AM PIN Diode

BAQ806

100V

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
- UL 94V-O classified plastic package
- Shipped in 12 mm embossed tape.

APPLICATIONS

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

DESCRIPTION

DO-214AC surface mountable package with glass passivated chip.

The well-defined void-free case is of a transfer-moulded thermo-setting plastic.

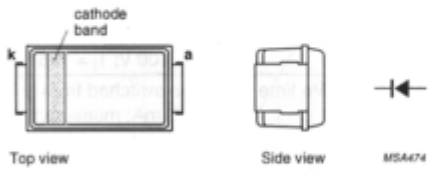

Fig.1 Simplified outline (SOD106) and symbol.

LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 134).

SYMBOL	PARAMETER	MIN.	MAX.	UNIT
V_{RRM}	repetitive peak reverse voltage	–	100	V
V_R	continuous reverse voltage	–	100	V
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.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	forward voltage	I_F = 100 mA; see Figs 2 and 3	–	0.9	1.1	V
		I_F = 100 mA; $T_j = T_{j\,max}$; see Figs 2 and 3	–	0.7	0.9	V
I_R	reverse current	V_R = 100 V; see Fig. 4	–	–	0.1	µA
		V_R = 100 V; T_j = 125 °C; see Fig. 4	–	–	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. 13	15	25	–	µs
C_d	diode capacitance	f = 1 MHz; see Figs 5, 6, 7 and 8				
		V_R = 0 V	–	9	11	pF
		V_R = 2 V	–	5	6	pF
r_D	diode forward resistance	f = 100 kHz; see Figs 9 and 14				
		I_F = 10 µA	–	3300	6000	Ω
		I_F = 100 µA	–	560	900	Ω
		I_F = 1 mA	–	62	90	Ω
		I_F = 10 mA	–	7	10	Ω
r_s	diode series resistance	f = 100 kHz; see Figs 10, 11 and 12				
		V_R = 0 V	1000	2100	–	kΩ
		V_R = 2 V	5000	12000	–	kΩ
		f = 1 MHz; see Figs 10, 11 and 12				
		V_R = 0 V	25	50	–	kΩ
		V_R = 2 V	100	250	–	kΩ

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j\text{-}tp}$	thermal resistance from junction to tie-point		25	K/W
$R_{th\ j\text{-}a}$	thermal resistance from junction to ambient	note 1	100	K/W
		note 2	150	K/W

Note

1. Device mounted on Al_2O_3 printed-circuit board, 0.7 mm thick; thickness of copper ≥35 µm, see Fig. 15
2. Device mounted on epoxy-glass printed-circuit board, 1.5 mm thick; thickness of copper ≥40 µm, see Fig. 15. For more information please refer to the *'General Part of Handbook SC10'*

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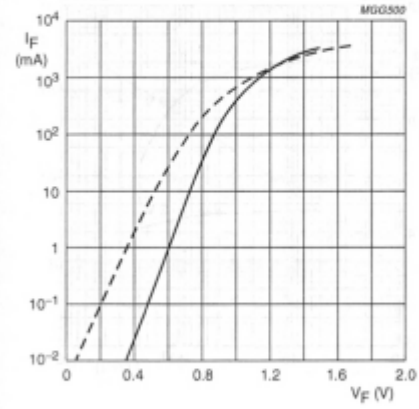
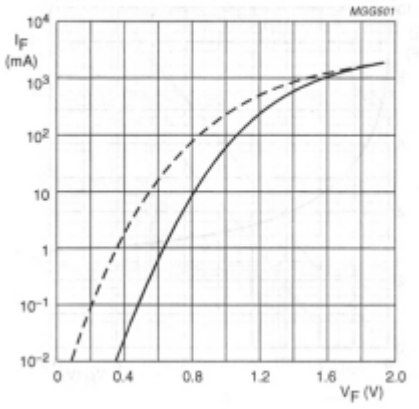
GRAPHICAL DATA



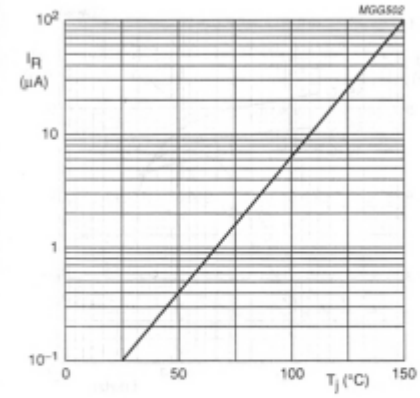
Dotted line: $T_j = T_{j\,max}$.
Solid line: $T_j = 25$ °C.

