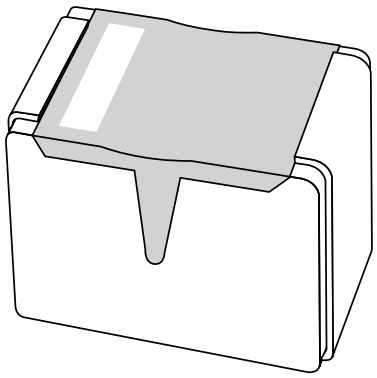
DATA SHEET



BAS221
General purpose diode

Product specification
Supersedes data of 1999 May 07

2002 May 28

Philips
Semiconductors

PHILIPS

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, encapsulated in a SOD110 very small ceramic SMD package.

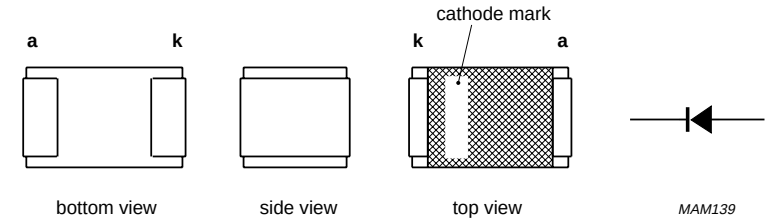


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Fig.1 Simplified outline (SOD110) and symbol.

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	continuous reverse voltage		–	200	V
I_F	continuous forward current	note 1; see Fig.2	–	300	mA
I_{FRM}	repetitive peak forward current	$t_p < 0.5$ ms; $\delta \leq 0.25$	–	1	A
I_{FSM}	non-repetitive peak forward current	square wave; T_j = 25 °C prior to surge; see Fig.4			
		t = 1 µs	–	20	A
		t = 100 µs	–	7	A
		t = 10 ms	–	2	A
P_{tot}	total power dissipation	T_{amb} = 25 °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.

THERMAL CHARACTERISTICS

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

Note

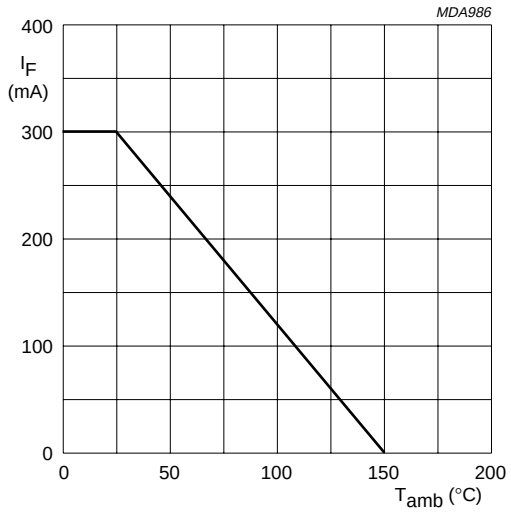
1. Device mounted on an FR4 printed-circuit board.

ELECTRICAL CHARACTERISTICS

T_j = 25 °C unless otherwise specified.

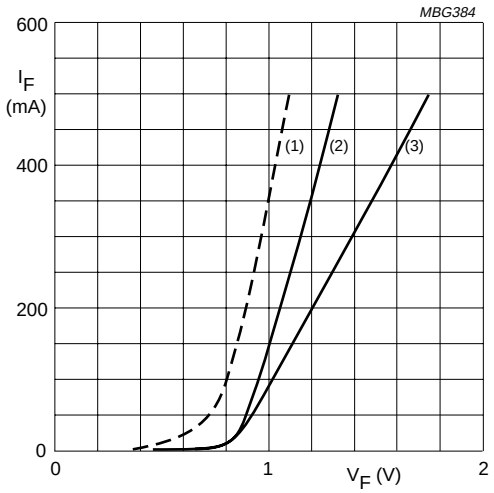
SYMBOL	PARAMETER	CONDITIONS	MAX.	UNIT
V_F	forward voltage	see Fig.3		
		I_F = 100 mA	1	V
		I_F = 200 mA	1.25	V
		I_F = 300 mA	1.4	V
I_R	reverse current	see Fig.5		
		V_R = 200 V	100	nA
		V_R = 200 V; T_j = 150 °C	100	μA
C_d	diode capacitance	f = 1 MHz; V_R = 0; see Fig.6	2	pF
t_{rr}	reverse recovery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

