



# BAS321

## General purpose diode

18 June 2019

Product data sheet

## 1. General description

General purpose diode fabricated in planar technology and encapsulated in a very small plastic SOD323 (SC76) package.

## 2. Features and benefits

- Small plastic SMD package
- Switching speed: max. 50 ns
- General application
- Continuous reverse voltage: max. 200 V
- Repetitive peak reverse voltage: max. 250 V
- Repetitive peak forward current: max. 625 mA
- AEC-Q101 qualified

## 3. Applications

- General purpose switching in surface mounted circuits

## 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			-	-	200	V
$P_{tot}$	total power dissipation	$T_{amb} = 25\text{ }^{\circ}\text{C}$	[1]	-	-	300	mW
$V_F$	forward voltage	$I_F = 200\text{ mA}; T_j = 25\text{ }^{\circ}\text{C}$		-	-	1.25	V

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

## 5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	K	Cathode	 SOD323	 001aaa020
2	A	Anode		

## 6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
BAS321	SOD323	plastic surface-mounted package; 2 leads	SOD323

## 7. Marking

Table 4. Marking codes

Type number	Marking code
BAS321	A7

## 8. 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			-	250	V
$V_R$	reverse voltage			-	200	V
$I_F$	forward current		[1]	-	250	mA
$I_{FSM}$	non-repetitive peak forward current	$t_p = 10 \text{ ms}$ ; $T_{j(\text{init})} = 25 \text{ }^\circ\text{C}$ ; square wave		-	1.7	A
		$t_p = 1 \text{ } \mu\text{s}$ ; $T_{j(\text{init})} = 25 \text{ }^\circ\text{C}$ ; square wave		-	9	A
		$t_p = 100 \text{ } \mu\text{s}$ ; $T_{j(\text{init})} = 25 \text{ }^\circ\text{C}$ ; square wave		-	3	A
$I_{FRM}$	repetitive peak forward current	$t_p \leq 0.5 \text{ ms}$ ; $\delta \leq 0.25$		-	625	mA
$P_{tot}$	total power dissipation	$T_{amb} = 25 \text{ }^\circ\text{C}$	[1]	-	300	mW
$T_j$	junction temperature			-	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.

## 9. Thermal characteristics

Table 6. Thermal characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
$R_{th(j-a)}$	thermal resistance from junction to ambient		[1]	-	-	366	K/W
$R_{th(j-sp)}$	thermal resistance from junction to solder point		[2]	-	-	130	K/W

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

[2] Soldering point of cathode tab.

10. Characteristics

Table 7. Characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$V_F$	forward voltage	$I_F = 100\text{ mA}; T_j = 25\text{ }^{\circ}\text{C}$	-	-	1	V
		$I_F = 200\text{ mA}; T_j = 25\text{ }^{\circ}\text{C}$	-	-	1.25	V
$I_R$	reverse current	$V_R = 200\text{ V}; T_j = 25\text{ }^{\circ}\text{C}$	-	-	100	nA
		$V_R = 200\text{ V}; T_j = 150\text{ }^{\circ}\text{C}$	-	-	100	$\mu\text{A}$
$C_d$	diode capacitance	$V_R = 0\text{ V}; f = 1\text{ MHz}; T_j = 25\text{ }^{\circ}\text{C}$	-	-	2	pF
$t_{rr}$	reverse recovery time	$I_F = 30\text{ mA}; I_R = 30\text{ mA}; R_L = 100\text{ }\Omega;$ $I_{R(\text{meas})} = 3\text{ mA}; T_j = 25\text{ }^{\circ}\text{C}$	-	-	50	ns

