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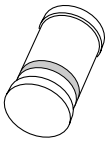
Team Nexperia



BAS45AL

Low-leakage diode

Rev. 5 — 6 August 2010 Product data sheet

1. Product profile

1.1 General description

Epitaxial medium-speed switching diode with a low leakage current, encapsulated in a small hermetically sealed glass SOD80C Surface-Mounted Device (SMD) package.

1.2 Features and benefits

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

1.3 Applications

- Low leakage current applications

1.4 Quick reference data

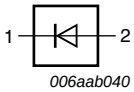
Table 1. Quick reference data

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
I_F	forward current		[1]	-	-	250	mA
V_R	reverse voltage			-	-	125	V
V_F	forward voltage	I_F = 100 mA		-	-	1000	mV

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

2. Pinning information

Table 2. Pinning

Pin	Description		Simplified outline	Graphic symbol
1	cathode	[1]		 006aab040
2	anode			

[1] The marking band indicates the cathode.

3. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
BAS45AL	-	hermetically sealed glass surface-mounted package; 2 connectors	SOD80C

4. Marking

Table 4. Marking codes

Type number	Marking code
BAS45AL	marking band

5. Limiting values

Table 5. Limiting values

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

Symbol	Parameter	Conditions		Min	Max	Unit
V_{RRM}	repetitive peak reverse voltage			-	125	V
V_R	reverse voltage			-	125	V
I_F	forward current		[1]	-	250	mA
I_{FRM}	repetitive peak forward current			-	625	mA
I_{FSM}	non-repetitive peak forward current	square wave	[2]			
		t_p = 1 µs		-	4	A
		t_p = 1 ms		-	1	A
		t_p = 1 s		-	0.5	A
P_{tot}	total power dissipation	$T_{amb} \leq 25$ °C	[1]	-	400	mW
T_j	junction temperature			-	175	°C
T_{stg}	storage temperature			–65	+175	°C

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

[2] T_j = 25 °C prior to surge.

6. Thermal characteristics

Table 6. Thermal characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
$R_{th(j-t)}$	thermal resistance from junction to tie-point			-	-	300	K/W
$R_{th(j-a)}$	thermal resistance from junction to ambient	in free air	[1]	-	-	375	K/W

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

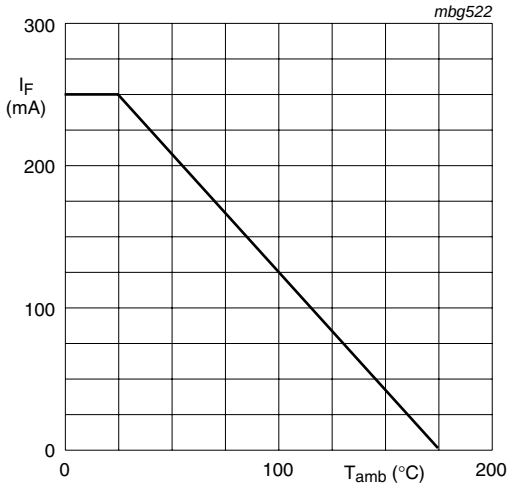
7. Characteristics

Table 7. Characteristics

T_j = 25 °C unless otherwise specified.

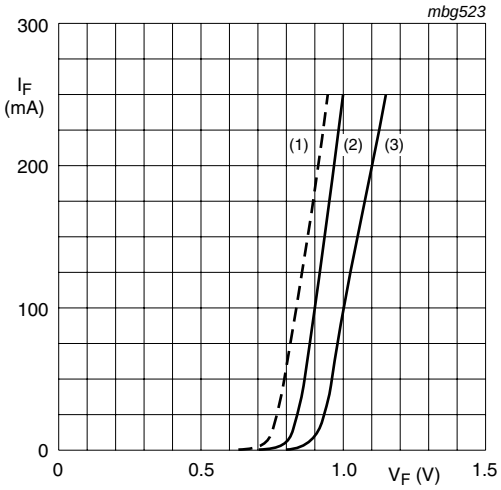
Symbol	Parameter	Conditions		Min	Typ	Max	Unit
V_F	forward voltage	I_F = 1 mA		-	-	780	mV
		I_F = 10 mA		-	-	860	mV
		I_F = 100 mA		-	-	1000	mV
I_R	reverse current	E_{max} = 100 lx					
		V_R = 125 V		-	-	1	nA
		V_R = 30 V; T_j = 125 °C		-	-	300	nA
		V_R = 125 V; T_j = 125 °C		-	-	500	nA
		V_R = 125 V; T_j = 150 °C		-	-	2	µA
C_d	diode capacitance	V_R = 0 V; f = 1 MHz		-	-	4	pF
t_{rr}	reverse recovery time		[1]	-	1.5	-	µs

[1] When switched from I_F = 10 mA to I_R = 10 mA; R_L = 100 Ω; measured at I_R = 1 mA.



