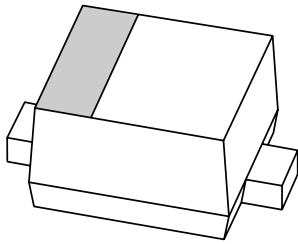


DATA SHEET



BAS716 Low-leakage diode

Product data sheet

2003 Nov 07

Low-leakage diode

BAS716

FEATURES

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

APPLICATION

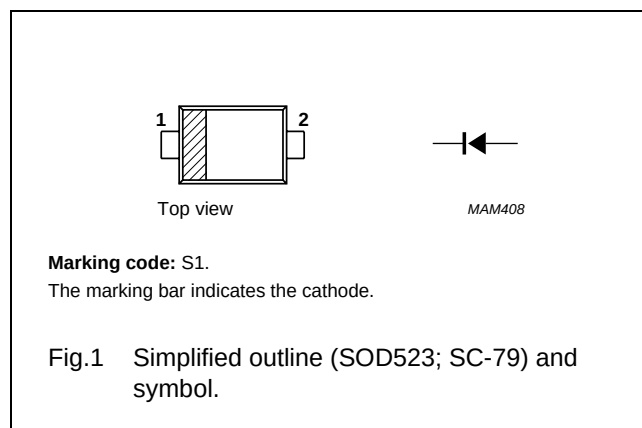
- Low leakage current applications in surface mounted circuits.

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



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; $T_j = 25\text{ }^{\circ}\text{C}$ prior to surge; see Fig.4 $t_p = 1\text{ }\mu\text{s}$ $t_p = 1\text{ ms}$ $t_p = 1\text{ s}$	– – –	4 1 0.5	A A A
P_{tot}	total power dissipation	$T_{amb} = 25\text{ }^{\circ}\text{C}$; note 1	–	250	mW
T_{stg}	storage temperature		–65	+150	$^{\circ}\text{C}$
T_j	junction temperature		–	150	$^{\circ}\text{C}$

Note

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

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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	$I_F = 1\text{ mA}$	0.77	0.9	V
		$I_F = 10\text{ mA}$	0.85	1	V
		$I_F = 50\text{ mA}$	0.92	1.1	V
		$I_F = 150\text{ mA}$	1.02	1.25	V
I_R	reverse current	$V_R = 75\text{ V}$	0.2	5	nA
		$V_R = 75\text{ V}; T_j = 150\text{ }^{\circ}\text{C}$	3	80	nA
		$V_R = 100\text{ V}$	0.3	—	nA
C_d	diode capacitance	$V_R = 0\text{ V}; f = 1\text{ MHz}; \text{ see Fig.6}$	2	—	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 $I_R = 1\text{ mA}$	0.6	3	μs

