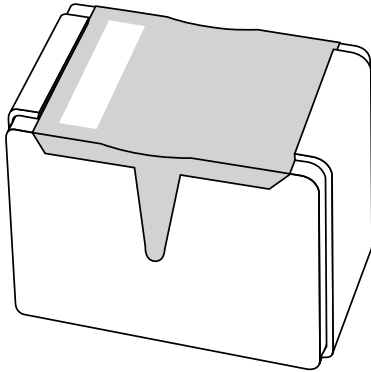


# DATA SHEET



## **BAS221** General purpose diode

Product specification  
Supersedes data of 1999 Apr 26

1999 May 07

General purpose diode

BAS221

FEATURES

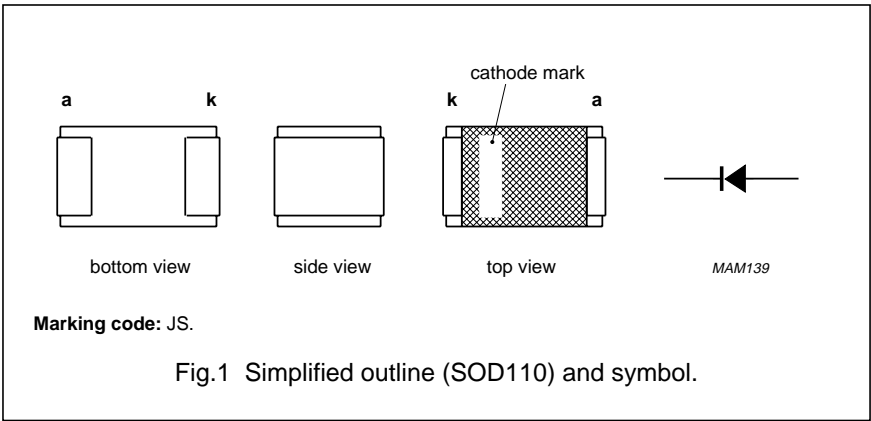
- Small ceramic SMD package
- Switching speed: max. 50 ns
- General application
- Continuous reverse voltage: max. 200 V
- Repetitive peak reverse voltage: max. 250 V
- Repetitive peak forward current: max. 1 A.

APPLICATIONS

- General purpose switching in e.g. surface mounted circuits.

DESCRIPTION

The BAS221 is a general purpose diode fabricated in planar technology, and encapsulated in the ceramic SOD110 package.



LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$V_{RRM}$	repetitive peak reverse voltage		–	250	V
$V_R$	continuous reverse voltage		–	200	V
$I_F$	continuous forward current	note 1; see Fig.2	–	300	mA
$I_{FRM}$	repetitive peak forward current	$t_p < 0.5\text{ ms}$ ; $\delta \leq 0.25$	–	1	A
$I_{FSM}$	non-repetitive peak forward current	square wave; $T_j = 25\text{ °C}$ prior to surge; see Fig.4			
		$t = 1\text{ }\mu\text{s}$	–	20	A
		$t = 100\text{ }\mu\text{s}$	–	7	A
		$t = 10\text{ ms}$	–	2	A
$P_{tot}$	total power dissipation	$T_{amb} = 25\text{ °C}$ ; note 1	–	400	mW
$T_{stg}$	storage temperature		–65	+150	°C
$T_j$	junction temperature		–	150	°C

Note

1. Device mounted on an FR4 printed-circuit board.

## General purpose diode

## BAS221

## THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j-tp}$	thermal resistance from junction to tie-point		200	K/W
$R_{th\ j-a}$	thermal resistance from junction to ambient	note 1	315	K/W

