BAS21J

Single high-speed switching diode

Rev. 01 — 8 March 2007 Product data sheet

1. Product profile

1.1 General description

Single high-speed switching diode, encapsulated in a SOD323F (SC-90) very small and flat lead Surface-Mounted Device (SMD) plastic package.

1.2 Features

- High switching speed: $t_{rr} \leq 50$ ns
- Low leakage current
- Repetitive peak reverse voltage: $V_{RRM} \leq 300$ V
- Excellent coplanarity and improved thermal behavior
- Low capacitance: $C_d \leq 2$ pF
- Reverse voltage: $V_R \leq 300$ V
- Very small and flat lead SMD plastic package

1.3 Applications

- High-speed switching
- General-purpose switching
- Voltage clamping
- Reverse polarity protection

1.4 Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
I_F	forward current		[1]	-	-	250	mA
I_R	reverse current	V_R = 250 V		-	-	150	nA
V_R	reverse voltage			-	-	300	V
t_{rr}	reverse recovery time		[2]	-	-	50	ns

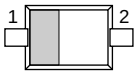
[1] Pulse test: $t_p \leq 300$ µs; $\delta \leq 0.02$.

[2] When switched from I_F = 30 mA to I_R = 30 mA; R_L = 100 Ω; measured at I_R = 3 mA.

nexperia

2. Pinning information

Table 2. Pinning

Pin	Description	Simplified outline	Symbol
1	cathode [1]		 sym006
2	anode		

[1] The marking bar indicates the cathode.

3. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
BAS21J	SC-90	plastic surface-mounted package; 2 leads	SOD323F

4. Marking

Table 4. Marking codes

Type number	Marking code
BAS21J	AN

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			-	300	V
V_R	reverse voltage			-	300	V
I_F	forward current		[1]	-	250	mA
I_{FRM}	repetitive peak forward current	$t_p \leq 0.5$ ms; $\delta \leq 0.25$		-	1	A
I_{FSM}	non-repetitive peak forward current	square wave	[2]			
		$t_p = 100$ µs		-	3	A
		$t_p = 1$ ms		-	2.3	A
		$t_p = 10$ ms		-	1.7	A
P_{tot}	total power dissipation	$T_{amb} \leq 25$ °C	[3][4]	-	550	mW
T_j	junction temperature			-	150	°C
T_{amb}	ambient temperature			–65	+150	°C
T_{stg}	storage temperature			–65	+150	°C

[1] Pulse test: $t_p \leq 300$ µs; $\delta \leq 0.02$.

[2] $T_j = 25$ °C prior to surge.

[3] Device mounted on an FR4 Printed-Circuit Board (PCB), single-sided copper, tin-plated, mounting pad for cathode 1 cm^2.

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

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]	-	-	230	K/W
$R_{th(j-sp)}$	thermal resistance from junction to solder point		[3]	-	-	55	K/W

[1] Device mounted on an FR4 PCB, single-sided copper, tin-plated, mounting pad for cathode 1 cm^2.

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

[3] Soldering point of cathode tab.

7. Characteristics

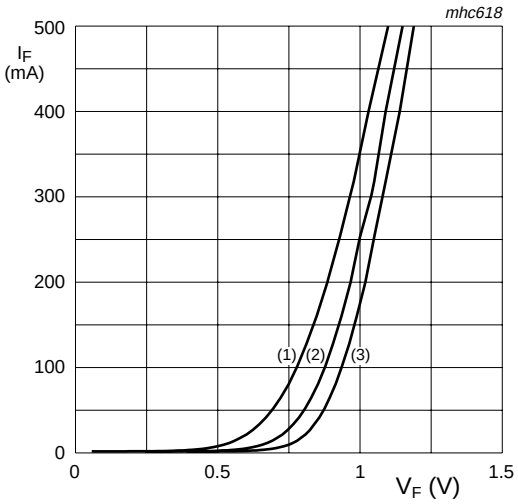
Table 7. Characteristics

T_{amb} = 25 °C unless otherwise specified.