THERMAL CHARACTERISTICS

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

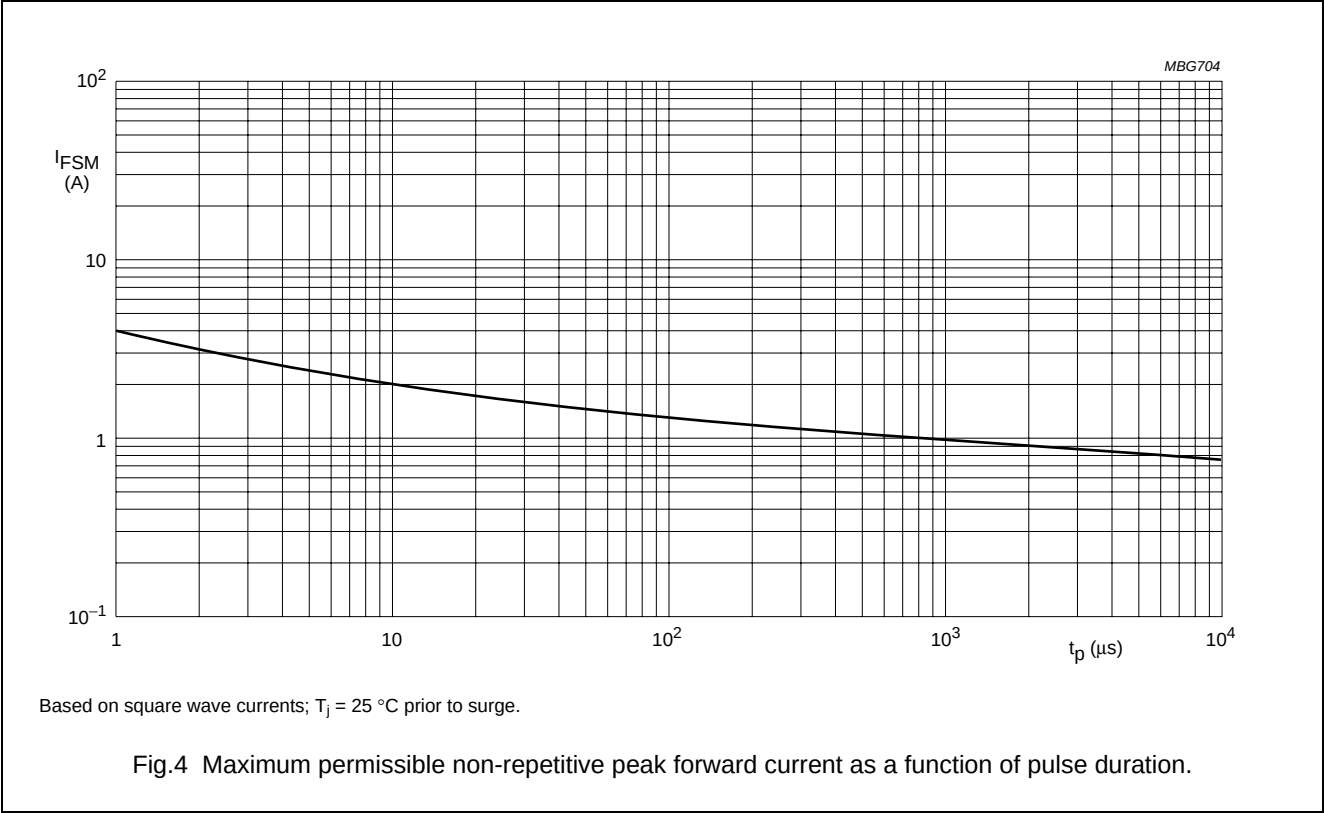
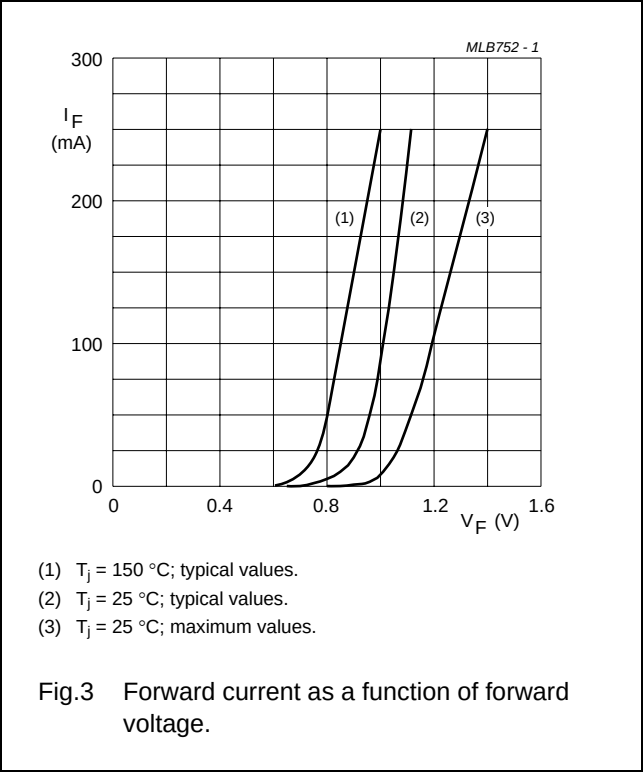
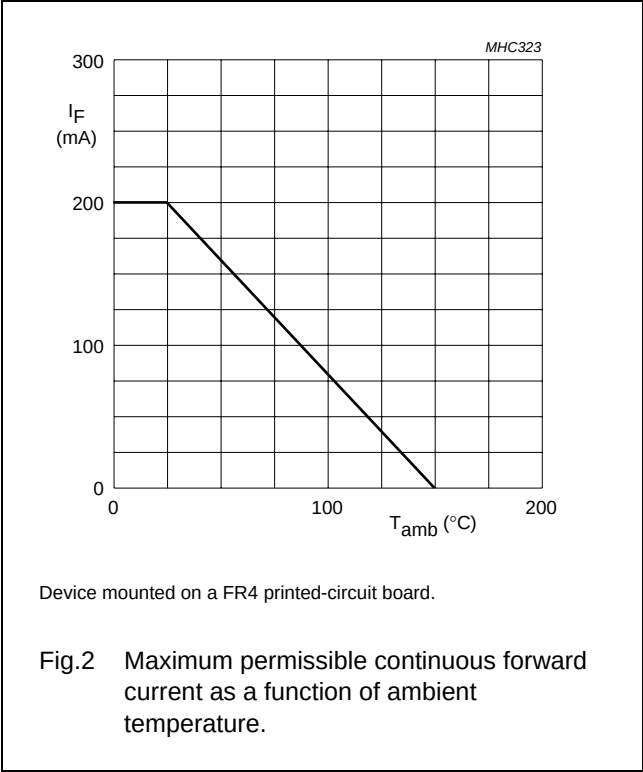
Notes