FR4 PCB, standard footprint

Fig 1. Forward current as a function of ambient temperature; derating curve

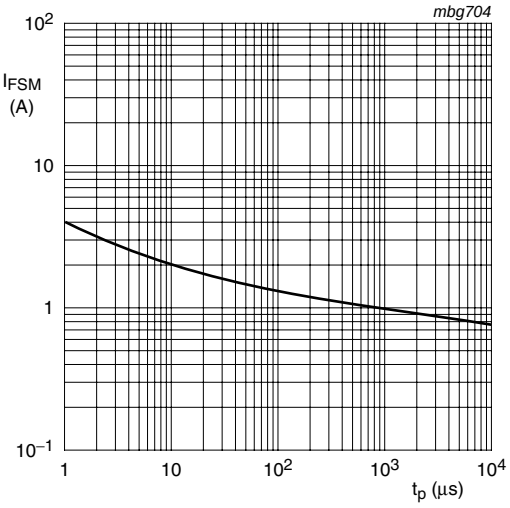


(1) T_j = 150 °C; typical values

(2) T_j = 25 °C; typical values

(3) T_j = 25 °C; maximum values

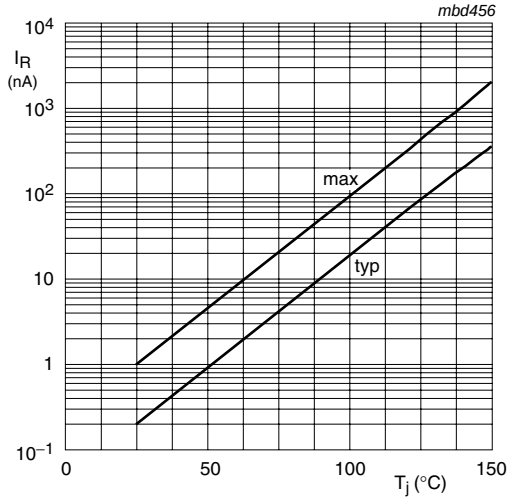
Fig 2. Forward current as a function of forward voltage



Based on square wave currents.

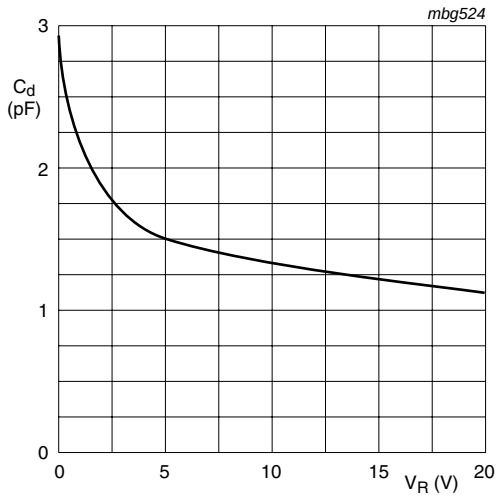
T_j = 25 °C prior to surge

Fig 3. Non-repetitive peak forward current as a function of pulse duration; maximum values