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
V_F	forward voltage	I_F = 100 mA	[1]	-	-	1.1	V
I_R	reverse current	V_R = 250 V		-	-	150	nA
		V_R = 250 V; T_j = 150 °C		-	-	50	µA
C_d	diode capacitance	V_R = 0 V; f = 1 MHz		-	-	2	pF
t_{rr}	reverse recovery time		[2]	-	-	50	ns

[1] Pulse test: $t_p \leq 300$ µs; $\delta \leq 0.02$.

[2] When switched from I_F = 30 mA to I_R = 30 mA; R_L = 100 Ω; measured at I_R = 3 mA.

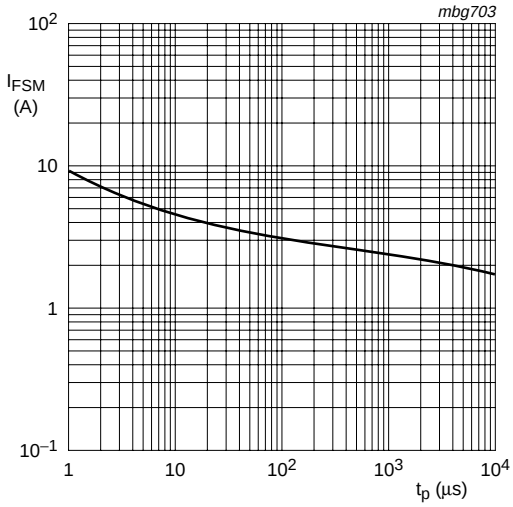


(1) T_{amb} = 150 °C

(2) T_{amb} = 75 °C

(3) T_{amb} = 25 °C

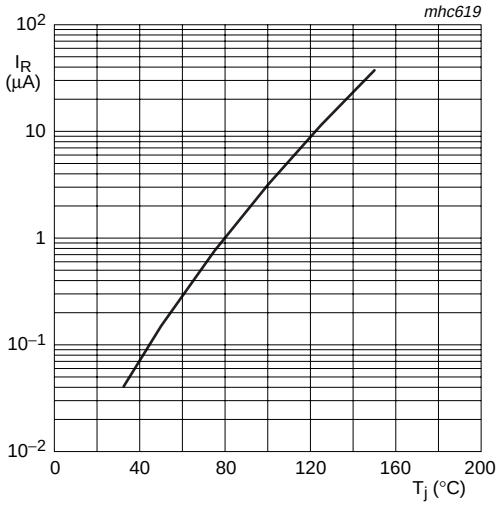
Fig 1. Forward current as a function of forward voltage; typical values



Based on square wave currents.

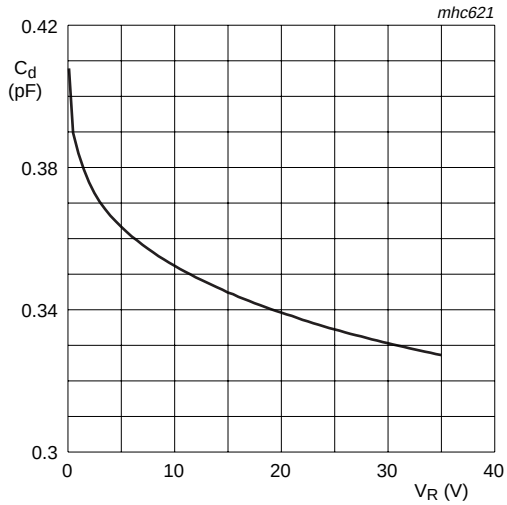
T_j = 25 °C; prior to surge

Fig 2. Non-repetitive peak forward current as a function of pulse duration; maximum values