Fig.2 Forward current as a function of forward voltage; typical values.



Dotted line: $T_j = T_{j\,max}$.
Solid line: $T_j = 25$ °C.

Fig.3 Forward current as a function of forward voltage; maximum values.



$V_R = V_{RRMmax}$.

Fig.4 Reverse current as a function of junction temperature; maximum values.

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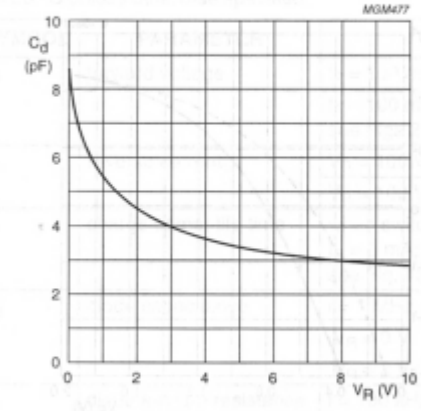

Fig.5 Diode capacitance as a function of reverse voltage; typical values.

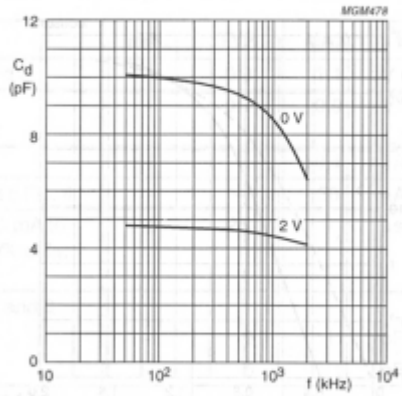

Fig.6 Diode capacitance as a function of frequency; typical values.

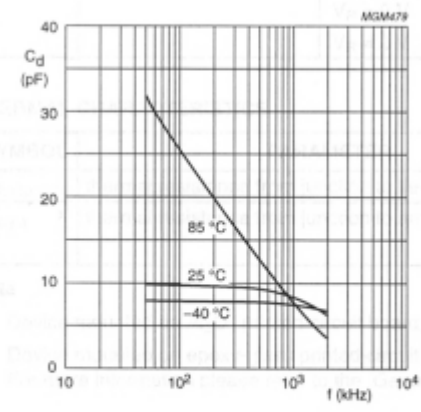

Fig.7 Diode capacitance as a function of frequency; typical values.

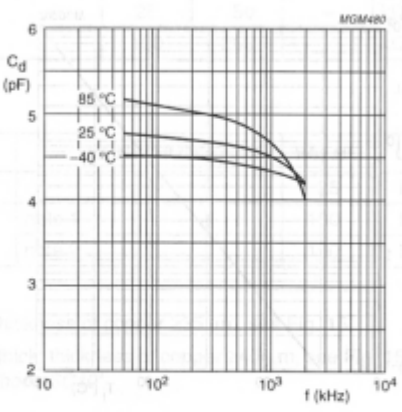

Fig.8 Diode capacitance as a function of frequency; typical values.

