

# BAS116H

75 V, low leakage diode in small SOD123F package

Rev. 01 — 11 April 2005

Product data sheet

## 1. Product profile

### 1.1 General description

Low leakage switching diode, encapsulated in a SOD123F small SMD plastic package.

### 1.2 Features

- Small and flat lead SMD plastic package
- Low leakage current

### 1.3 Applications

- General-purpose switching



### 1.4 Quick reference data

Table 1: Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$I_F$	forward current		-	-	215	mA
$V_R$	reverse voltage		-	-	75	V
$I_R$	reverse current	$V_R = 75\text{ V}$	-	0.003	5.0	nA

## 2. Pinning information

Table 2: Pinning

Pin	Description	Simplified outline	Symbol
1	cathode	[1]	 1  2 <i>sym001</i>
2	anode		

[1] The marking bar indicates the cathode.

## 3. Ordering information

Table 3: Ordering information

Type number	Package		
	Name	Description	Version
BAS116H	-	plastic surface mounted package; 2 leads	SOD123F

## 4. Marking

Table 4: Marking codes

Type number	Marking code
BAS116H	B1

## 5. Limiting values

Table 5: Limiting values

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

Symbol	Parameter	Conditions	Min	Max	Unit
<b>Per diode</b>					
$V_{RRM}$	repetitive peak reverse voltage		-	85	V
$V_R$	reverse voltage		-	75	V
$I_F$	forward current		-	215	mA
$I_{FRM}$	repetitive peak forward current		-	500	mA
$I_{FSM}$	non-repetitive peak forward current	$t_p = 1 \mu s$	-	4	A
		$t_p = 1 ms$	-	1	A
		$t_p = 1 s$	-	0.5	A
$P_{tot}$	total power dissipation	$T_{amb} \leq 25 \text{ }^\circ\text{C}$	[1]	-	375 mW
$T_j$	junction temperature		-	150	$^\circ\text{C}$
$T_{amb}$	ambient temperature		-65	+150	$^\circ\text{C}$
$T_{stg}$	storage temperature		-65	+150	$^\circ\text{C}$

[1] Device mounted on an FR4 Printed-Circuit Board (PCB), single-sided copper, tin-plated and standard footprint.

## 6. Thermal characteristics

**Table 6: Thermal characteristics**

Symbol	Parameter	Conditions	Min	Typ	Max	Unit	
$R_{th(j-a)}$	thermal resistance from junction to ambient	in free air	[1] [2]	-	-	330	K/W
$R_{th(j-sp)}$	thermal resistance from junction to solder point		-	-	70	K/W	

[1] Device mounted on an FR4 PCB, single-sided copper, tin-plated and standard footprint.

[2] Reflow soldering is the only recommended soldering method.

## 7. Characteristics

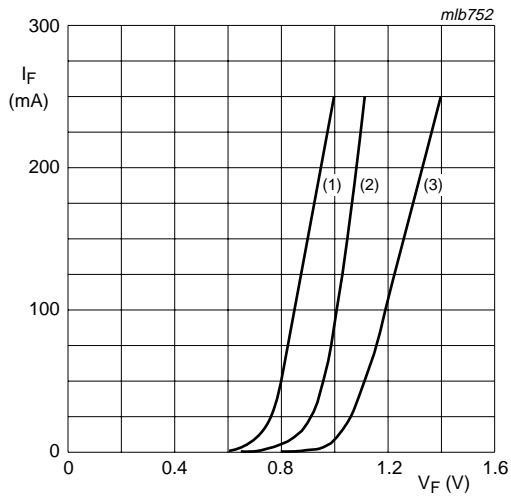
**Table 7: Characteristics**

$T_{amb} = 25\text{ }^{\circ}\text{C}$  unless otherwise specified.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit	
<b>Per diode</b>							
$V_F$	forward voltage	$I_F = 1\text{ mA}$	[1]	-	-	0.90	mV
		$I_F = 10\text{ mA}$	[1]	-	-	1.00	mV
		$I_F = 50\text{ mA}$	[1]	-	-	1.10	mV
		$I_F = 150\text{ mA}$	[1]	-	-	1.25	mV
$I_R$	reverse current	$V_R = 75\text{ V}$	-	0.003	5.0	nA	
		$V_R = 75\text{ V}; T_j = 150\text{ }^{\circ}\text{C}$	-	3	80.0	nA	
$C_d$	diode capacitance	$V_R = 0\text{ V}; f = 1\text{ MHz}$	-	2	-	pF	
$t_{rr}$	reverse recovery time		[2]	0.8	3.0	$\mu\text{s}$	

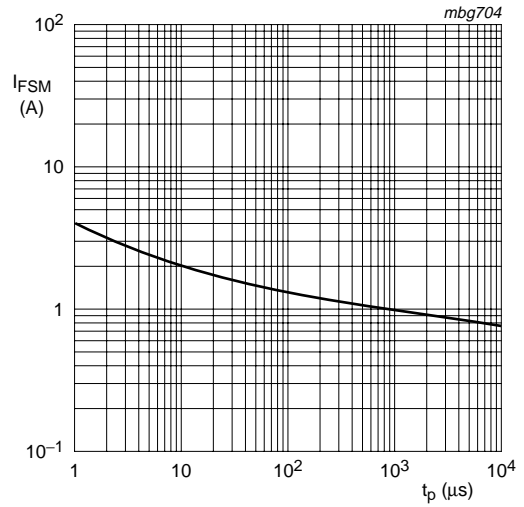
[1] Pulse test:  $t_p \leq 300\text{ }\mu\text{s}; \delta \leq 0.02$ .

