



# 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	$T_{amb} = 25\text{ °C}$	[1]	-	300	mW
$V_F$	forward voltage	$I_F = 200\text{ mA}; T_j = 25\text{ °C}$	-	-	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

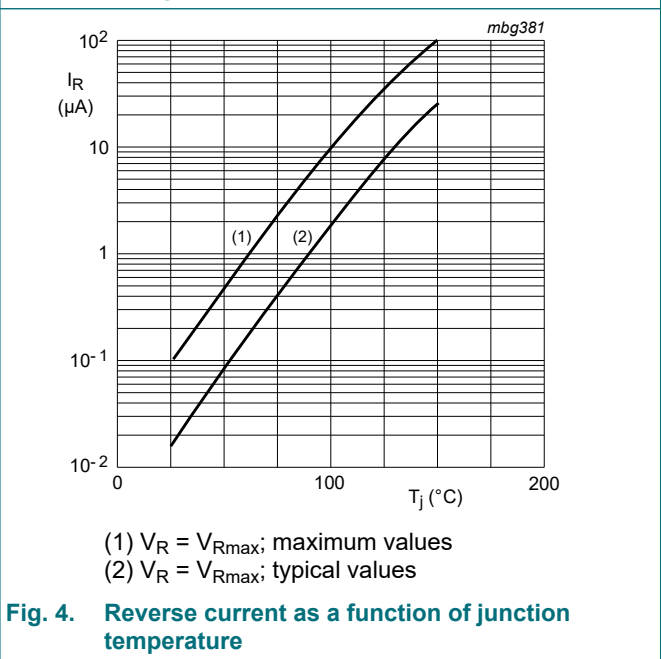
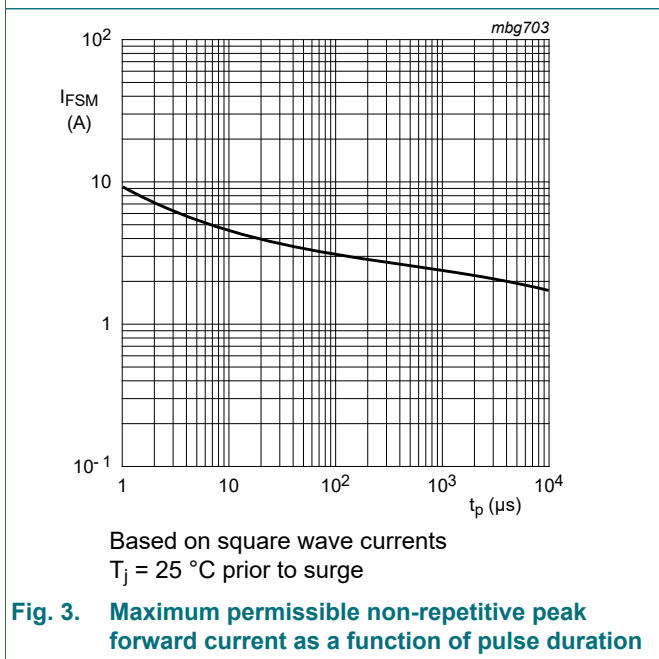
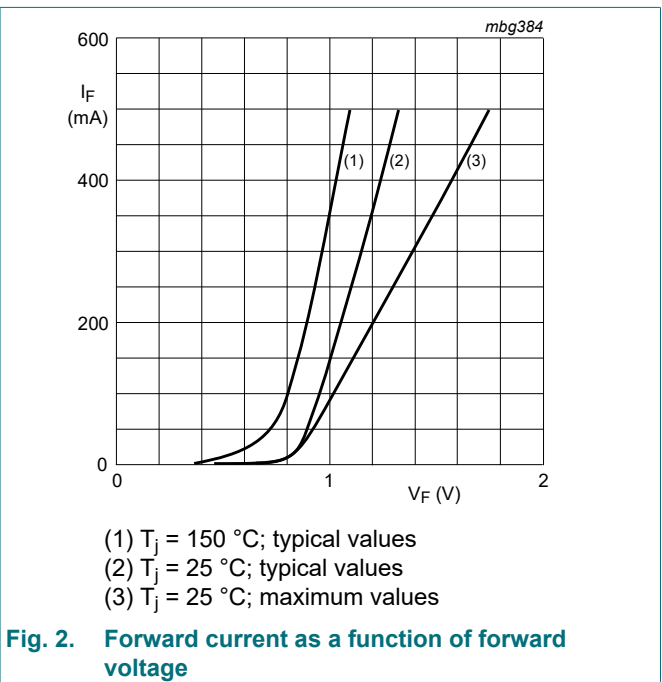
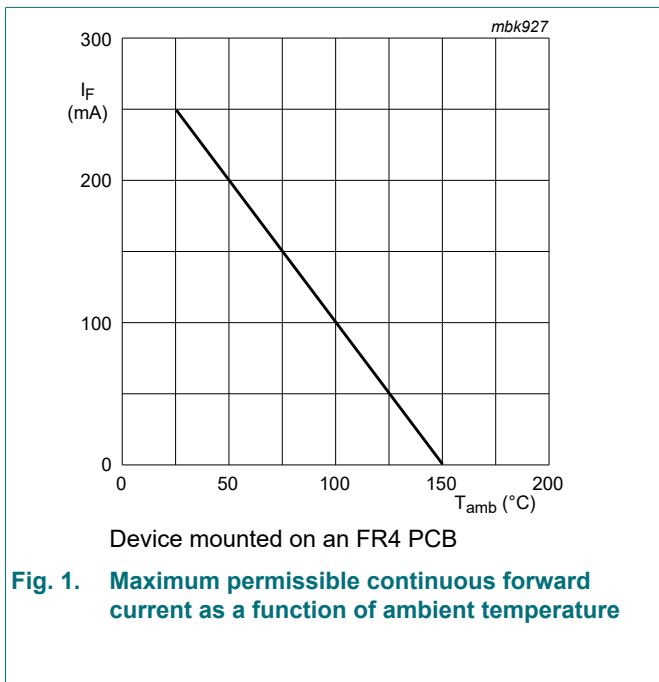
[1] Device mounted on an FR4 Printed-Circuit Board (PCB), single-sided copper, tin-plated and standard footprint.