V_R = 250 V

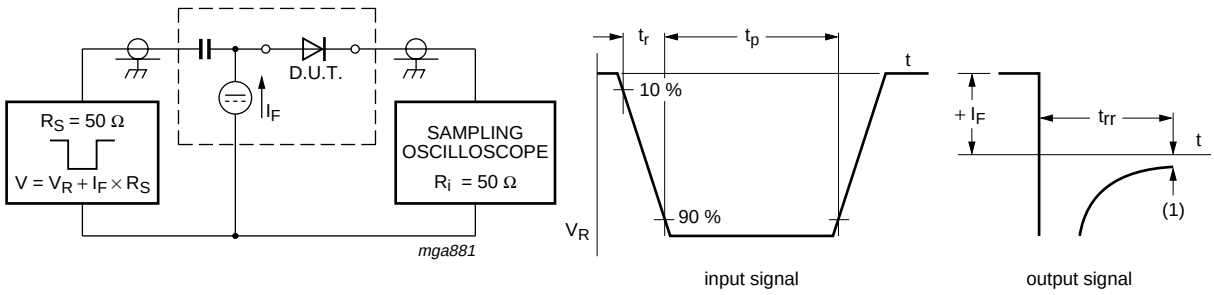
Fig 3. Reverse current as a function of junction temperature; typical values



f = 1 MHz; T_{amb} = 25 °C

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

8. Test information



(1) I_R = 1 mA

Input signal: reverse pulse rise time t_r = 0.6 ns; reverse voltage pulse duration t_p = 100 ns; duty cycle δ = 0.05

Oscilloscope: rise time t_r = 0.35 ns

Fig 5. Reverse recovery time test circuit and waveforms

9. Package outline

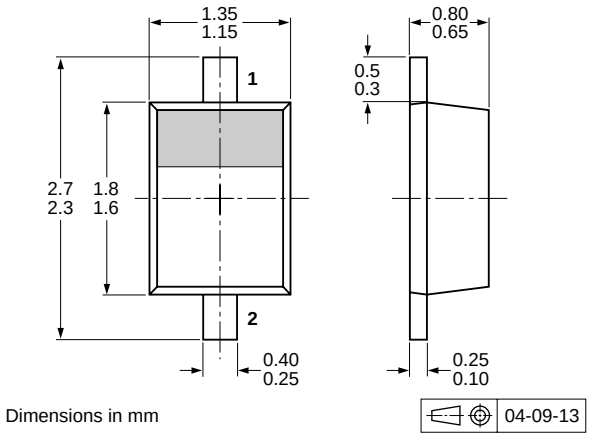
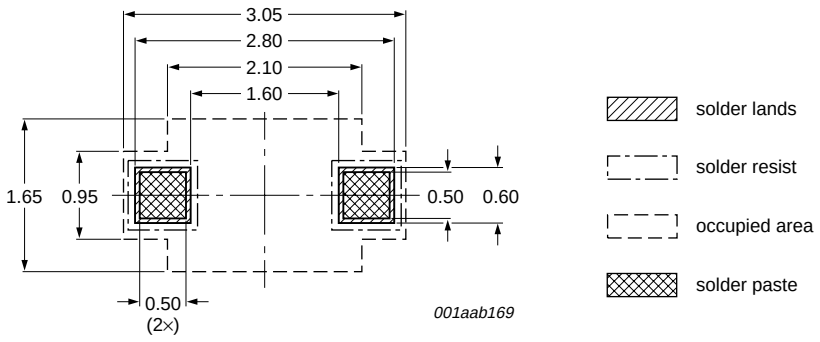


Fig 6. Package outline SOD323F (SC-90)

10. Packing information

Please refer to packing information on www.nexperia.com.

11. Soldering



Reflow soldering is the only recommended soldering method.

Dimensions in mm

Fig 7. Reflow soldering footprint SOD323F (SC-90)

12. Revision history

Table 9. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
BAS21J_1	20070308	Product data sheet	-	-

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.nexperia.com.