V_R = 125 V

Fig 4. Reverse current as a function of junction temperature



f = 1 MHz; T_j = 25 °C

Fig 5. Diode capacitance as a function of reverse voltage; typical values

8. Test information

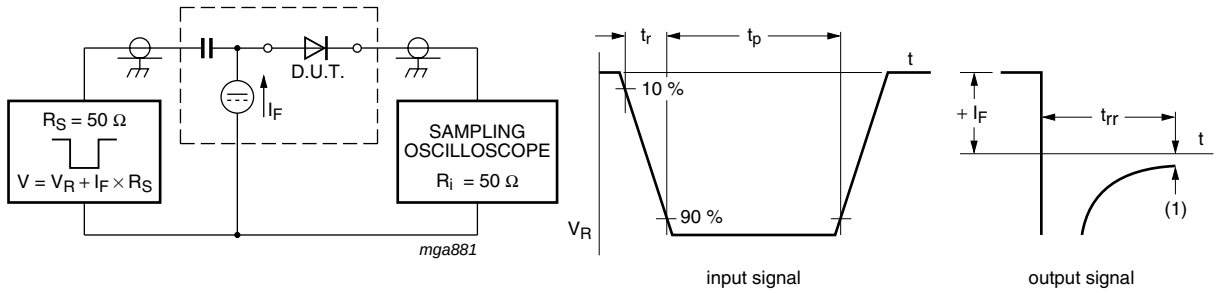


Fig 6. Reverse recovery time test circuit and waveforms

9. Package outline

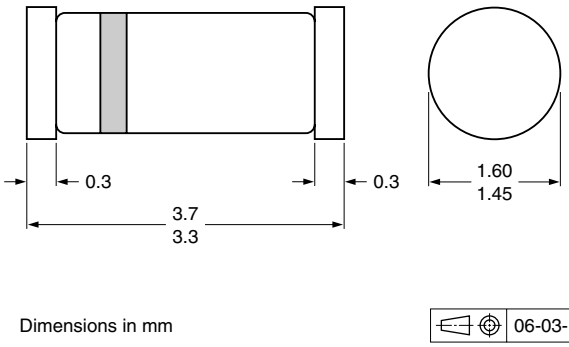


Fig 7. Package outline SOD80C

10. Packing information

Table 8. Packing methods

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

Type number	Package	Description	Packing quantity	
			2500	10000
BAS45AL	SOD80C	4 mm pitch, 8 mm tape and reel	-115	-135

[1] For further information and the availability of packing methods, see Section 14.

11. Soldering

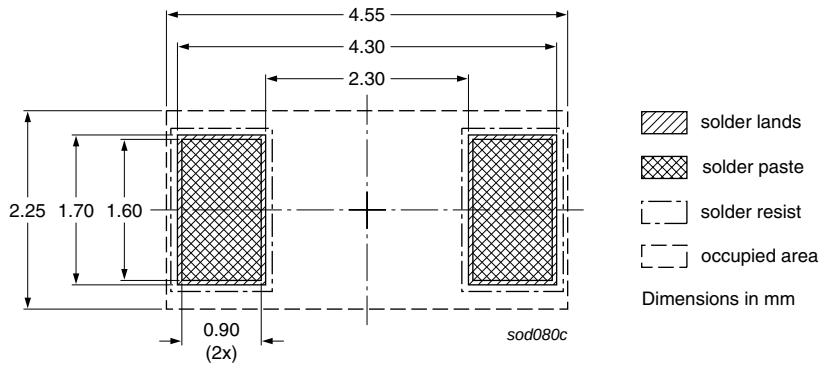


Fig 8. Reflow soldering footprint SOD80C

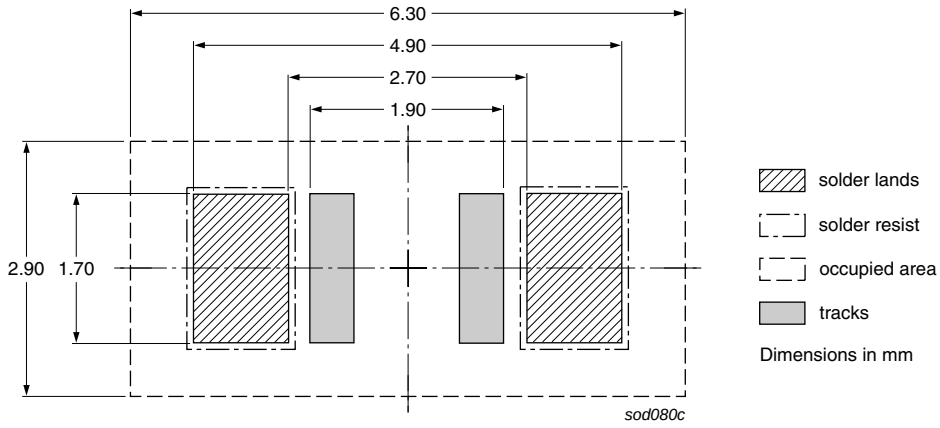


Fig 9. Wave soldering footprint SOD80C

12. Revision history

Table 9. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
BAS45AL v.5	20100806	Product data sheet	-	BAS45AL_4
Modifications:	• The format of this data sheet has been redesigned to comply with the new identity guidelines of NXP Semiconductors. • Legal texts have been adapted to the new company name where appropriate. • Table 1 “Quick reference data”: added • Section 4 “Marking”: added • Figure 7: superseded by minimized package outline drawing • Section 10 “Packing information”: added • Section 11 “Soldering”: added • Section 13 “Legal information”: updated			
BAS45AL_4	19990528	Product specification	-	BAS45AL_3
BAS45AL_3	19990504	Product specification	-	BAS45AL_2
BAS45AL_2	19960313	Product specification	-	BAS45AL_1

13. Legal information

13.1 Data sheet status

Document status[1][2]	Product status[3]	Definition
Objective [short] data sheet	Development	This document contains data from the objective specification for product development.
Preliminary [short] data sheet	Qualification	This document contains data from the preliminary specification.
Product [short] data sheet	Production	This document contains the product specification.

[1] Please consult the most recently issued document before initiating or completing a design.

[2] The term 'short data sheet' is explained in section "Definitions".

[3] 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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15. Contents

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Date of release: 6 August 2010
Document identifier: BAS45AL

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