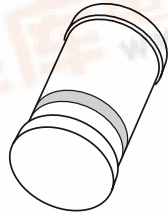


DISCRETE SEMICONDUCTORS

DATA SHEET



BAS45AL Low-leakage diode

Product specification
Supersedes data of 1999 May 04

1999 May 28

Low-leakage diode

BAS45AL

FEATURES

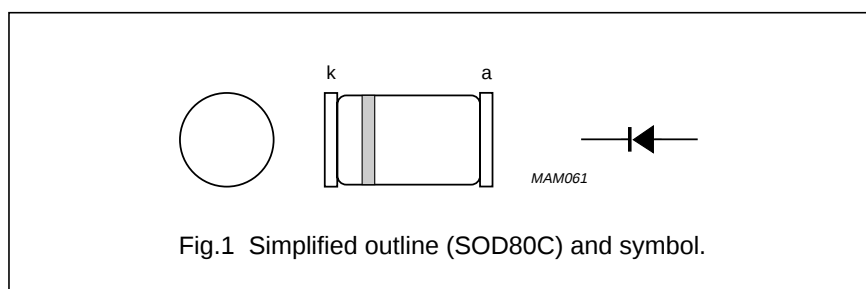
- Continuous reverse voltage: max. 125 V
- Repetitive peak forward current: max. 625 mA
- Low reverse current: max. 1 nA
- Switching time: typ. 1.5 μ s.

APPLICATION

- Low leakage current applications.

DESCRIPTION

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



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	note 1; see Fig.2	—	250	mA
I_{FRM}	repetitive peak forward current		—	625	mA
I_{FSM}	non-repetitive peak forward current	square wave; $T_j = 25\text{ }^{\circ}\text{C}$ prior to surge; see Fig.4			
		$t_p = 1\text{ }\mu\text{s}$	—	4	A
		$t_p = 1\text{ ms}$	—	1	A
		$t_p = 1\text{ s}$	—	0.5	A
P_{tot}	total power dissipation	$T_{amb} = 25\text{ }^{\circ}\text{C}$; note 1	—	400	mW
T_{stg}	storage temperature		−65	+175	$^{\circ}\text{C}$
T_j	junction temperature		—	175	$^{\circ}\text{C}$

Note

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

Low-leakage diode

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ELECTRICAL CHARACTERISTICS $T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise specified.