GRAPHICAL DATA



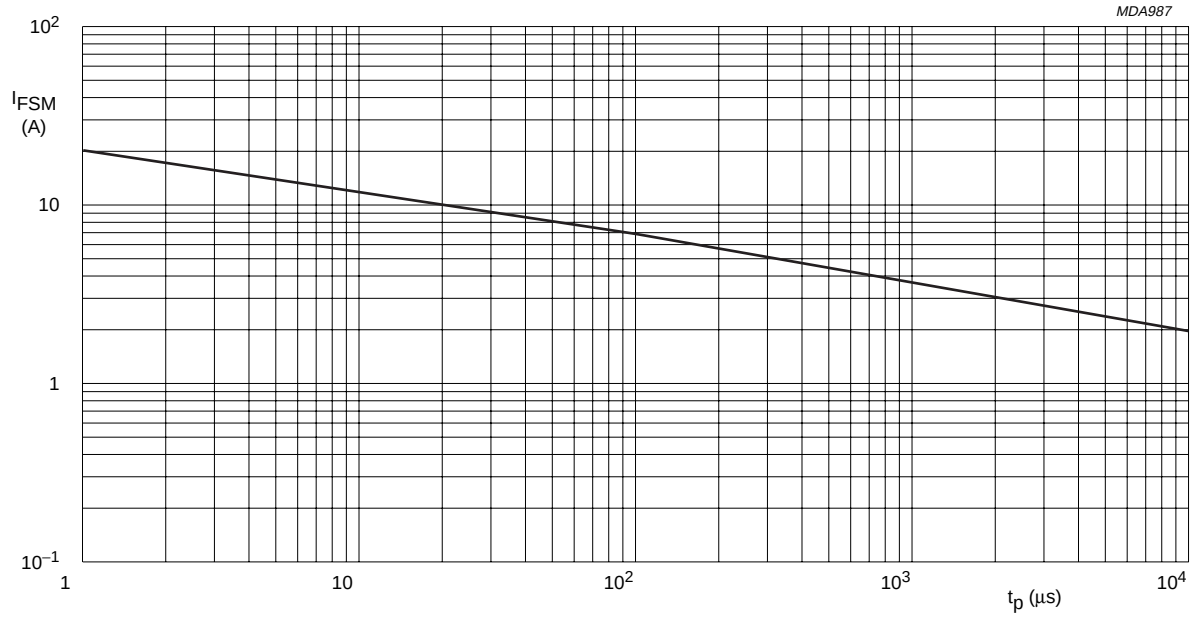
Device mounted on an FR4 printed-circuit board.

Fig.2 Maximum permissible continuous forward current as a function of ambient temperature.



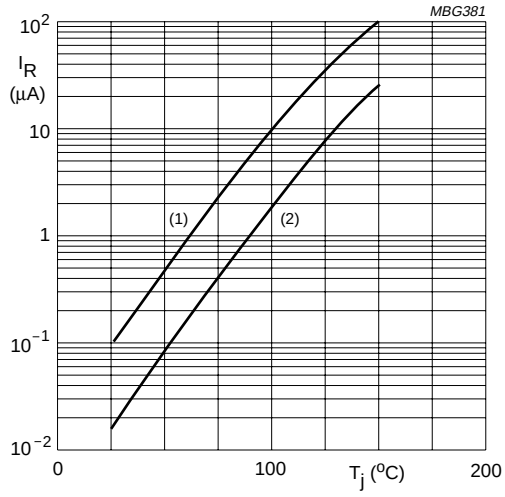
(1) T_j = 150 °C; typical values.
(2) T_j = 25 °C; typical values.
(3) T_j = 25 °C; maximum values.

Fig.3 Forward current as a function of forward voltage.



