



# BAS321-Q

General purpose diode

29 January 2025

Product data sheet

## 1. General description

General purpose diode fabricated in planar technology and encapsulated in a very small SOD323 (SC-76) plastic 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
- Qualified according to AEC-Q101 and recommended for use in automotive applications

## 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
$t_{rr}$	reverse recovery time	$I_F = 30 \text{ mA}; I_R = 30 \text{ mA}; R_L = 100 \Omega; I_{R(meas)} = 3 \text{ mA}; T_j = 25 \text{ }^{\circ}\text{C}$		-	-	50	ns

[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		
2	A	Anode		

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## 6. Ordering information

**Table 3. Ordering information**

Type number	Package		
	Name	Description	Version
BAS321-Q	SOD323	plastic, surface-mounted package; 2 leads; 1.3 mm pitch; 1.7 mm x 1.25 mm x 0.95 mm body	SOD323

## 7. Marking

**Table 4. Marking codes**

Type number	Marking code
BAS321-Q	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	$t_p = 50 \mu s$ ; square wave; $T_{j(init)} = 25^\circ C$		-	14.1	A
		$t_p = 10 ms$ ; square wave; $T_{j(init)} = 25^\circ C$		-	1.8	A
$I_{FRM}$	repetitive peak forward current	$t_p \leq 0.5 ms$ ; $\delta \leq 0.25$		-	625	mA
$P_{tot}$	total power dissipation	$T_{amb} = 25^\circ C$	[1]	-	300	mW
$T_j$	junction temperature			-	150	°C
$T_{stg}$	storage temperature			-65	150	°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

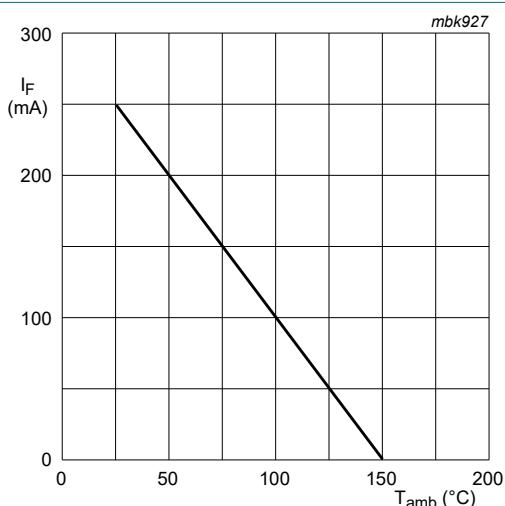
[1] Device mounted on an FR4 Printed-Circuit Board (PCB), single-sided copper, tin-plated and standard footprint.

[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	μA
$C_d$	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	$I_F = 30 \text{ mA}; I_R = 30 \text{ mA}; R_L = 100 \Omega$ $I_{R(meas)} = 3 \text{ mA}; T_j = 25 \text{ }^\circ\text{C}$	-	-	50	ns



Device mounted on an FR4 PCB

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

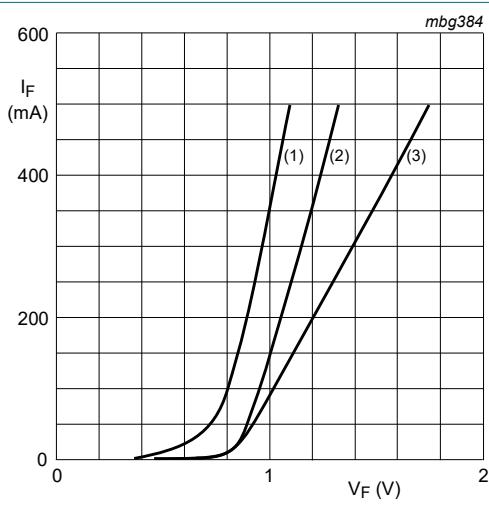
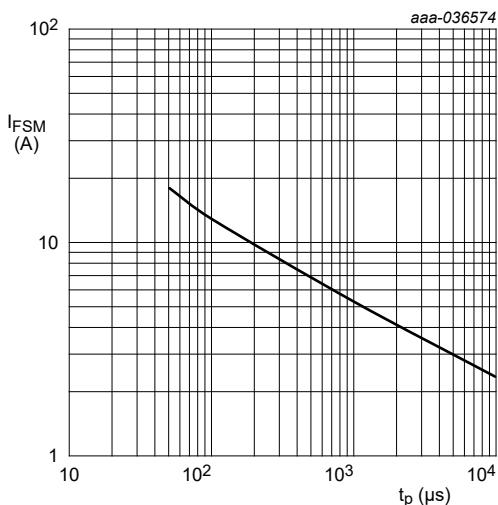


