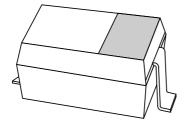
DISCRETE SEMICONDUCTORS

DATA SHEET



BAS416 Low-leakage diode

Product specification

2002 Nov 19





Low-leakage diode

BAS416

FEATURES

• Plastic SMD package

• Low leakage current: typ. 3 pA

• Switching time: typ. 0.8 μs

• Continuous reverse voltage: max. 75 V

• Repetitive peak reverse voltage: max. 85 V

• Repetitive peak forward current: max. 500 mA.

APPLICATIONS

Low-leakage current applications in surface mounted circuits.

DESCRIPTION

Epitaxial, medium-speed switching diode with a low leakage current encapsulated in a small SOD323 SMD plastic package.

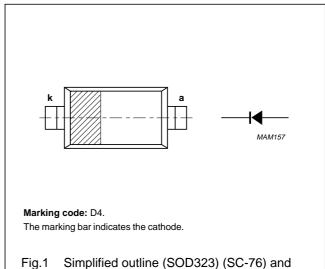


Fig.1 Simplified outline (SOD323) (SC-76) and symbol.

LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 60134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V _{RRM}	repetitive peak reverse voltage		_	85	V
V _R	continuous reverse voltage		_	75	V
I _F	continuous forward current	see Fig.2	_	200	mA
I _{FRM}	repetitive peak forward current		_	500	mA
I _{FSM}	non-repetitive peak forward current	square wave; T _j = 25 °C prior to surge; see Fig.4			
		t = 1 μs	_	4	A
		t = 1 ms	_	1	Α
		t = 1 s	_	0.5	Α
P _{tot}	total power dissipation	T _{amb} = 25 °C; note 1	_	250	mW
T _{stg}	storage temperature		-65	+150	°C
Tj	junction temperature		_	150	°C

Note

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

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ELECTRICAL CHARACTERISTICS

 T_{amb} = 25 °C; unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	TYP.	MAX.	UNIT
V _F	forward voltage	see Fig.3			
		I _F = 1 mA	_	0.9	V
		I _F = 10 mA	_	1	V
		I _F = 50 mA	_	1.1	V
		I _F = 150 mA	_	1.25	V
I _R	reverse current	see Fig.5			
		V _R = 75 V	0.003	5	nA
		V _R = 75 V; T _j = 150 °C	3	80	nA
C _d	diode capacitance	V _R = 0; f = 1 MHz; see Fig.6	2	_	pF
t _{rr}	reverse recovery time	when switched from I _F = 10 mA to	0.8	3	μs
		$I_R = 10 \text{ mA}; R_L = 100 \Omega;$			
		measured at I _R = 1 mA; see Fig.7			

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
R _{th j-a}	thermal resistance from junction to ambient	note 1	450	K/W

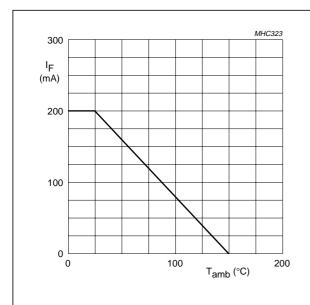
Note

1. Refer to SOD323 (SC-76) standard mounting conditions.

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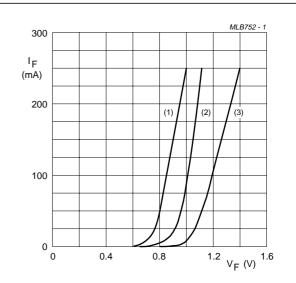
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GRAPHICAL DATA



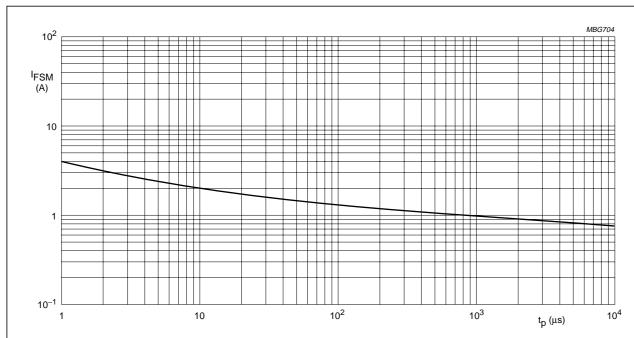
Device mounted on an FR4 printed-circuit board.

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



- (1) $T_i = 150$ °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.