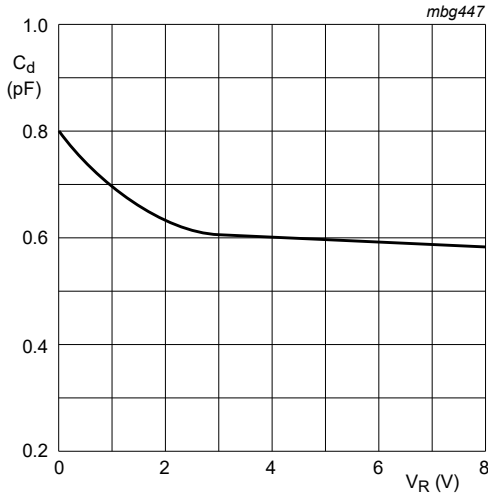
[2] Soldering point of cathode tab.

## 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





f = 1 MHz  
T<sub>j</sub> = 25 °C.

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

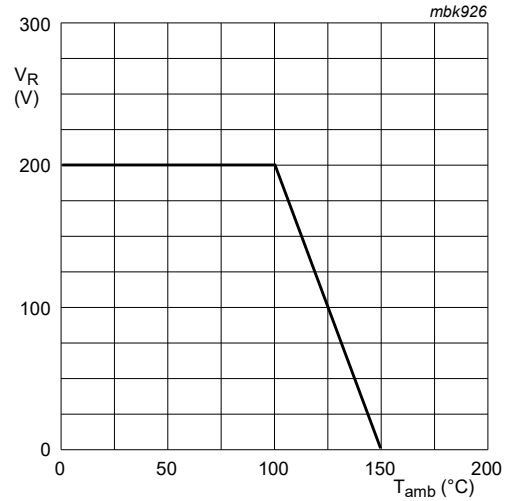
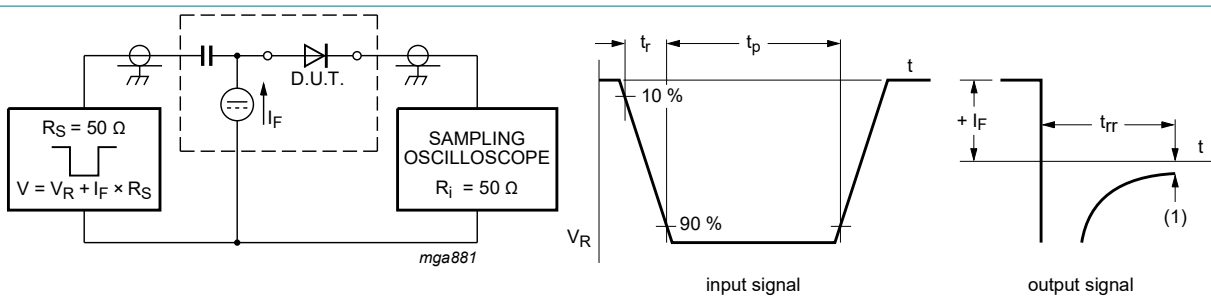