[2] When switched from  $I_F = 10\text{ mA}$  to  $I_R = 10\text{ mA}; R_L = 100\text{ }\Omega$ ; measured at  $I_R = 1\text{ mA}$



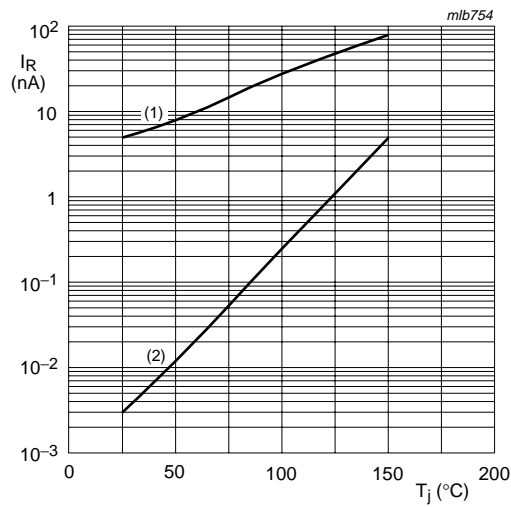
- (1)  $T_{amb} = 150\text{ }^{\circ}\text{C}$ ; typical values
- (2)  $T_{amb} = 25\text{ }^{\circ}\text{C}$ ; typical values
- (3)  $T_{amb} = 25\text{ }^{\circ}\text{C}$ ; maximum values

**Fig 1. Forward current as a function of forward voltage**



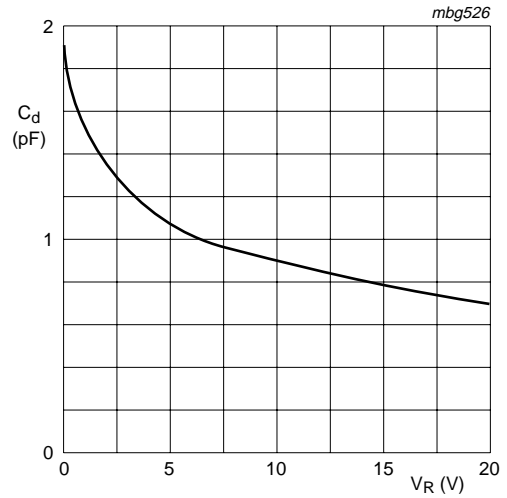
- Based on square wave currents
- (1)  $T_j = 25\text{ }^{\circ}\text{C}$ ; prior to surge

**Fig 2. Non-repetitive peak forward current as a function of pulse duration**



- $V_R = 75\text{ V}$
- (1) Maximum values
  - (2) Typical values

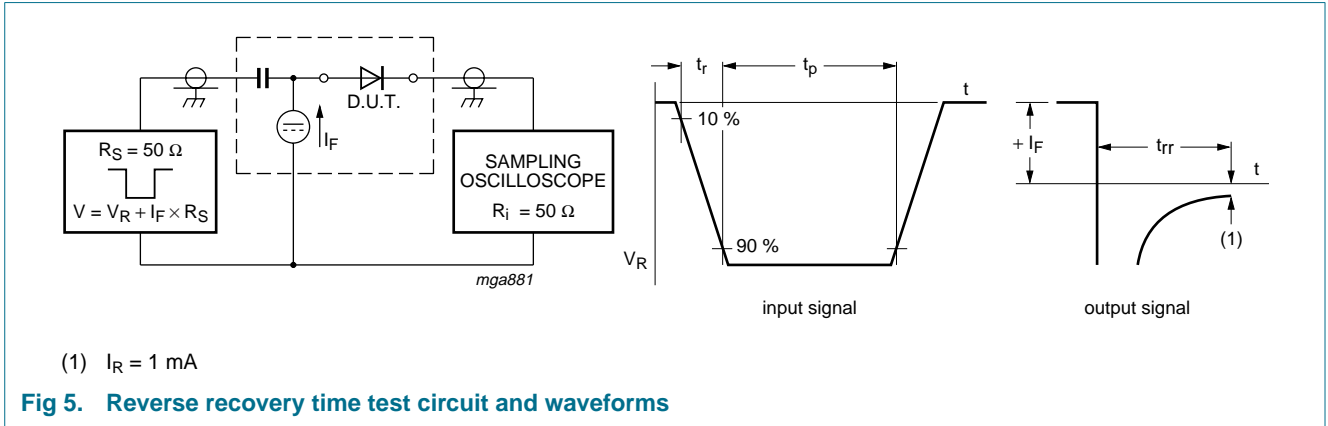
**Fig 3. Reverse current as a function of junction temperature**