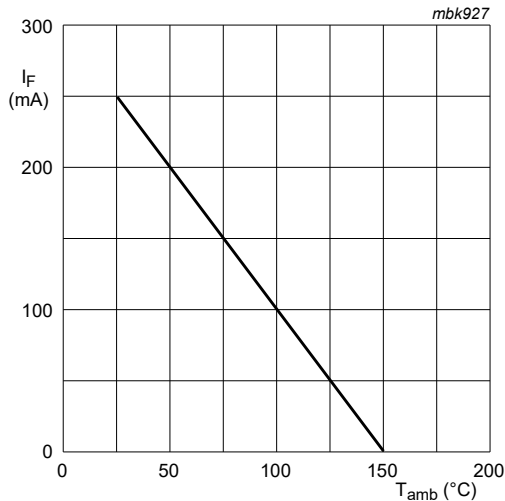
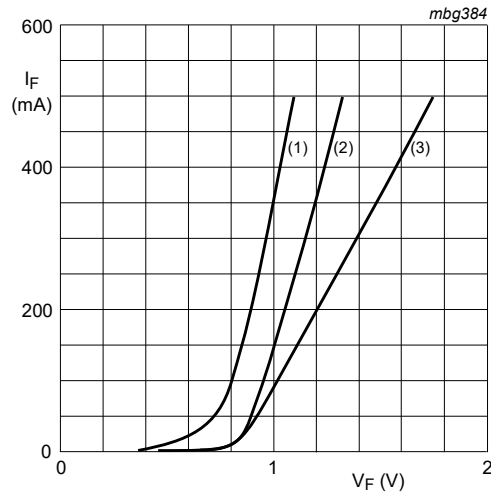


Fig. 1. Maximum permissible continuous forward current as a function of ambient temperature



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

Fig. 2. Forward current as a function of forward voltage

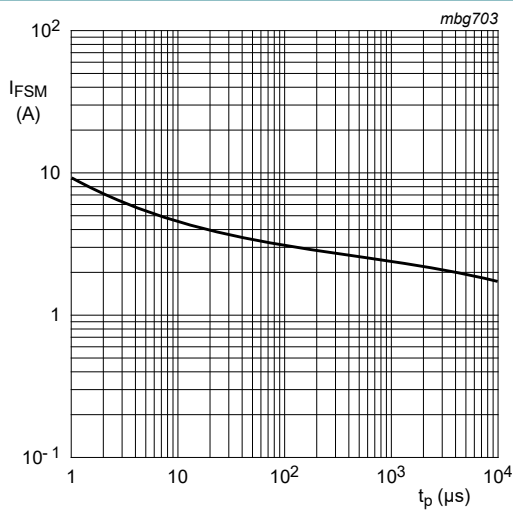
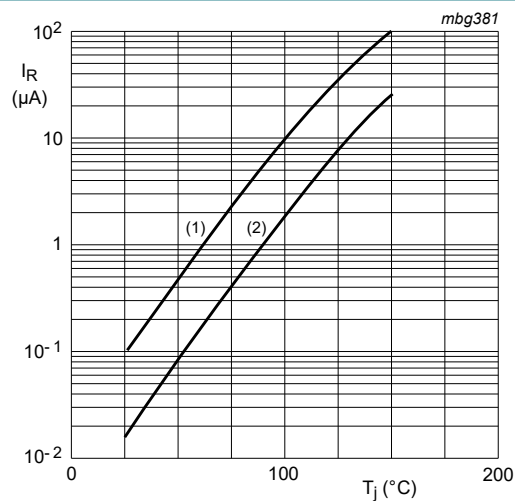


Fig. 3. Maximum permissible non-repetitive peak forward current as a function of pulse duration



(1)  $V_R = V_{R\text{max}}$ ; maximum values  
(2)  $V_R = V_{R\text{max}}$ ; typical values

Fig. 4. Reverse current as a function of junction temperature

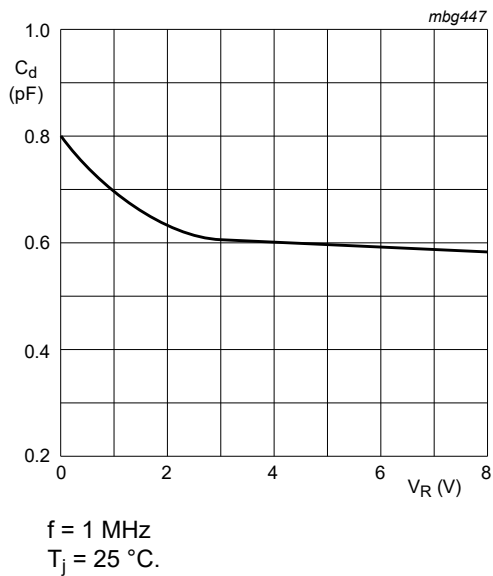


Fig. 5. Diode capacitance as a function of reverse voltage; typical values.

