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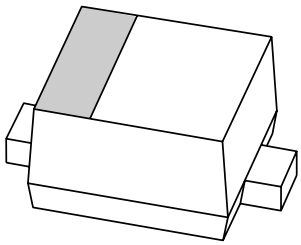
Team Nexperia

DATA SHEET



BAS716
Low-leakage diode

Product data sheet

2003 Nov 07

NXP founded by Philips

Low-leakage diode BAS716

FEATURES

- Plastic SMD package
- Low leakage current: typ. 0.2 nA
- Switching time: typ. 0.6 μs
- Continuous reverse voltage: max. 75 V
- Repetitive peak reverse voltage: max. 85 V
- Repetitive peak forward current: max. 500 mA.

APPLICATION

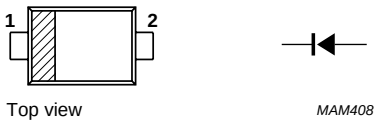
- Low leakage current applications in surface mounted circuits.

DESCRIPTION

Epitaxial medium-speed switching diode with a low leakage current in an ultra small SOD523 (SC-79) SMD plastic package.

PINNING

PIN	DESCRIPTION
1	cathode
2	anode



Marking code: S1.
The marking bar indicates the cathode.

Fig.1 Simplified outline (SOD523; SC-79) and symbol.

ORDERING INFORMATION

TYPE NUMBER	PACKAGE		
	NAME	DESCRIPTION	VERSION
BAS716	–	plastic surface mounted package; 2 leads	SOD523

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; note 1	–	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_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	–	250	mW
T_{stg}	storage temperature		−65	+150	°C
T_j	junction temperature		–	150	°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	I_F = 1 mA	0.77	0.9	V
		I_F = 10 mA	0.85	1	V
		I_F = 50 mA	0.92	1.1	V
		I_F = 150 mA	1.02	1.25	V
I_R	reverse current	V_R = 75 V	0.2	5	nA
		V_R = 75 V; T_j = 150 °C	3	80	nA
		V_R = 100 V	0.3	–	nA
C_d	diode capacitance	V_R = 0 V; f = 1 MHz; see Fig.6	2	–	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	0.6	3	μs

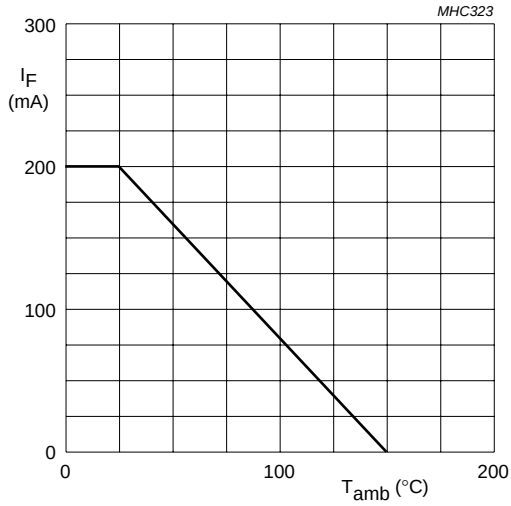
THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j\text{-}a}$	thermal resistance from junction to ambient	note 1	450	K/W
$R_{th\ j\text{-}s}$	thermal resistance from junction to soldering point	note 2	120	K/W

Notes

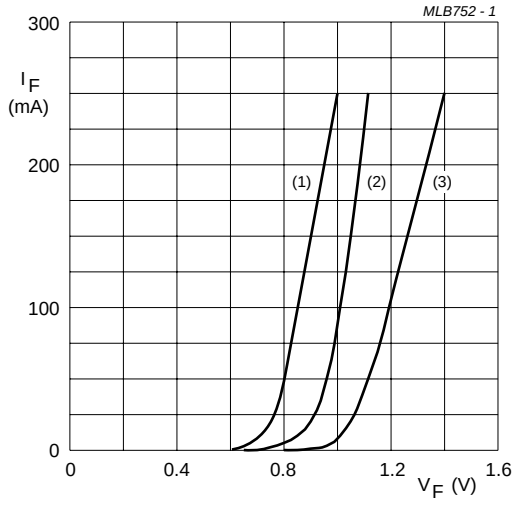
1. Device mounted on a FR4 printed-circuit board. Refer to SOD523 (SC-79) standard mounting conditions.
2. Soldering point of the cathode tab.