Fig. 6. Maximum permissible continuous reverse voltage as a function of the ambient temperature

## 11. Test information



(1)  $I_R = 3 \text{ mA}$

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

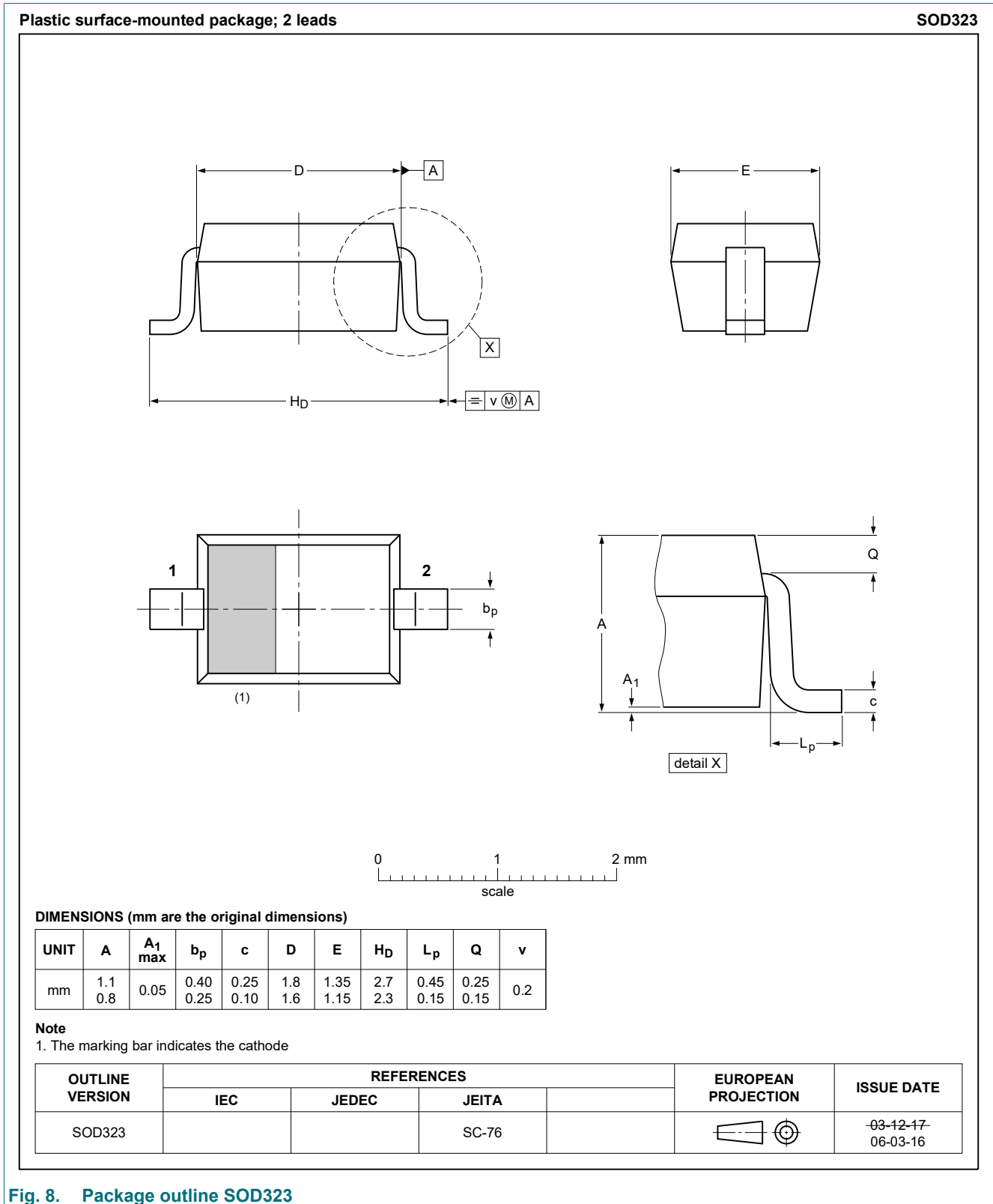