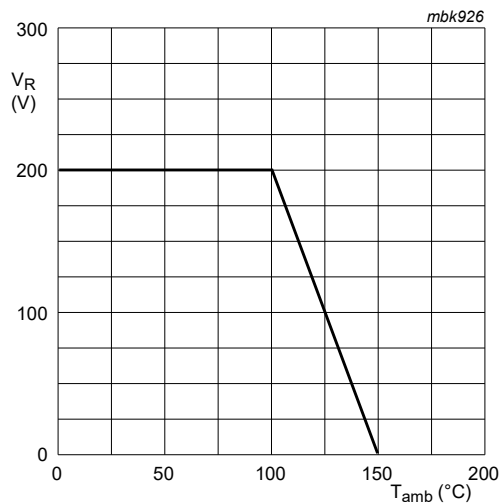


Fig. 6. Maximum permissible continuous reverse voltage as a function of the ambient temperature

11. Test information

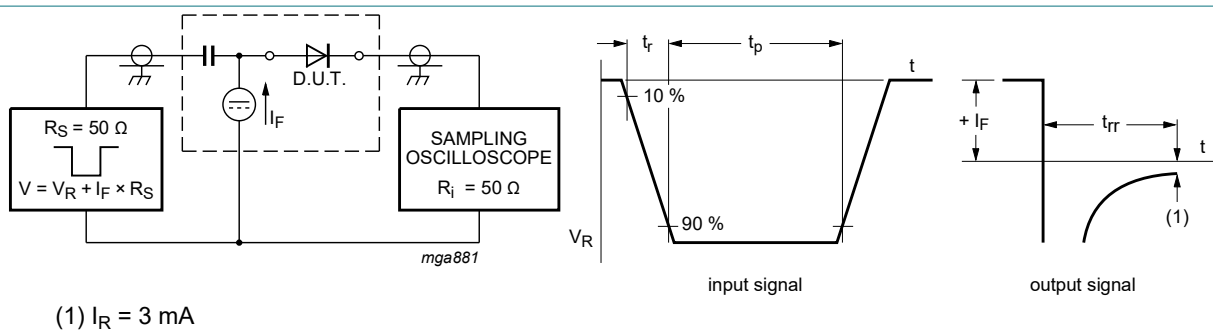


Fig. 7. Reverse recovery time test circuit and waveforms

Quality information

This product has been qualified in accordance with the Automotive Electronics Council (AEC) standard *Q101 - Stress test qualification for discrete semiconductors*, and is suitable for use in automotive applications.