GRAPHICAL DATA



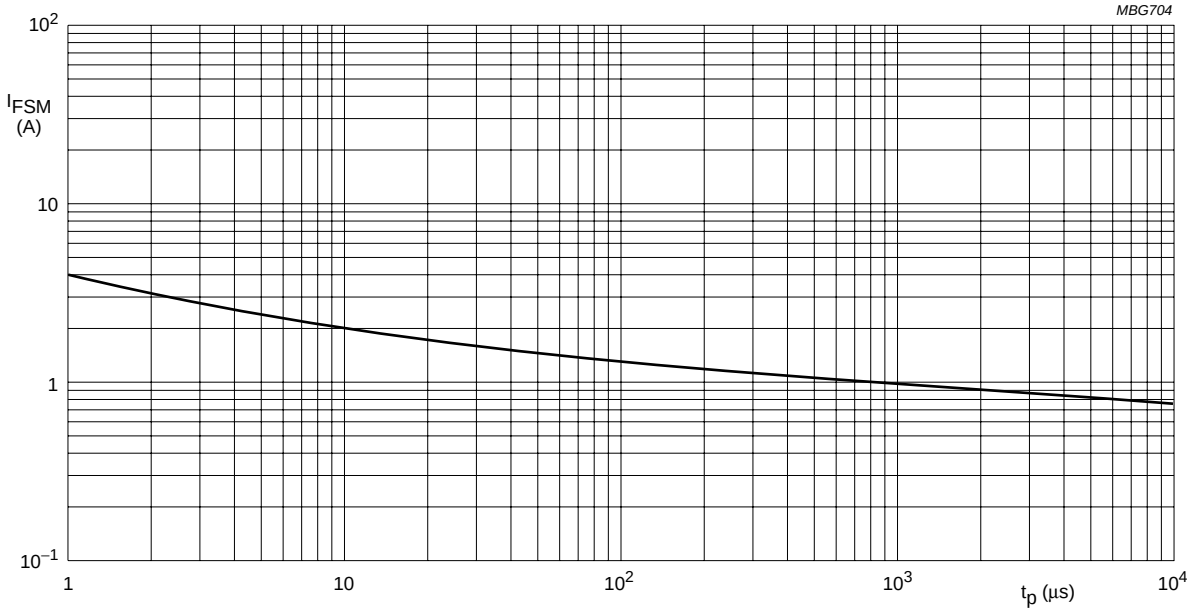
Device mounted on a FR4 printed-circuit board.

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



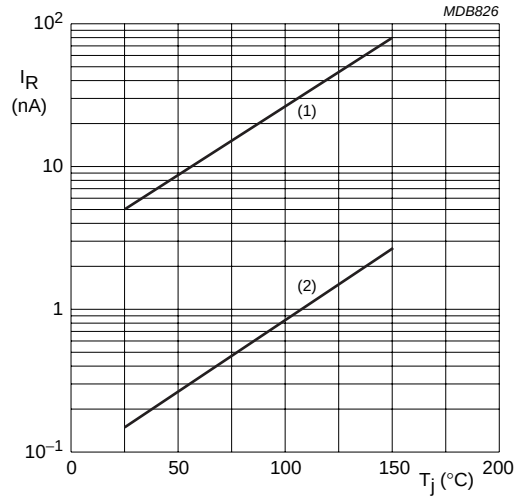
(1) T_j = 150 °C; typical values.
(2) T_j = 25 °C; typical values.
(3) T_j = 25 °C; maximum values.

Fig.3 Forward current as a function of forward voltage.