## Note

1. Device mounted on an FR4 printed-circuit board.

## ELECTRICAL CHARACTERISTICS

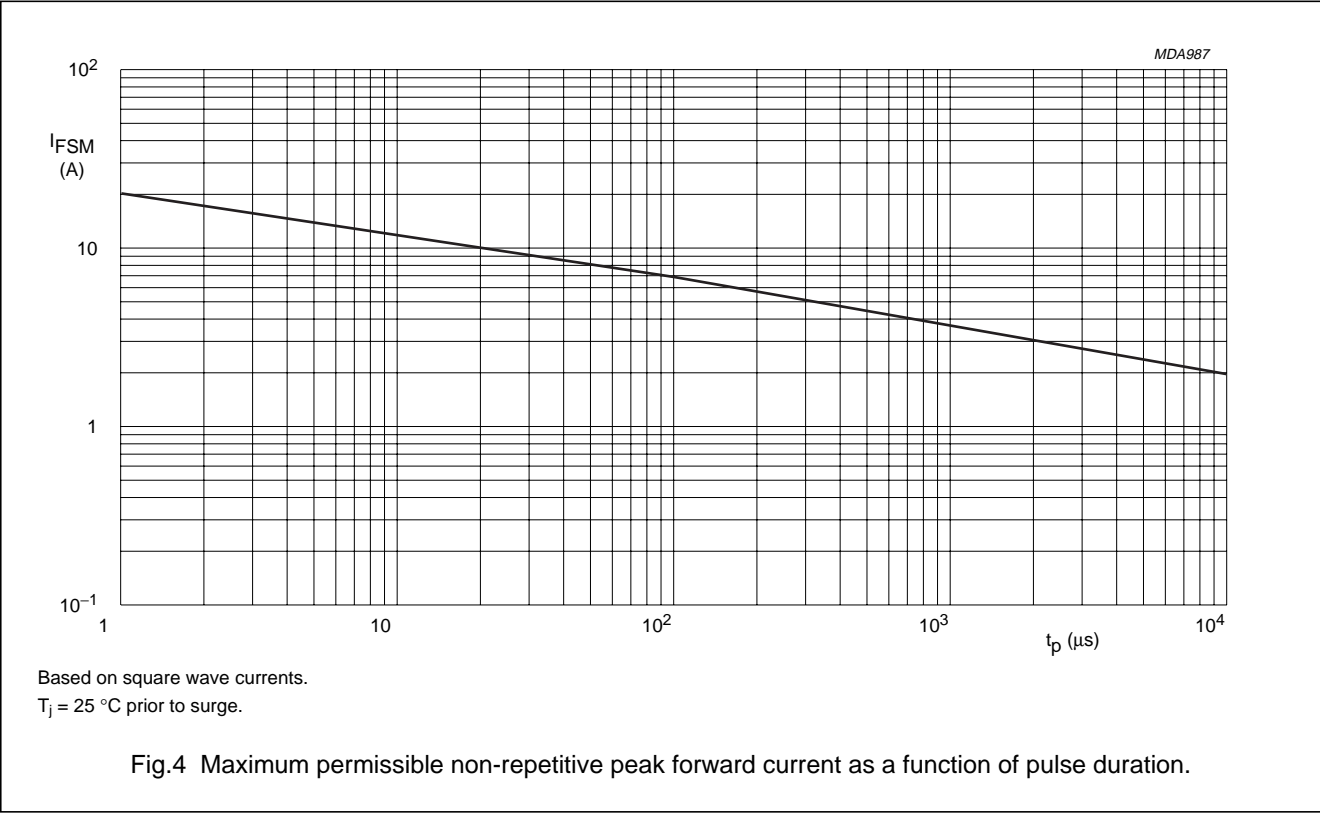
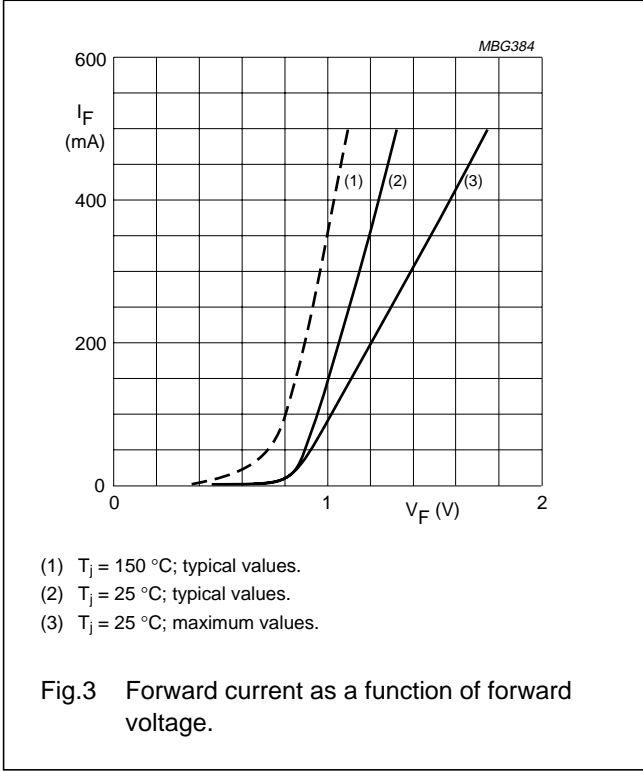
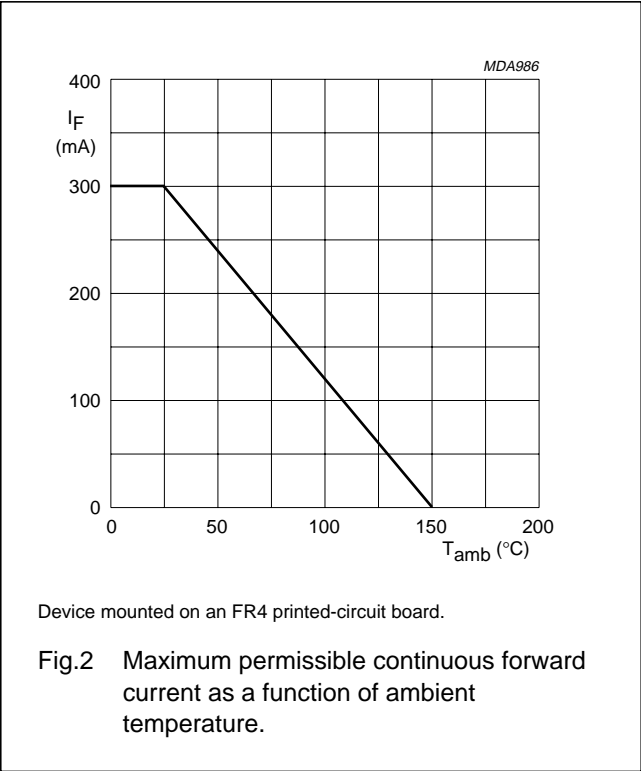
$T_j = 25\ ^\circ\text{C}$  unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MAX.	UNIT
$V_F$	forward voltage	see Fig.3 $I_F = 100\ \text{mA}$ $I_F = 200\ \text{mA}$ $I_F = 300\ \text{mA}$	1 1.25 1.4	V V V
$I_R$	reverse current	see Fig.5 $V_R = 200\ \text{V}$ $V_R = 200\ \text{V}; T_j = 150\ ^\circ\text{C}$	100 100	nA $\mu\text{A}$
$C_d$	diode capacitance	$f = 1\ \text{MHz}; V_R = 0$ ; see Fig.6	2	pF
$t_{rr}$	reverse recovery time	when switched from $I_F = 30\ \text{mA}$ to $I_R = 30\ \text{mA}$ ; $R_L = 100\ \Omega$ ; measured at $I_R = 3\ \text{mA}$ ; see Fig.7	50	ns

