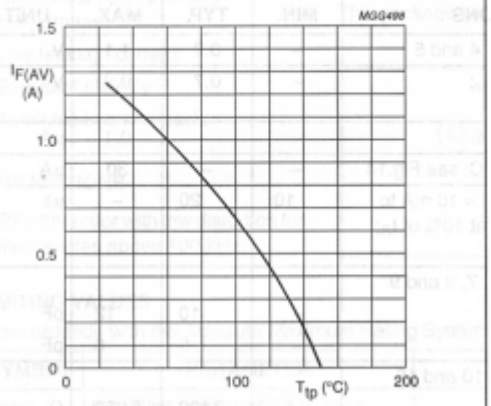
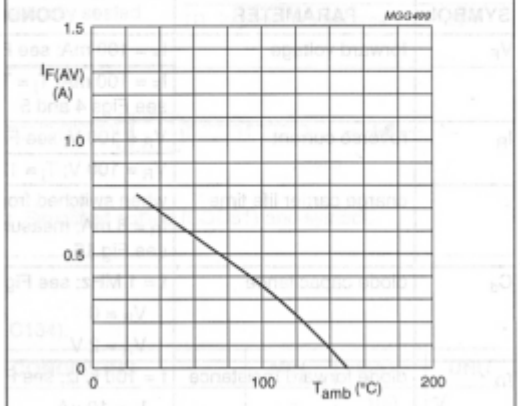
GRAPHICAL DATA



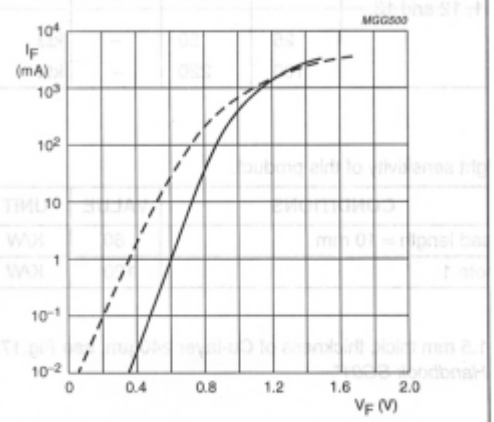
DC application.

Fig.2 Maximum permissible average forward current as a function of tie-point temperature.



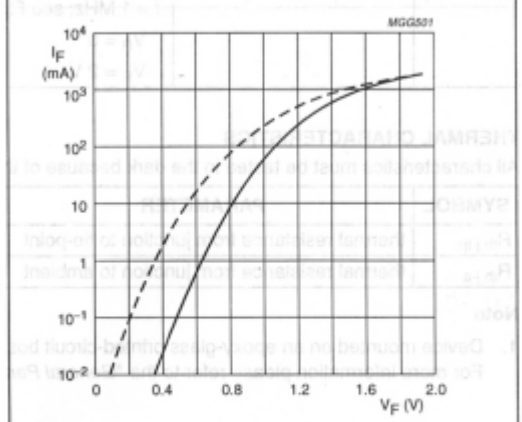
DC application.

Fig.3 Maximum permissible average forward current as a function of ambient temperature.



Dotted line: T_j = 150 °C.
Solid line: T_j = 25 °C.

Fig.4 Forward voltage as a function of forward current; typical values.



Dotted line: T_j = 150 °C.
Solid line: T_j = 25 °C.

Fig.5 Forward voltage as a function of forward current; maximum values.

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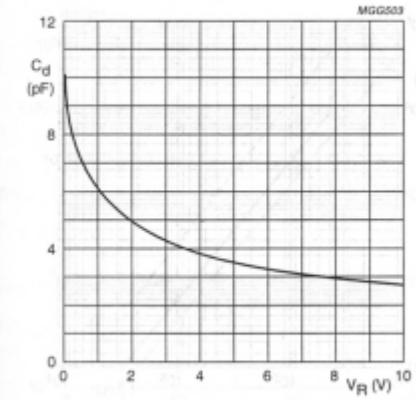
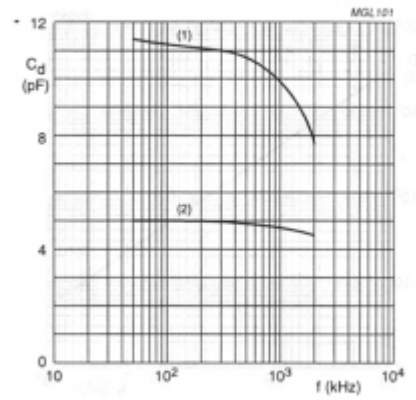


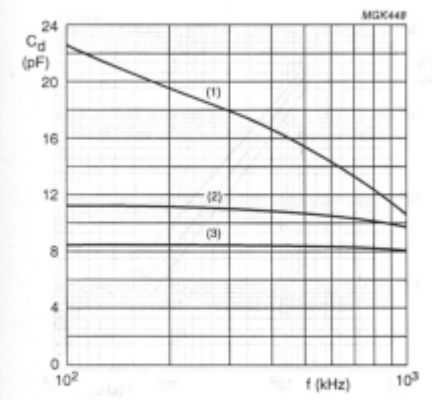
f = 1 MHz; T_j = 25 °C.