13.2 Definitions

Draft — The document is a draft version only. The content is still under internal review and subject to formal approval, which may result in modifications or additions. Nexperia does not give any representations or warranties as to the accuracy or completeness of information included herein and shall have no liability for the consequences of use of such information.

Short data sheet — A short data sheet is an extract from a full data sheet with the same product type number(s) and title. A short data sheet is intended for quick reference only and should not be relied upon to contain detailed and full information. For detailed and full information see the relevant full data sheet, which is available on request via the local Nexperia sales office. In case of any inconsistency or conflict with the short data sheet, the full data sheet shall prevail.

13.3 Disclaimers

General — Information in this document is believed to be accurate and reliable. However, Nexperia does not give any representations or warranties, expressed or implied, as to the accuracy or completeness of such information and shall have no liability for the consequences of use of such information.

Right to make changes — Nexperia reserves the right to make changes to information published in this document, including without limitation specifications and product descriptions, at any time and without notice. This document supersedes and replaces all information supplied prior to the publication hereof.

Suitability for use — Nexperia products are not designed, authorized or warranted to be suitable for use in medical, military, aircraft, space or life support equipment, nor in applications where failure or malfunction of a Nexperia product can reasonably be expected to result in personal injury, death or severe property or environmental damage. Nexperia accepts no liability for inclusion and/or use of Nexperia products in such equipment or applications and therefore such inclusion and/or use is at the customer's own risk.

Applications — Applications that are described herein for any of these products are for illustrative purposes only. Nexperia makes no representation or warranty that such applications will be suitable for the specified use without further testing or modification.

Limiting values — Stress above one or more limiting values (as defined in the Absolute Maximum Ratings System of IEC 60134) may cause permanent damage to the device. Limiting values are stress ratings only and operation of the device at these or any other conditions above those given in the Characteristics sections of this document is not implied. Exposure to limiting values for extended periods may affect device reliability.

Terms and conditions of sale — Nexperia products are sold subject to the general terms and conditions of commercial sale, as published at http://www.nexperia.com/profile/terms, including those pertaining to warranty, intellectual property rights infringement and limitation of liability, unless explicitly otherwise agreed to in writing by Nexperia. In case of any inconsistency or conflict between information in this document and such terms and conditions, the latter will prevail.

No offer to sell or license — Nothing in this document may be interpreted or construed as an offer to sell products that is open for acceptance or the grant, conveyance or implication of any license under any copyrights, patents or other industrial or intellectual property rights.

13.4 Trademarks

Notice: All referenced brands, product names, service names and trademarks are the property of their respective owners.

14. Contents

For more information, please visit: http://www.nexperia.com
For sales office addresses, please send an email to:
salesaddresses@nexperia.com

Date of release: 8 March 2007
Document identifier: BAS21J

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for Diodes - General Purpose, Power, Switching ***category:***

Click to view products by Nexperia ***manufacturer:***

Other Similar products are found below :

RD0306T-H BAV17-TR BAV19-TR 1N3611 NTE156A NTE525 NTE571 NTE5804 NTE5806 NTE6244 1SS181-TP 1SS193,LF 1SS400CST2RA SDAA13 SHN2D02FUTW1T1G LS4151GS08 1N4449 1N456A 1N4934-E3/73 1N914B 1N914BTR RFUH20TB3S BAS 28 E6327 BAV199-TP BAW56DWQ-7-F BAW75-TAP MM230L-CAA IDW40E65D1 JAN1N3600 LL4151-GS18 053684A SMMSD4148T3G 707803H NSVDAN222T1G SP000010217 CDSZC01100-HF BAV199E6433HTMA1 BAV70M3T5G SMBT2001T1G NTE5801 NTE5800 NTE5808 NTE6240 NTE6248 DLM10C-AT1 BAS28-7 BAW56HDW-13 BAS28 TR VS-HFA04SD60STR-M3 NSVM1MA152WKT1G