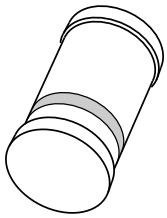
DATA SHEET



BAS45AL
Low-leakage diode

Product specification
Supersedes data of June 1994
File under Discrete Semiconductors, SC01

1996 Mar 13

Philips
Semiconductors

PHILIPS

Low-leakage diode BAS45AL

FEATURES

- Continuous reverse voltage: max. 125 V
- Repetitive peak forward current: max. 625 mA
- Low reverse current: max. 1 nA
- Switching time: typ. 1.5 μs.

APPLICATION

- Low leakage current applications.

DESCRIPTION

Epitaxial medium-speed switching diode with a low leakage current in a small glass SOD80C SMD package.

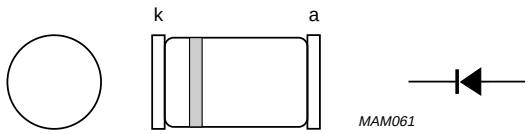


Fig.1 Simplified outline (SOD80C) and symbol.

LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{RRM}	repetitive peak reverse voltage		–	125	V
V_R	continuous reverse voltage		–	125	V
I_F	continuous forward current	see Fig.2; note 1	–	250	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; see Fig.4			
		t_p = 1 μs	–	4	A
		t_p = 1 ms	–	1	A
		t_p = 1 s	–	0.5	A
P_{tot}	total power dissipation	T_{amb} = 25 °C; note 1	–	400	mW
T_{stg}	storage temperature		–65	+175	°C
T_j	junction temperature		–	175	°C

Note

1. Device mounted on a FR4 printed-circuit board.

ELECTRICAL CHARACTERISTICS

T_j = 25 °C unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	TYP.	MAX.	UNIT
V_F	forward voltage	see Fig.3			
		I_F = 1 mA	–	780	mV
		I_F = 10 mA	–	860	mV
		I_F = 100 mA	–	1000	mV
I_R	reverse current	see Fig.5			
		V_R = 125 V; E_{max} = 100 lx	–	1	nA
		V_R = 30 V; T_j = 125 °C; E_{max} = 100 lx	–	300	nA
		V_R = 125 V; T_j = 125 °C; E_{max} = 100 lx	–	500	nA
		V_R = 125 V; T_j = 150 °C; E_{max} = 100 lx	–	2	µA
C_d	diode capacitance	f = 1 MHz; V_R = 0; see Fig.6	–	4	pF
t_{rr}	reverse recovery time	when switched from I_F = 10 mA to I_R = 10 mA; R_L = 100 Ω; measured at I_R = 1 mA; see Fig.7	1.5	–	µs

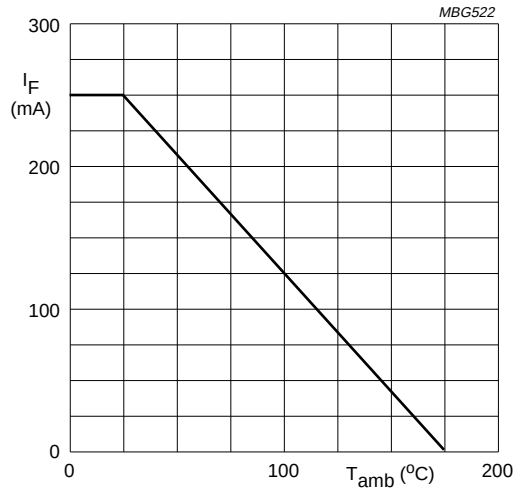
THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j\text{-}tp}$	thermal resistance from junction to tie-point		300	K/W
$R_{th\ j\text{-}a}$	thermal resistance from junction to ambient	note 1	375	K/W

Note

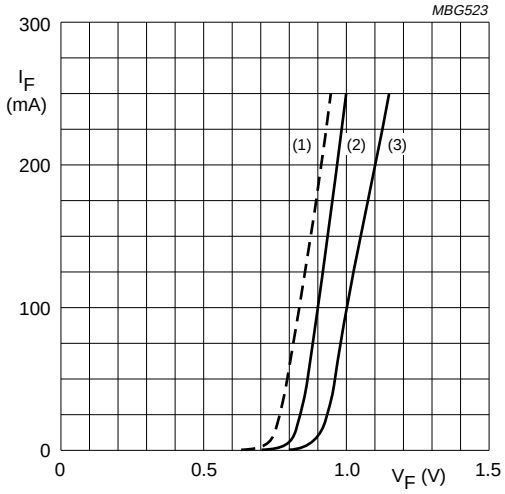
1. Device mounted on a FR4 printed-circuit board.