Fig. 2. Forward current as a function of forward voltage



Based on square wave currents.  
 $T_{j(init)} = 25 \text{ }^\circ\text{C}$

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

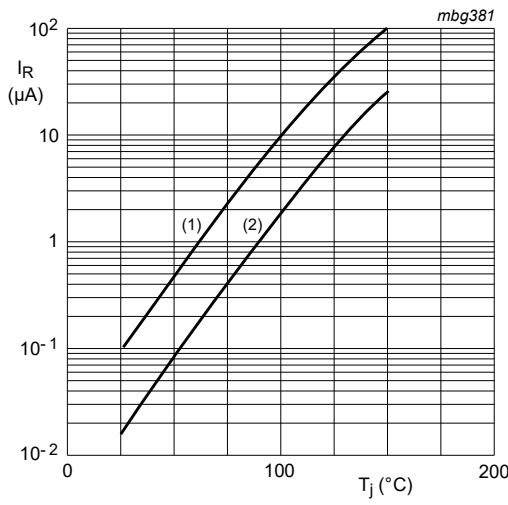
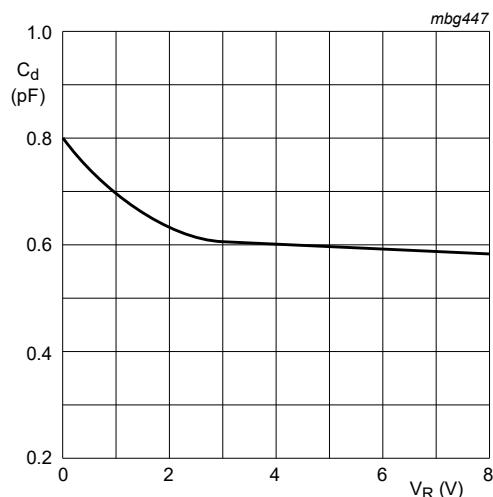


Fig. 4. Reverse current as a function of junction temperature



$f = 1 \text{ MHz}$   
 $T_j = 25^\circ\text{C}$

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

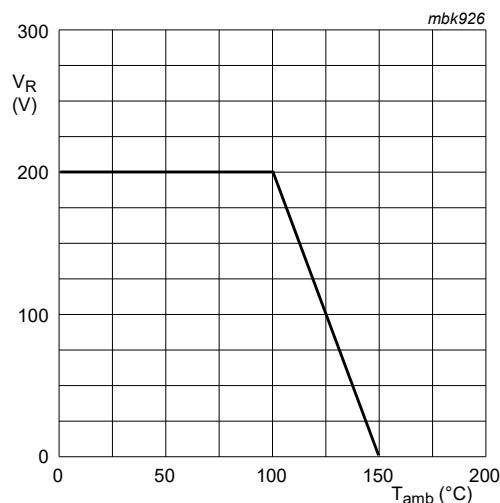


Fig. 6. Maximum permissible continuous reverse voltage as a function of the ambient temperature