General purpose diode

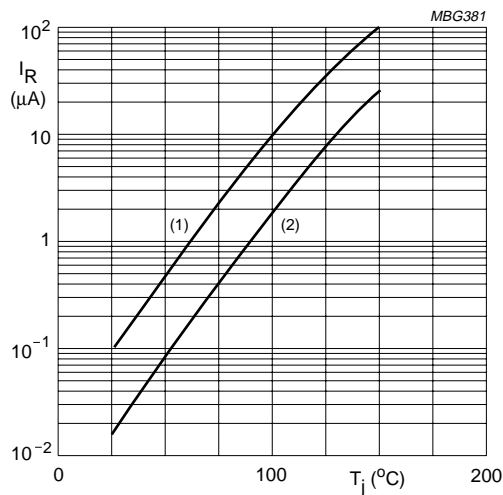
BAS221

GRAPHICAL DATA



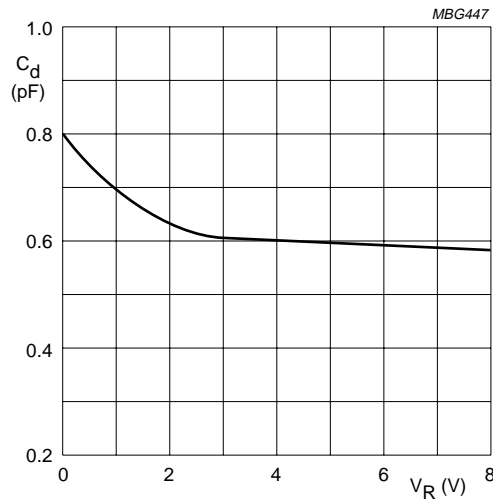
General purpose diode

BAS221



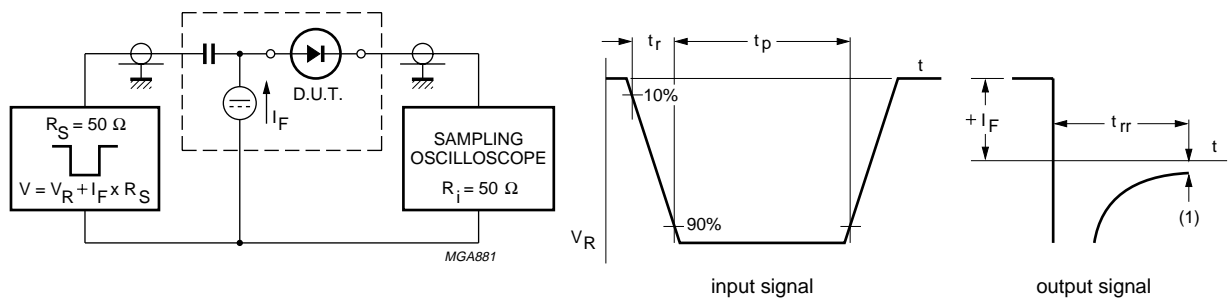
- (1)  $V_R = V_{Rmax}$ ; maximum values.
- (2)  $V_R = V_{Rmax}$ ; typical values.