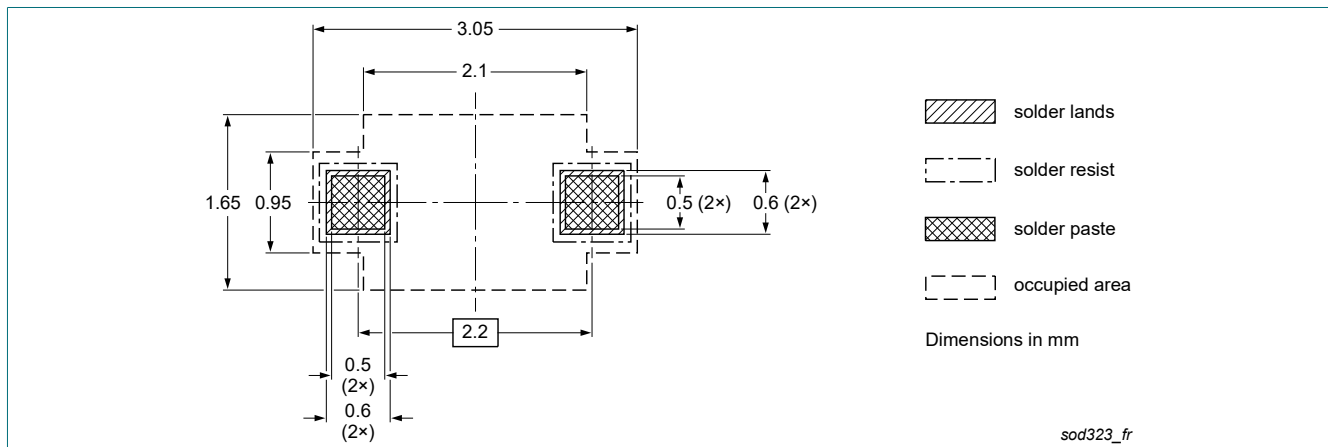
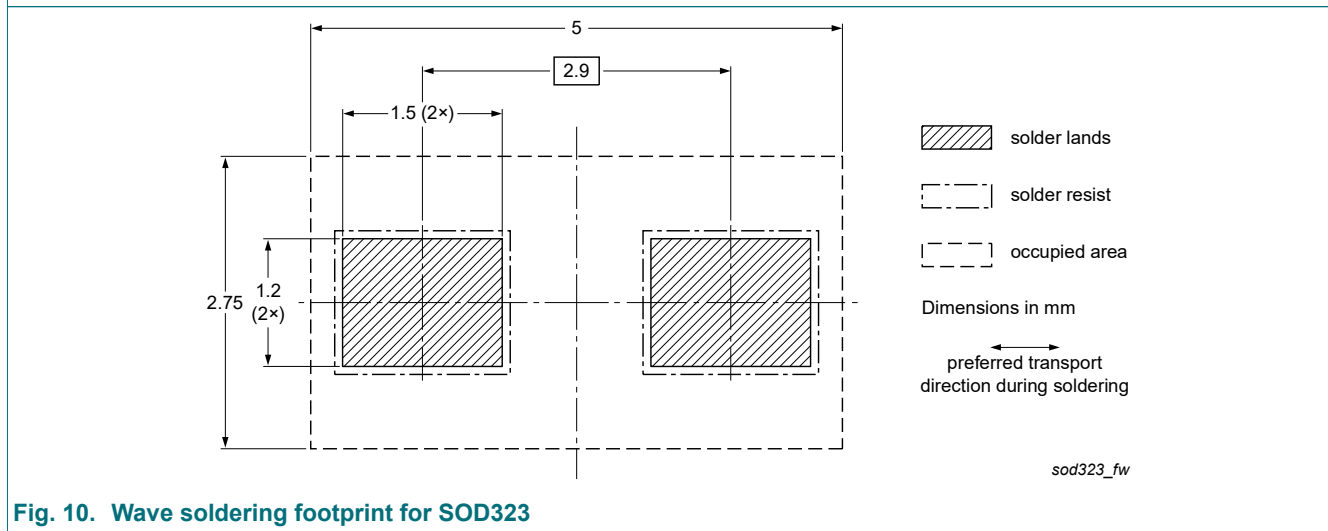


Fig. 8. Package outline SOD323

### 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".
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