## 11. Test information

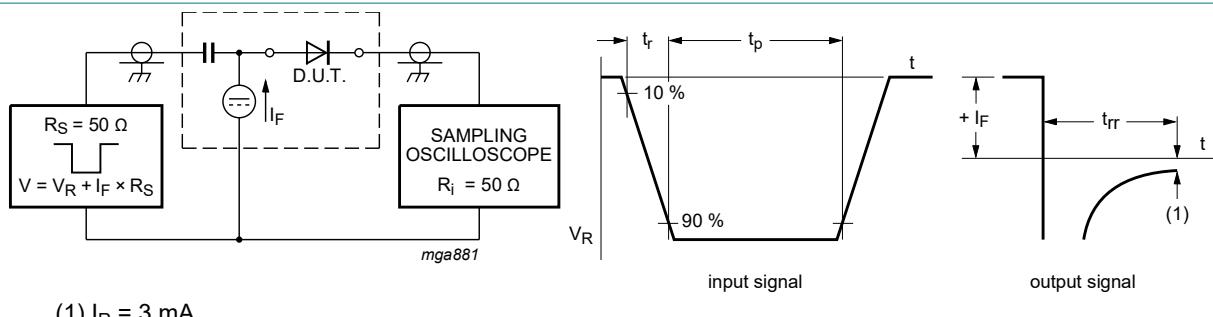


Fig. 7. Reverse recovery time test circuit and waveforms

### 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

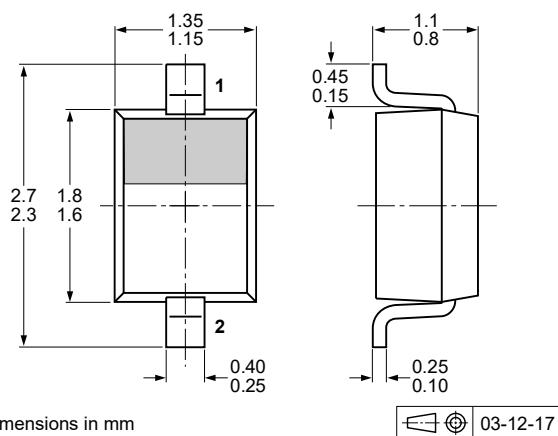


Fig. 8. Package outline SOD323

## 13. Soldering

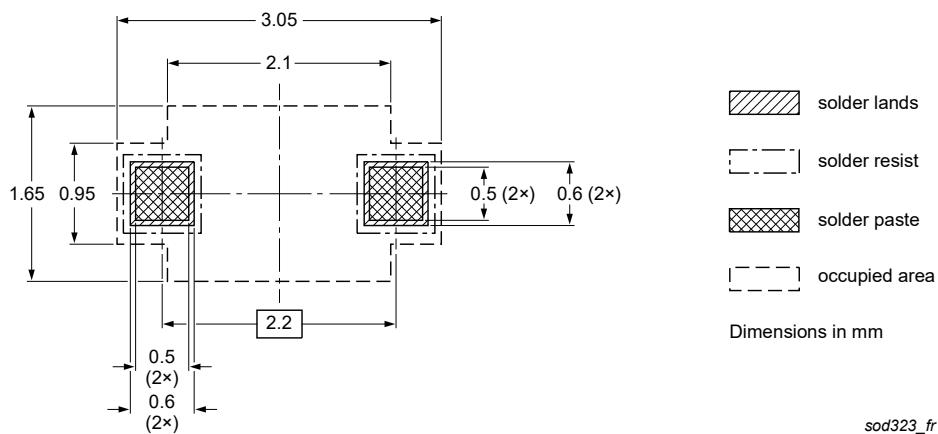


Fig. 9. Reflow soldering footprint for SOD323

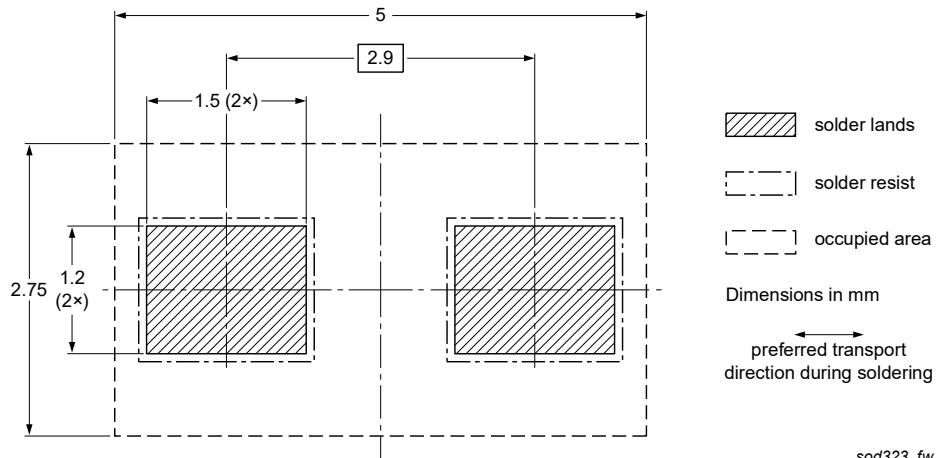


Fig. 10. Wave soldering footprint for SOD323

## 14. Revision history

**Table 8. Revision history**

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
BAS321-Q v.2	20250129	Product data sheet	-	BAS321-Q v.1
Modifications:	<ul style="list-style-type: none"><li>Limiting values: <math>I_{F5M}</math> values changed</li><li>Characteristics Fig. 3: Graph changed</li></ul>			
BAS321-Q v.1	20210602	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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