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

Low-leakage diode

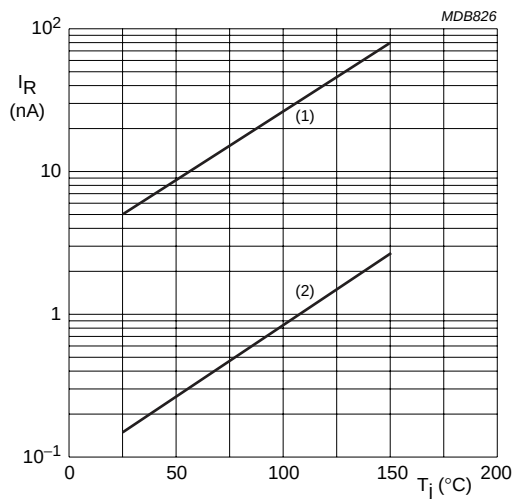
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GRAPHICAL DATA



Low-leakage diode

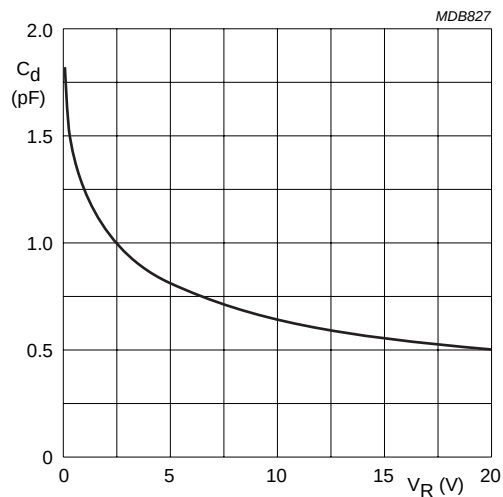
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$V_R = 75 \text{ V.}$

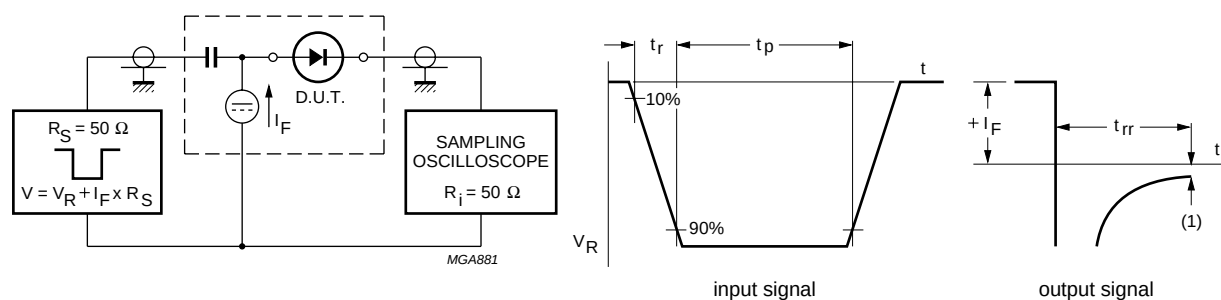
- (1) Maximum values.
- (2) Typical values.

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



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

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



(1) $I_R = 1 \text{ mA.}$

Input signal: reverse pulse rise time $t_r = 0.6 \text{ ns}$; reverse voltage pulse duration $t_p = 100 \text{ ns}$; duty factor $\delta = 0.05$;

Oscilloscope: rise time $t_r = 0.35 \text{ ns}$.

Fig.7 Reverse recovery voltage test circuit and waveforms.

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PACKAGE OUTLINE

Plastic surface mounted package; 2 leads

SOD523

Top view: Dimensions A (height), c (lead thickness), H_E (lead length), D (body width), and marking bar (1).
Side view: Shows the profile of the package.
Front view: Shows the package with leads 1 and 2, and dimension b_p (lead width).
Marking: A square symbol with 'v' and a circled 'M' followed by 'A'.

0 0.5 1 mm
scale

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

Low-leakage diode

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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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1. Please consult the most recently issued document before initiating or completing a design.
2. The product status of device(s) described in this document may have changed since this document was published and may differ in case of multiple devices. The latest product status information is available on the Internet at URL <http://www.nxp.com>.

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Website :

Welcome to visit www.ameya360.com

Contact Us :

➤ Address :

401 Building No.5, JiuGe Business Center, Lane 2301, Yishan Rd
Minhang District, Shanghai , China

➤ Sales :

Direct +86 (21) 6401-6692

Email amall@ameya360.com

QQ 800077892

Skype ameyasales1 ameyasales2

➤ Customer Service :

Email service@ameya360.com

➤ Partnership :

Tel +86 (21) 64016692-8333

Email mkt@ameya360.com