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



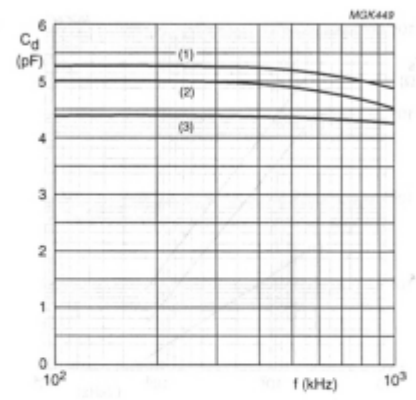
T_j = 25 °C.
(1) V_R = 0.
(2) V_R = 2 V.

Fig.7 Diode capacitance as a function of frequency; typical values.



(1) T_j = 85 °C.
(2) T_j = 25 °C.
(3) T_j = −40 °C.
V_R = 0.

Fig.8 Diode capacitance as a function of frequency; typical values.



(1) T_j = 85 °C.
(2) T_j = 25 °C.
(3) T_j = −40 °C.
V_R = 2 V.

Fig.9 Diode capacitance as a function of frequency; typical values.

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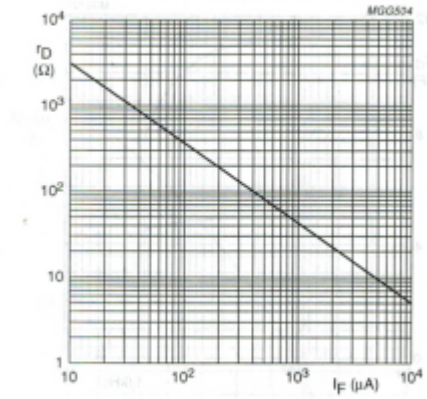
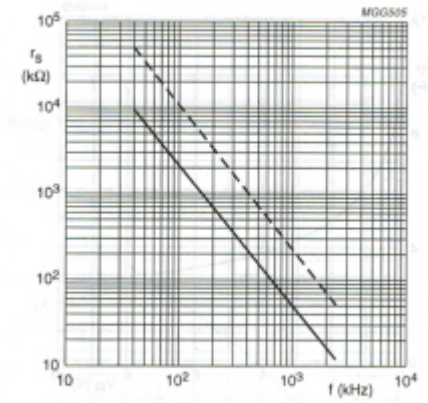


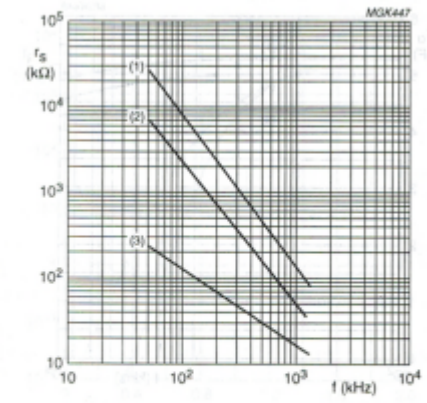
f = 100 kHz; see Fig.16.

Fig.10 Diode forward resistance as a function of forward current; typical values.



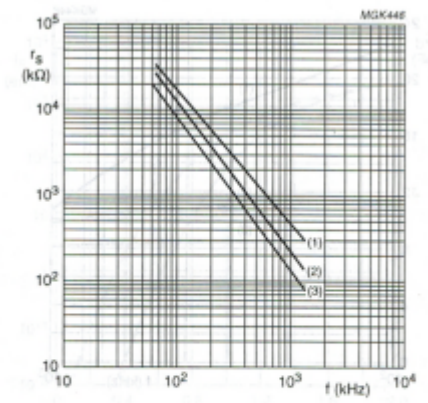
T_j = 25 °C.
Solid line: V_R = 0.
Dotted line: V_R = 2 V.

Fig.11 Diode series resistance as a function of frequency; typical values.



(1) T_j = −40 °C.
(2) T_j = 25 °C.
(3) T_j = 85 °C.
V_R = 0.

Fig.12 Diode series resistance as a function of frequency; typical values.



(1) T_j = −40 °C.
(2) T_j = 25 °C.
(3) T_j = 85 °C.
V_R = 2 V.

Fig.13 Diode series resistance as a function of frequency; typical values.

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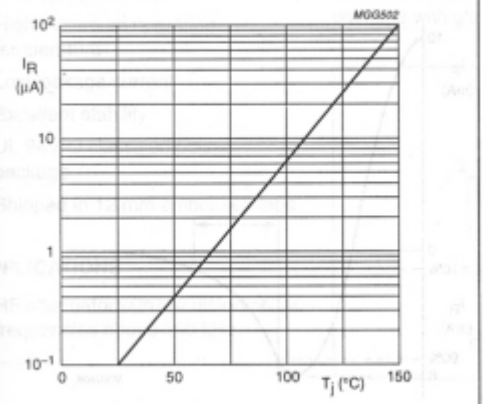

$V_R = V_{RRMmax}$

Fig.14 Reverse current as a function of junction temperature; maximum values.