- $T_{amb} = 25\text{ }^{\circ}\text{C}$ ;  $f = 1\text{ MHz}$

**Fig 4. Diode capacitance as a function of reverse voltage; typical values**

**8. Test information**



## 9. Package outline

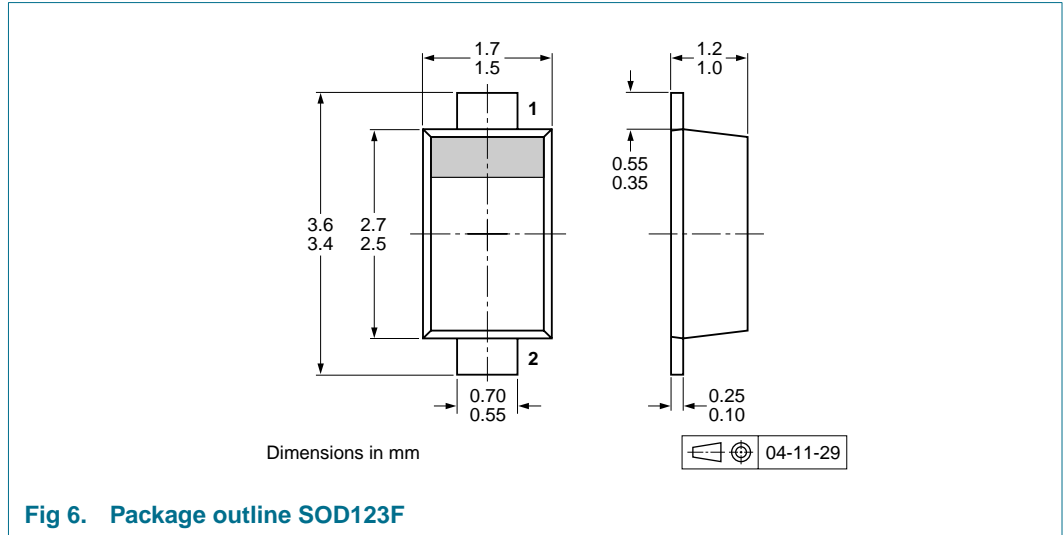


Fig 6. Package outline SOD123F

## 10. Packing information

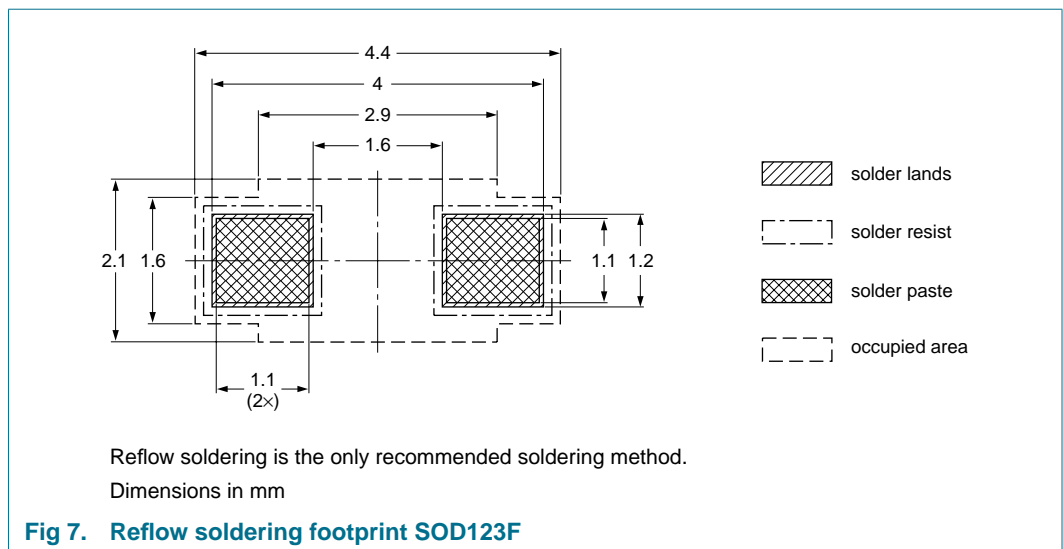
**Table 8: Packing methods**

The -xxx numbers are the last three digits of the 12NC ordering code. [1]

Type number	Package	Description	Packing quantity	
			3000	10000
BAS116H	SO123F	4 mm pitch, 8 mm tape and reel	-115	-135

[1] For further information and the availability of packing methods, see [Section 16](#).

## 11. Soldering



## 12. Revision history

Table 9: Revision history

Document ID	Release date	Data sheet status	Change notice	Doc. number	Supersedes
BAS116H_1	20050411	Product data sheet	-	9397 750 14881	-

## 13. Data sheet status

Level	Data sheet status <sup>[1]</sup>	Product status <sup>[2] [3]</sup>	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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**Short-form specification** — The data in a short-form specification is extracted from a full data sheet with the same type number and title. For detailed information see the relevant data sheet or data handbook.

**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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