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

THERMAL CHARACTERISTICS

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

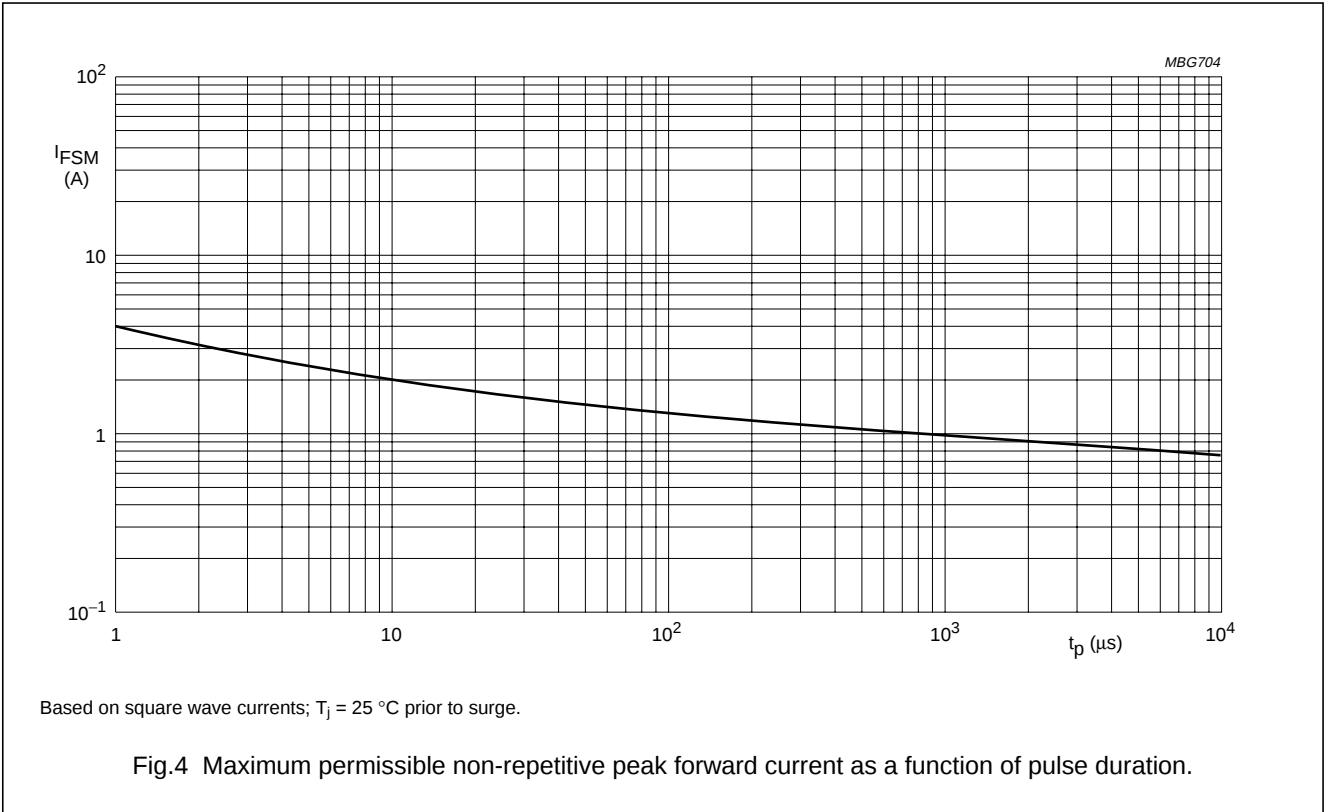
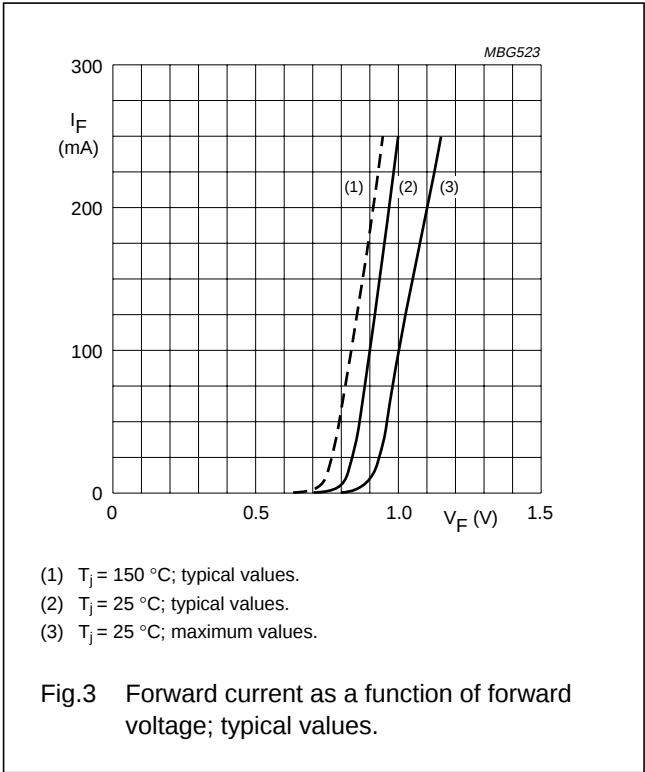
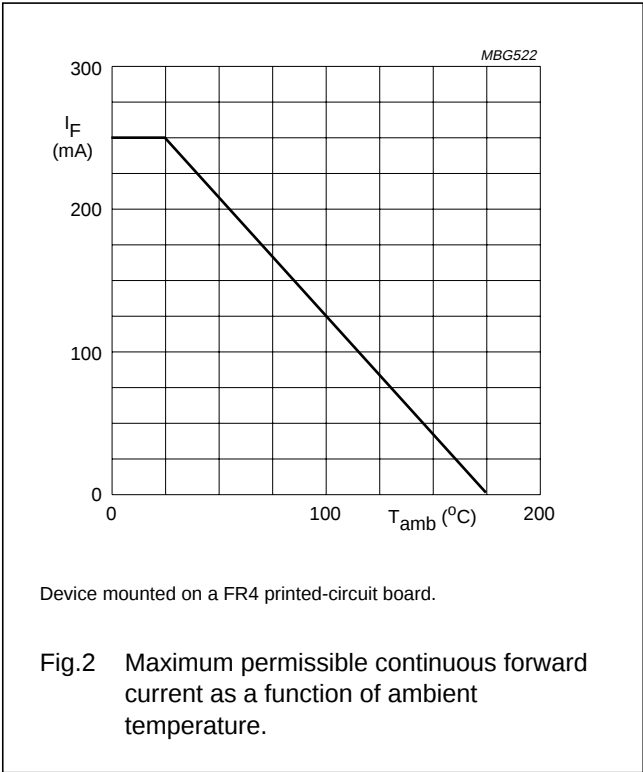
Note