12. Package outline

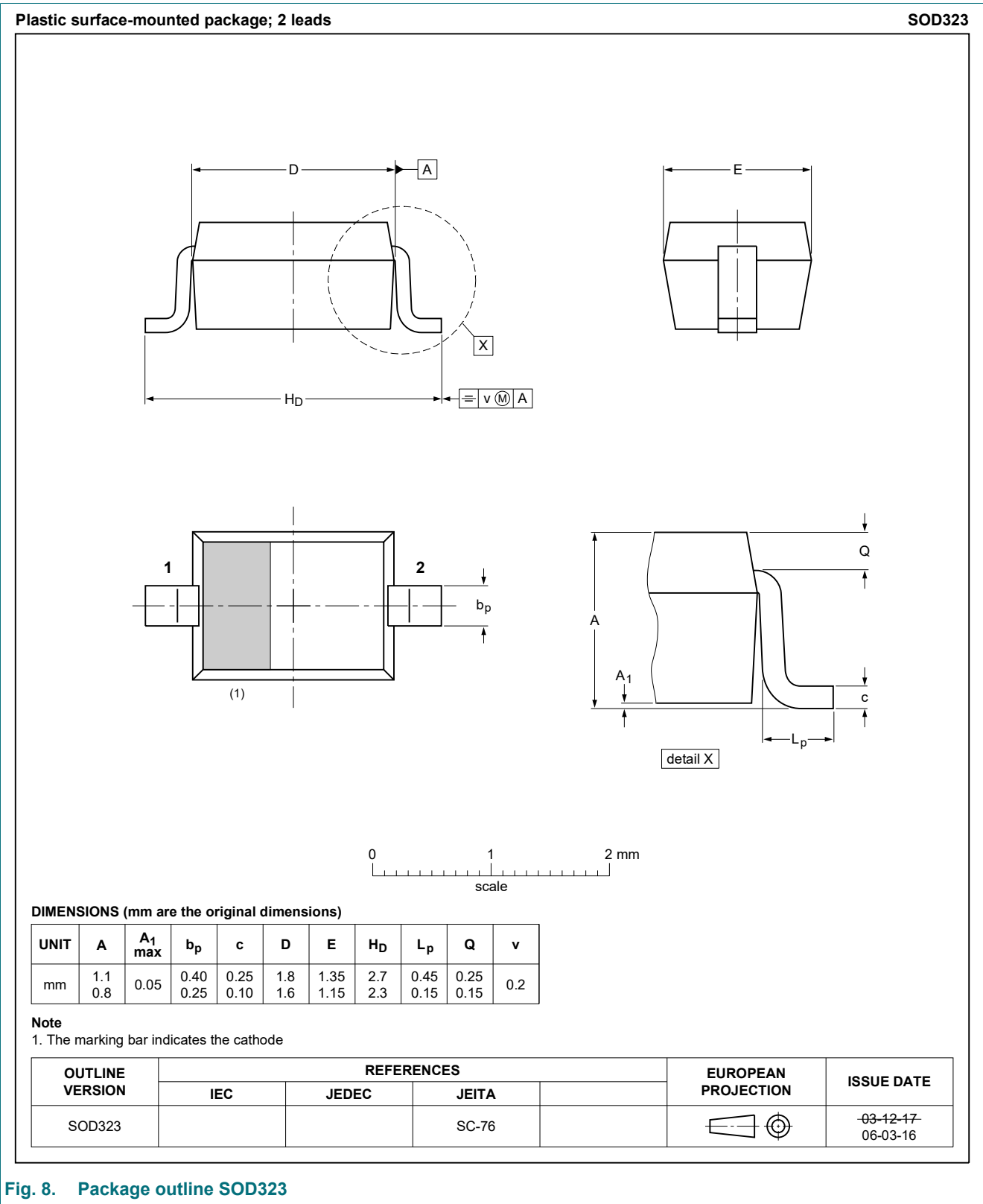


Fig. 8. Package outline SOD323

13. Soldering

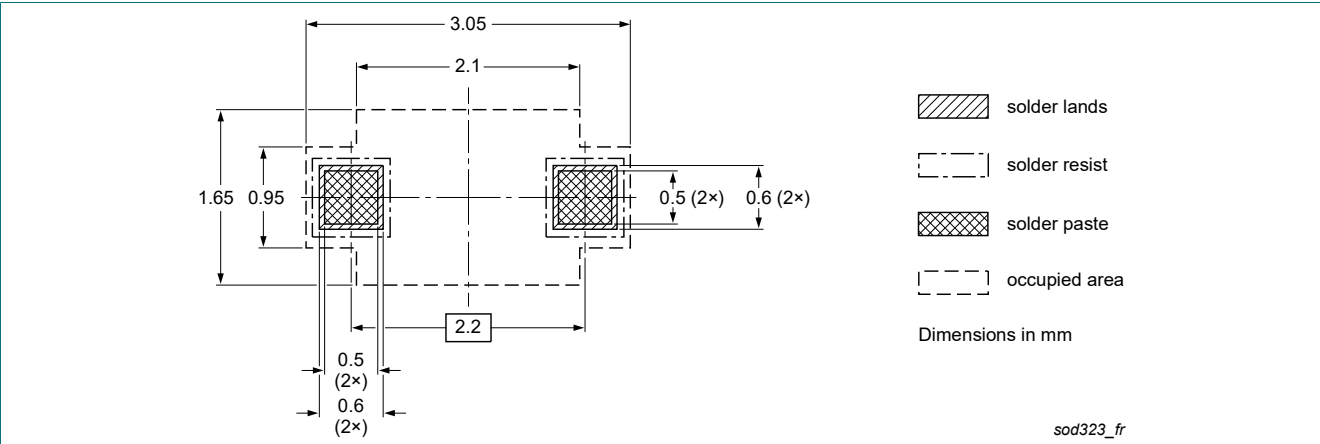


Fig. 9. Reflow soldering footprint for SOD323

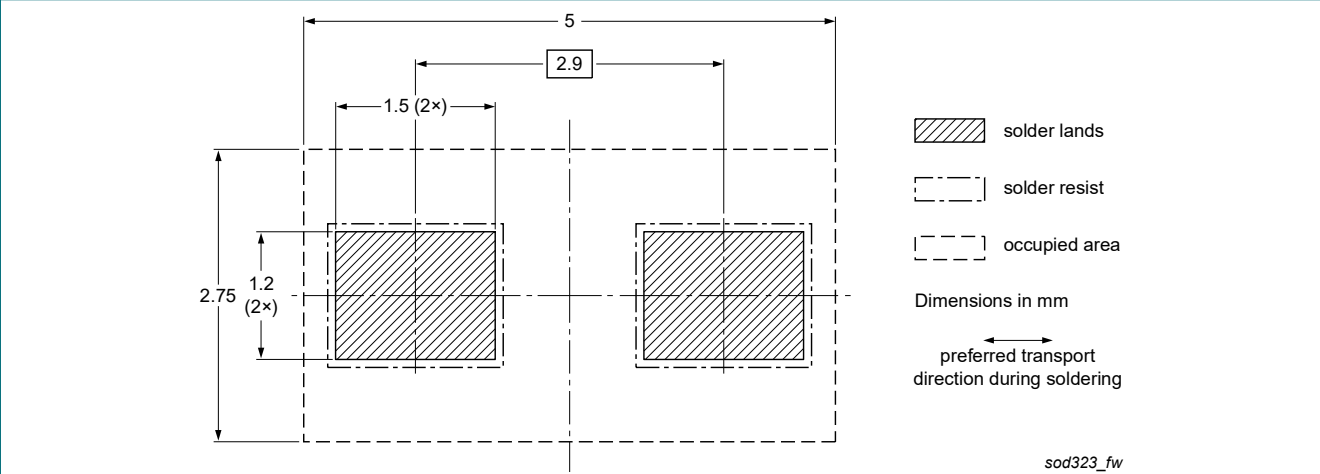


Fig. 10. Wave soldering footprint for SOD323

## 14. Revision history

**Table 8. Revision history**

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
BAS321 v.3	20190618	Product data sheet	-	BAS321 v.2
Modifications:	<ul style="list-style-type: none"><li>• Features and benefits and Test information: AEC-Q101 qualification added</li><li>• The format of this data sheet has been redesigned to comply with the identity guidelines of Nexperia.</li><li>• Legal texts have been adapted to the new company name where appropriate.</li></ul>			
BAS321 v.2	20040126	Product data sheet	-	BAS321 v.1
BAS321 v.1	19990209	Product data sheet	-	-

## 15. Legal information

### 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 <https://www.nexperia.com>.

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Contents

1. General description..... 1

2. Features and benefits..... 1

3. Applications..... 1

4. Quick reference data..... 1

5. Pinning information..... 1

6. Ordering information..... 2

7. Marking..... 2

8. Limiting values..... 2

9. Thermal characteristics..... 2

10. Characteristics..... 3

11. Test information..... 4

12. Package outline..... 5

13. Soldering..... 6

14. Revision history..... 7

15. Legal information..... 8

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