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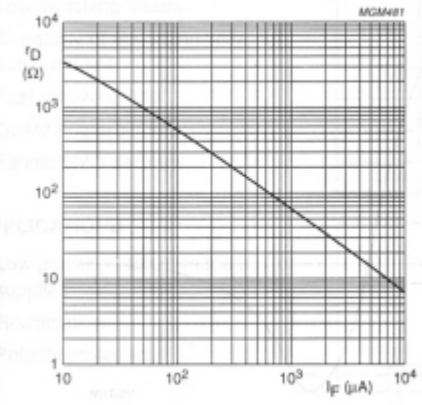
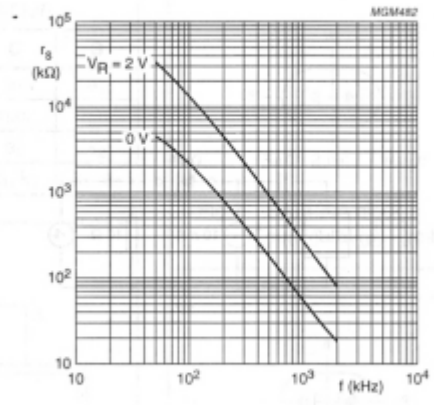


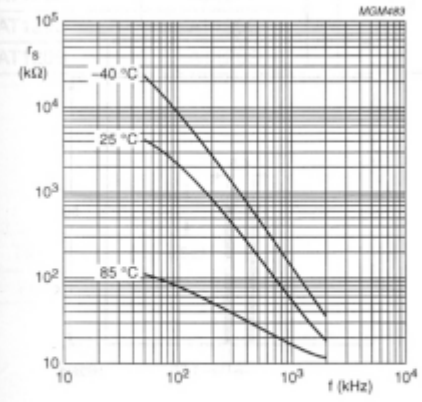
f = 100 kHz; see Fig. 14.

Fig.9 Diode forward resistance as a function of forward current; typical values.



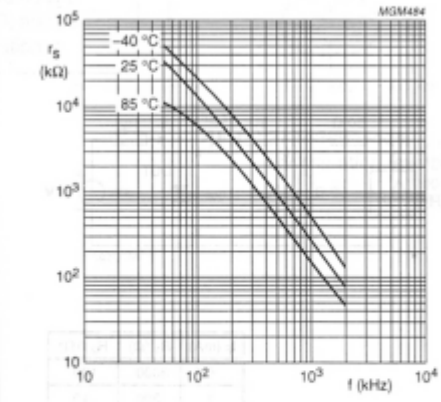
T_j = 25 °C.

Fig.10 Diode series resistance as a function of frequency; typical values.



V_R = 0 V.

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



V_R = 2 V.

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

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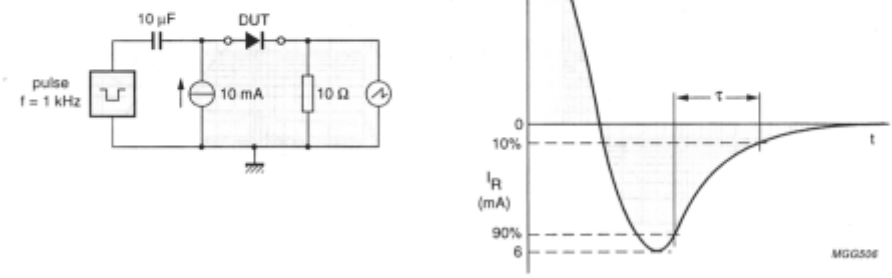
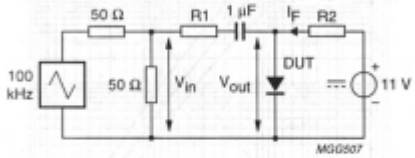


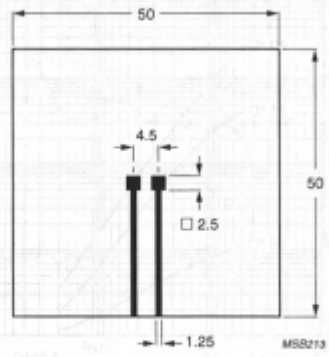
Input impedance oscilloscope: 1 MΩ, 22 pF; $t_r \leq 7$ ns.
Source impedance: 50 Ω; $t_r \leq 15$ ns.

Fig.13 Charge carrier life time test circuit and definition.



I_F (mA)	R_1 (Ω)	R_2 (kΩ)
0.1	3000	100
1	300	10
10	30	1

Fig.14 Diode forward resistance test circuit.



Dimensions in mm.

Fig.15 Printed-circuit board for surface mounting.