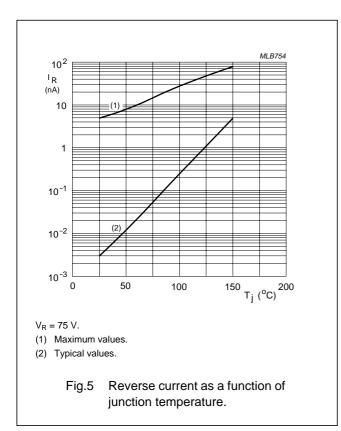
Based on square wave currents.

 T_j = 25 °C prior to surge.

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

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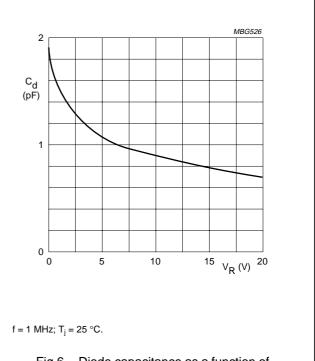
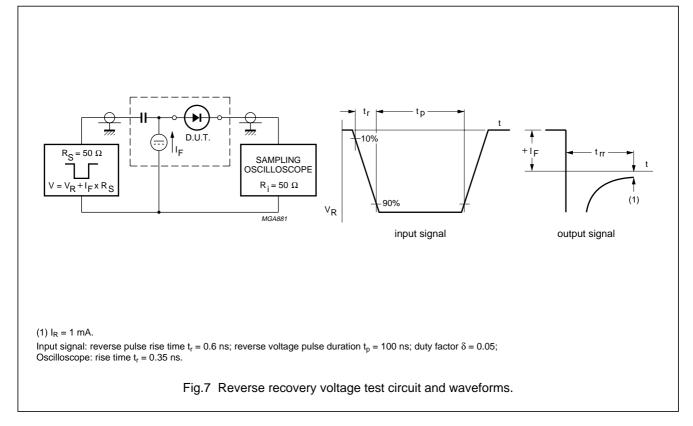


Fig.6 Diode capacitance as a function of reverse voltage; typical values.



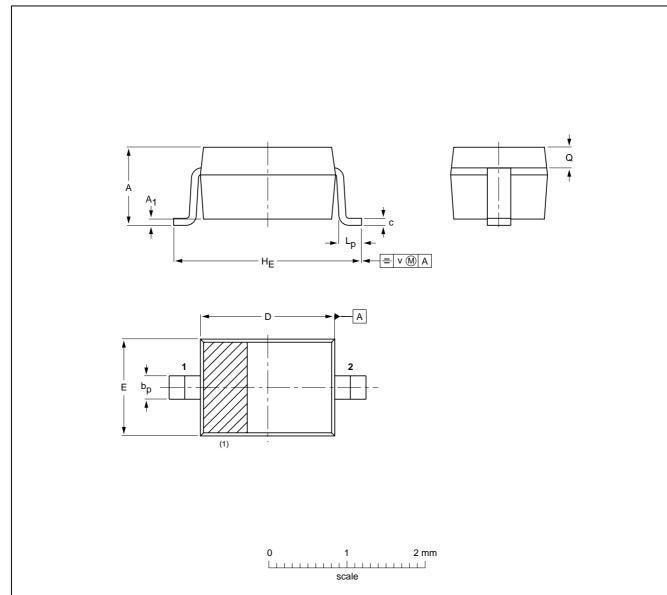
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PACKAGE OUTLINE

Plastic surface mounted package; 2 leads

SOD323



DIMENSIONS (mm are the original dimensions)

UNIT	А	A ₁ max.	bp	С	D	E	HE	L _p	Q	v
mm	1.1 0.8	+ 0.05 - 0.05	0.40 0.25	0.25 0.10	1.8 1.6	1.35 1.15	2.7 2.3	0.45 0.15	0.25 0.15	0.2

Note

1. The marking bar indicates the cathode.

OUTLINE VERSION	REFERENCES				EUROPEAN	IOOUE DATE	
	IEC	JEDEC	EIAJ		PROJECTION	ISSUE DATE	
SOD323			SC-76			98-09-14 99-09-13	

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DATA SHEET STATUS

LEVEL	DATA SHEET STATUS ⁽¹⁾	PRODUCT STATUS(2)(3)	DEFINITION
I	Objective data	Development	This data sheet contains data from the objective specification for product development. Philips Semiconductors reserves the right to change the specification in any manner without notice.
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Notes

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Limiting values definition — Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 60134). 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.

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Contact information

For additional information please visit http://www.semiconductors.philips.com. Fax: +31 40 27 24825 For sales offices addresses send e-mail to: sales.addresses@www.semiconductors.philips.com.

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