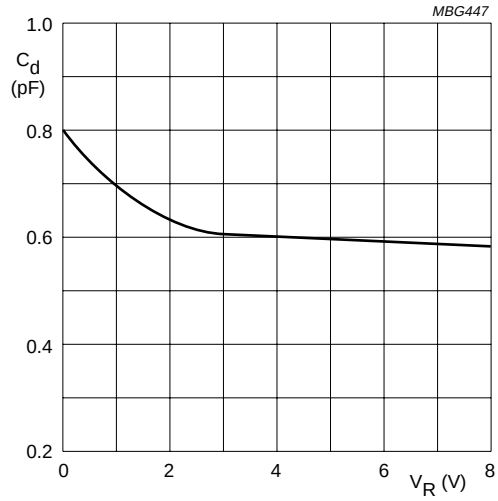
Based on square wave currents.
T_j = 25 °C prior to surge.

Fig.4 Maximum permissible non-repetitive peak forward current as a function of pulse duration.



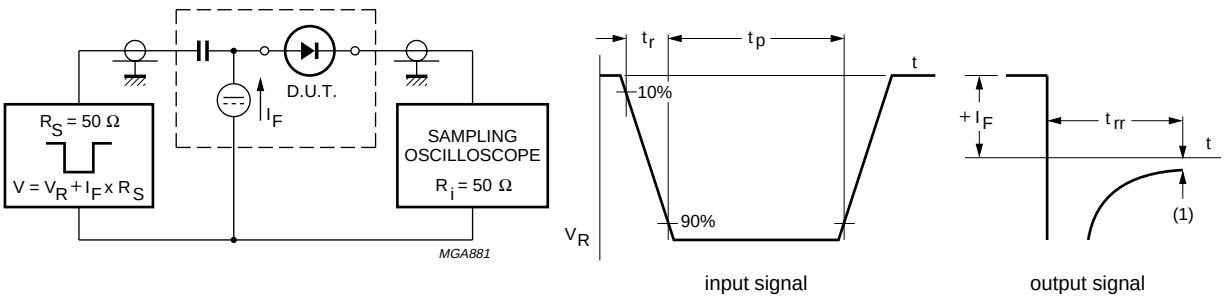
(1) $V_R = V_{Rmax}$; maximum values.
(2) $V_R = V_{Rmax}$; typical values.

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



f = 1 MHz; T_j = 25 °C.

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

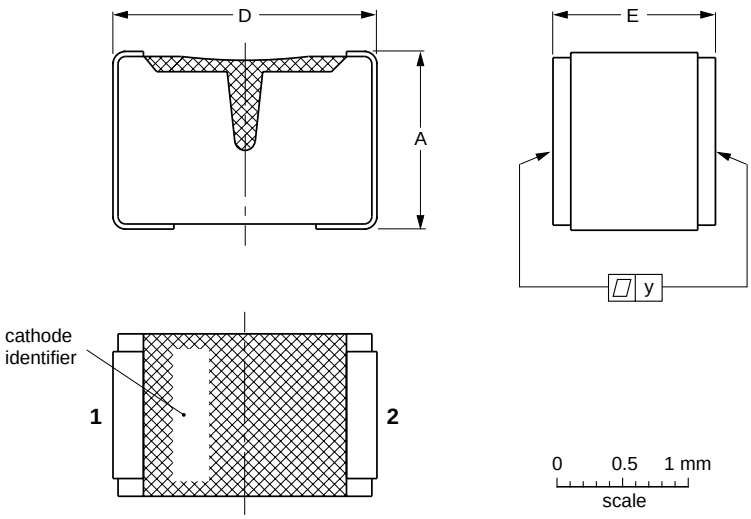


(1) I_R = 3 mA.
Input signal: reverse pulse rise time t_r = 0.6 ns; reverse voltage pulse duration t_p = 100 ns; duty factor δ = 0.05.
Oscilloscope: rise time t_r = 0.35 ns.
Circuit capacitance C ≤ 1 pF (oscilloscope input + parasitic capacitance).

Fig.7 Reverse recovery time and waveforms.

PACKAGE OUTLINE

Very small ceramic rectangular surface mounted package **SOD110**



DIMENSIONS (mm are the original dimensions)

UNIT	A max.	D	E	y
mm	1.6	2.10 1.90	1.40 1.10	0.1

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOD110						97-04-14

DATA SHEET STATUS

DATA SHEET STATUS[1]	PRODUCT STATUS[2]	DEFINITIONS
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