GRAPHICAL DATA



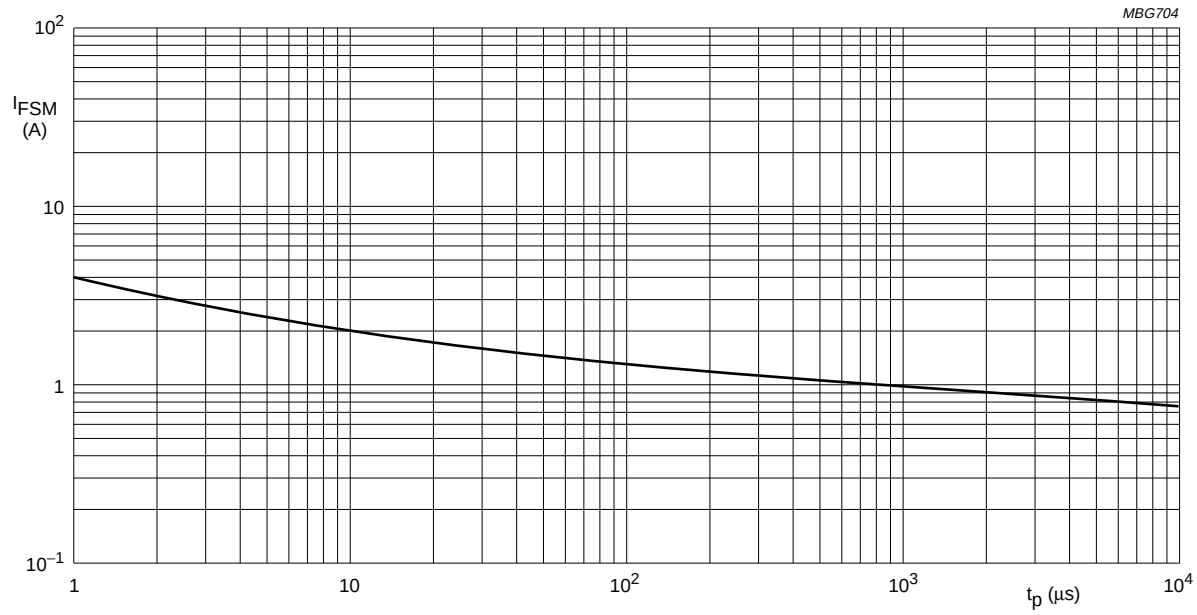
Device mounted on a FR4 printed-circuit board.

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



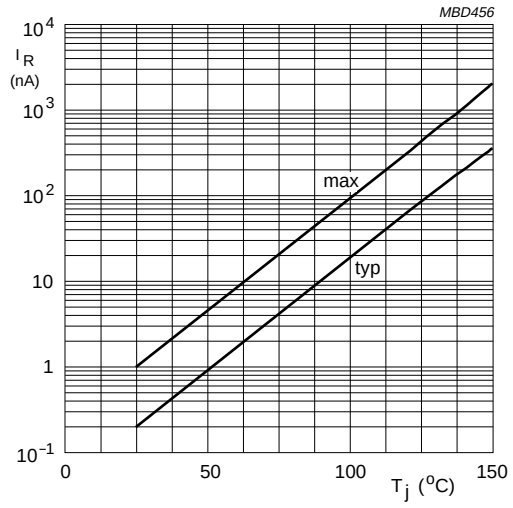
(1) T_j = 150 °C; typical values.
(2) T_j = 25 °C; typical values.
(3) T_j = 25 °C; maximum values.

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



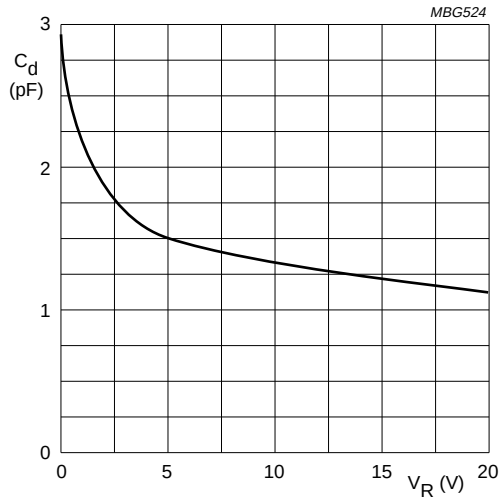
Based on square wave currents; T_j = 25 °C prior to surge.

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



V_R = 125 V.

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.

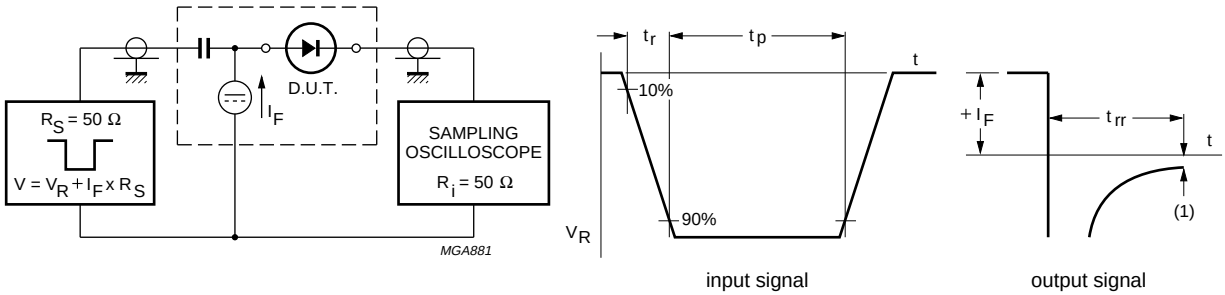
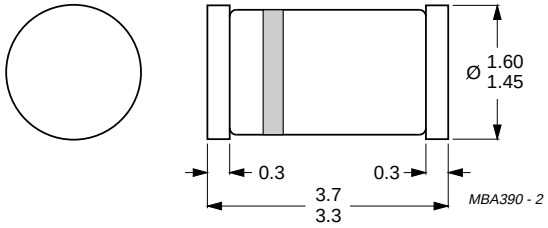


Fig.7 Reverse recovery time test circuit and waveforms.

PACKAGE OUTLINE



Dimensions in mm.
The black marking band indicates the cathode.

Fig.8 SOD80C.

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.	

LIFE SUPPORT APPLICATIONS

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