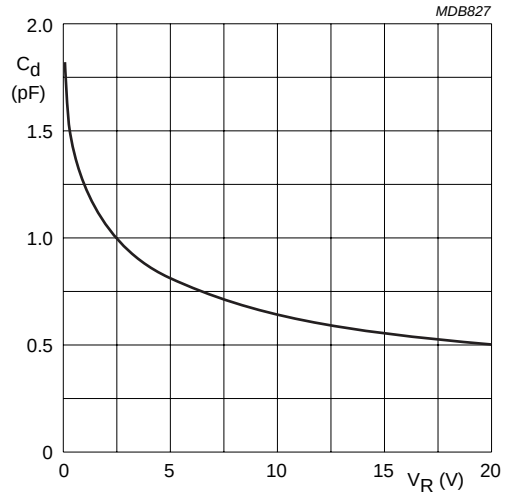
Based on square wave currents; T_j = 25 °C prior to surge.

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



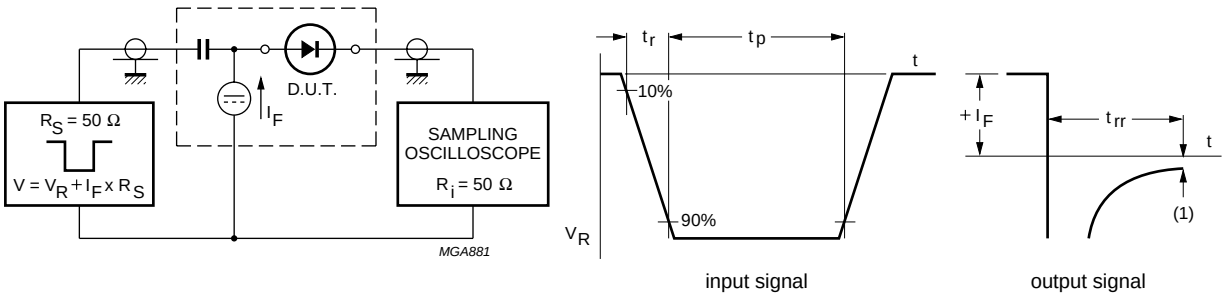
V_R = 75 V.
(1) Maximum values.
(2) Typical values.

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.

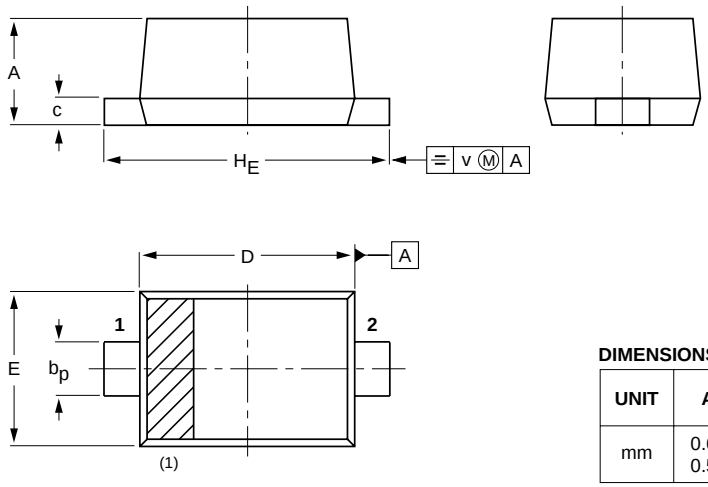


(1) I_R = 1 mA.
Input signal: reverse pulse rise time t_r = 0.6 ns; reverse voltage pulse duration t_p = 100 ns; duty factor δ = 0.05;
Oscilloscope: rise time t_r = 0.35 ns.

Fig.7 Reverse recovery voltage test circuit and waveforms.

PACKAGE OUTLINE

Plastic surface mounted package; 2 leads **SOD523**



DIMENSIONS (mm are the original dimensions)

UNIT	A	b_p	c	D	E	H_E	v
mm	0.65 0.58	0.34 0.26	0.17 0.11	1.25 1.15	0.85 0.75	1.65 1.55	0.1

Note

1. The marking bar indicates the cathode.

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA			
SOD523			SC-79			~~98-11-25~~ 02-12-13

DATA SHEET STATUS

DOCUMENT STATUS[1]	PRODUCT STATUS[2]	DEFINITION
Objective data sheet	Development	This document contains data from the objective specification for product development.
Preliminary data sheet	Qualification	This document contains data from the preliminary specification.
Product data sheet	Production	This document contains the product specification.

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NXP Semiconductors

Customer notification

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