Fig.5 Reverse current as a function of junction temperature.



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

Fig.6 Diode capacitance as a function of reverse voltage; typical values.



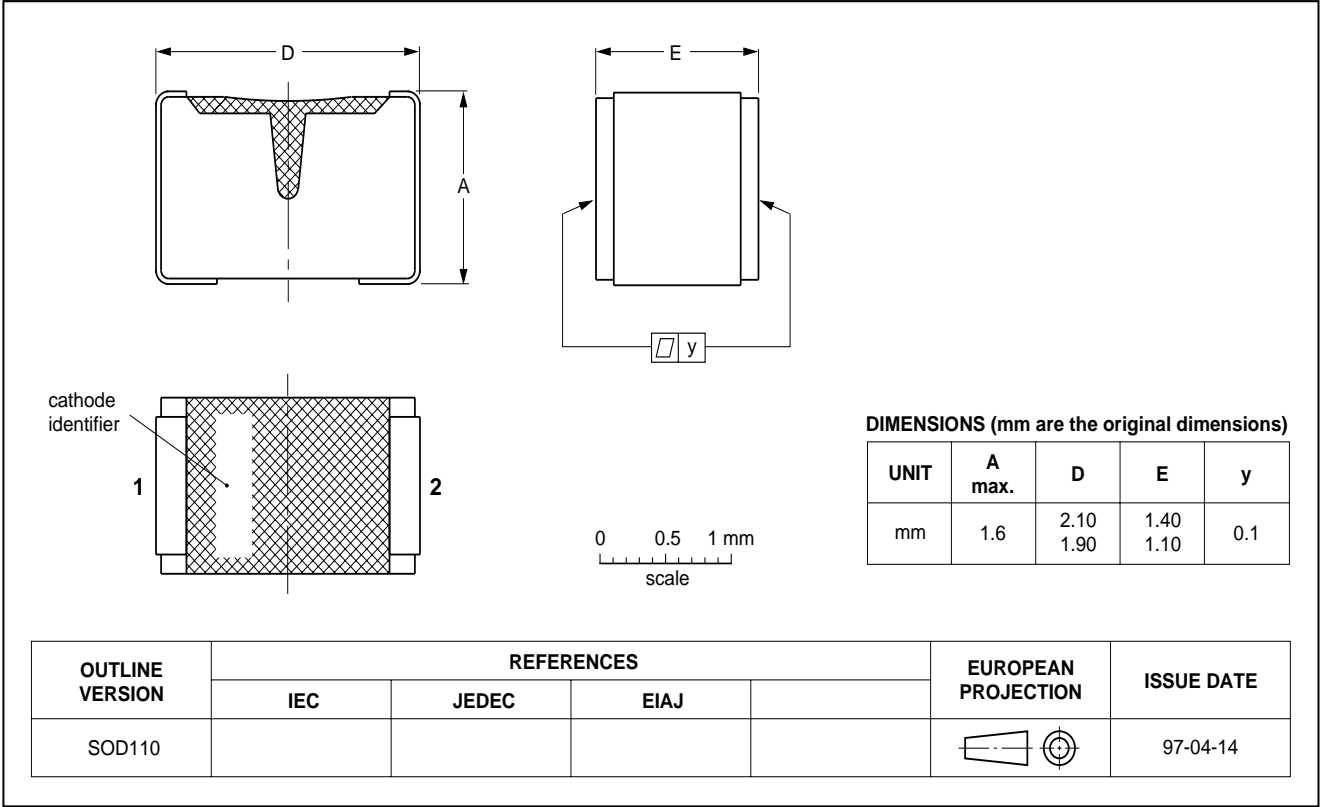
- (1)  $I_R = 3\text{ mA}$ .
- Input signal: reverse pulse rise time  $t_r = 0.6\text{ ns}$ ; reverse voltage pulse duration  $t_p = 100\text{ ns}$ ; duty factor  $\delta = 0.05$ .
- Oscilloscope: rise time  $t_r = 0.35\text{ ns}$ .
- Circuit capacitance  $C \leq 1\text{ pF}$  (oscilloscope input + parasitic capacitance).

Fig.7 Reverse recovery time and waveforms.

General purpose diode

BAS221

PACKAGE OUTLINE



DEFINITIONS

Data Sheet Status	
Objective specification	This data sheet contains target or goal specifications for product development.
Preliminary specification	This data sheet contains preliminary data; supplementary data may be published later.
Product specification	This data sheet contains final product specifications.
Limiting values	
Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability.	
Application information	
Where application information is given, it is advisory and does not form part of the specification.	

LIFE SUPPORT APPLICATIONS

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General purpose diode

BAS221

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