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

Low-leakage diode

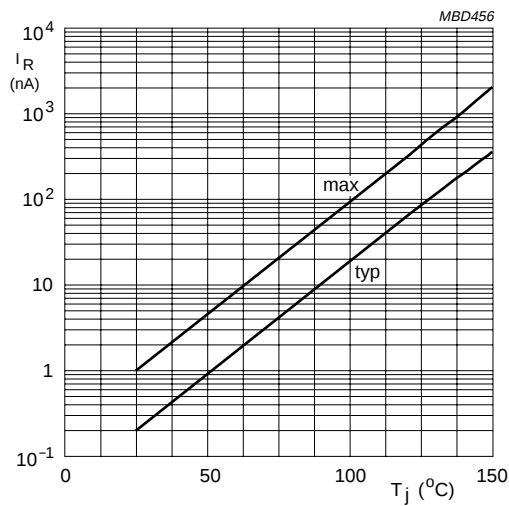
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GRAPHICAL DATA



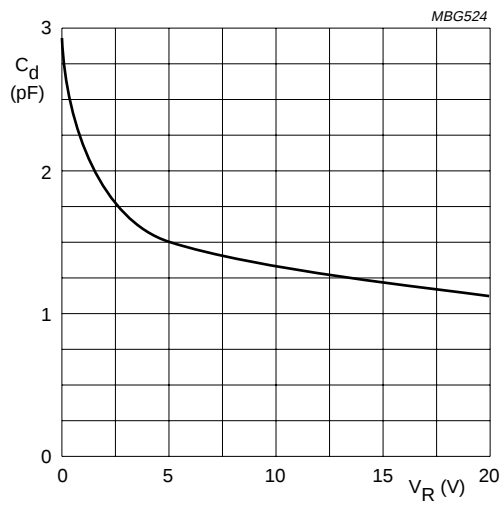
Low-leakage diode

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$V_R = 125 \text{ V}$.

Fig.5 Reverse current as a function of junction temperature.



$f = 1 \text{ MHz}$; $T_j = 25 \text{ }^{\circ}\text{C}$.

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

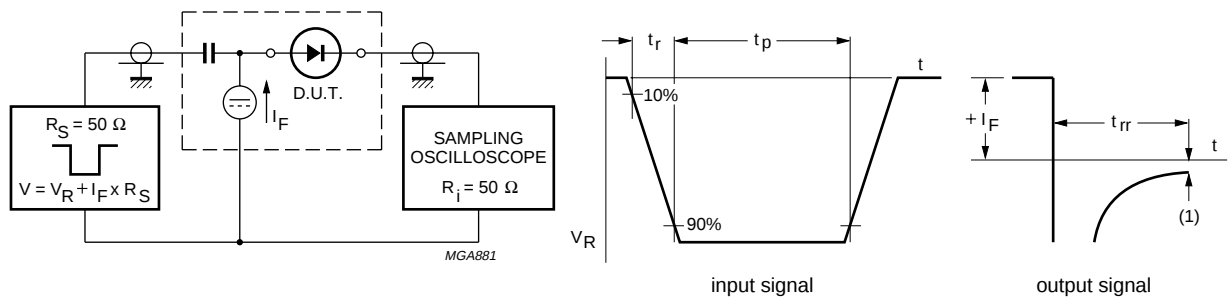


Fig.7 Reverse recovery time test circuit and waveforms.

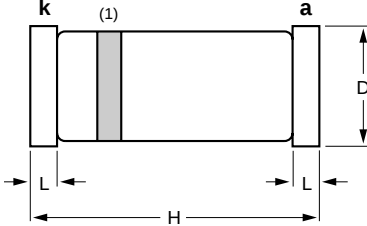
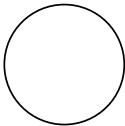
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PACKAGE OUTLINE

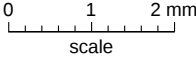
Hermetically sealed glass surface mounted package; 2 connectors

SOD80C



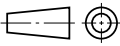
DIMENSIONS (mm are the original dimensions)

UNIT	D	H	L
mm	1.60 1.45	3.7 3.3	0.3



Note

1. The marking band indicates the cathode.

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOD80C	100H01					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.	

LIFE SUPPORT APPLICATIONS

These products are not designed for use in life support appliances, devices, or systems where malfunction of these products can reasonably be expected to result in personal injury. Philips customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Philips for any damages resulting from such improper use or sale.

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Printed in The Netherlands

115002/04/pp8

Date of release: 1999 May 28

Document order number: 9397 750 06041

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