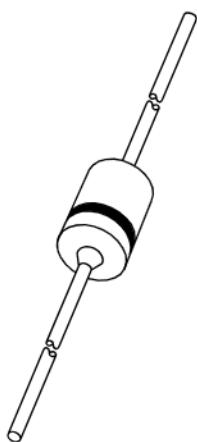


DATA SHEET



1N4148; 1N4448 **High-speed diodes**

Product specification
Supersedes data of 1996 Sep 03

1999 May 25

High-speed diodes**1N4148; 1N4448****FEATURES**

- Hermetically sealed leaded glass SOD27 (DO-35) package
- High switching speed: max. 4 ns
- General application
- Continuous reverse voltage: max. 75 V
- Repetitive peak reverse voltage: max. 75 V
- Repetitive peak forward current: max. 450 mA.

DESCRIPTION

The 1N4148 and 1N4448 are high-speed switching diodes fabricated in planar technology, and encapsulated in hermetically sealed leaded glass SOD27 (DO-35) packages.



MAM246

The diodes are type branded.

Fig.1 Simplified outline (SOD27; DO-35) and symbol.

APPLICATIONS

- High-speed switching.

LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{RRM}	repetitive peak reverse voltage		-	75	V
V_R	continuous reverse voltage		-	75	V
I_F	continuous forward current	see Fig.2; note 1	-	200	mA
I_{FRM}	repetitive peak forward current		-	450	mA
I_{FSM}	non-repetitive peak forward current	square wave; $T_j = 25^\circ\text{C}$ prior to surge; see Fig.4 $t = 1 \mu\text{s}$ $t = 1 \text{ ms}$ $t = 1 \text{ s}$	- - -	4 1 0.5	A A A
P_{tot}	total power dissipation	$T_{amb} = 25^\circ\text{C}$; note 1	-	500	mW
T_{stg}	storage temperature		-65	+200	°C
T_j	junction temperature		-	200	°C

Note

1. Device mounted on an FR4 printed circuit-board; lead length 10 mm.

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_F	forward voltage 1N4148 1N4448	see Fig.3 $I_F = 10 \text{ mA}$ $I_F = 5 \text{ mA}$ $I_F = 100 \text{ mA}$	- 0.62 -	1 0.72 1	V V V
I_R	reverse current	$V_R = 20 \text{ V}$; see Fig.5 $V_R = 20 \text{ V}; T_j = 150^\circ\text{C}$; see Fig.5		25 50	nA μA
I_R	reverse current; 1N4448	$V_R = 20 \text{ V}; T_j = 100^\circ\text{C}$; see Fig.5	-	3	μA
C_d	diode capacitance	$f = 1 \text{ MHz}; V_R = 0$; see Fig.6		4	pF
t_{rr}	reverse recovery time	when switched from $I_F = 10 \text{ mA}$ to $I_R = 60 \text{ mA}; R_L = 100 \Omega$; measured at $I_R = 1 \text{ mA}$; see Fig.7		4	ns
V_{fr}	forward recovery voltage	when switched from $I_F = 50 \text{ mA}$; $t_r = 20 \text{ ns}$; see Fig.8	-	2.5	V

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th j\text{-tp}}$	thermal resistance from junction to tie-point	lead length 10 mm	240	K/W
$R_{th j\text{-a}}$	thermal resistance from junction to ambient	lead length 10 mm; note 1	350	K/W

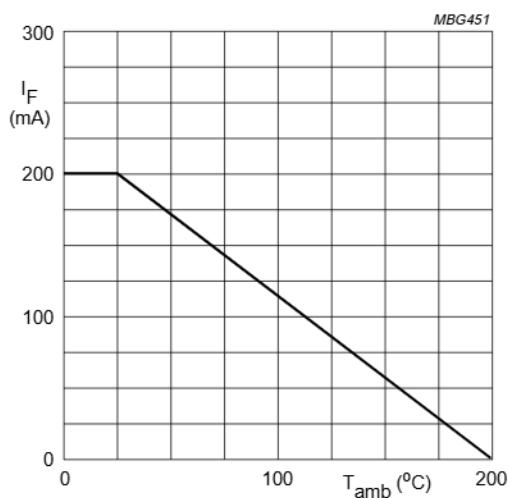
Note

1. Device mounted on a printed circuit-board without metallization pad.

High-speed diodes

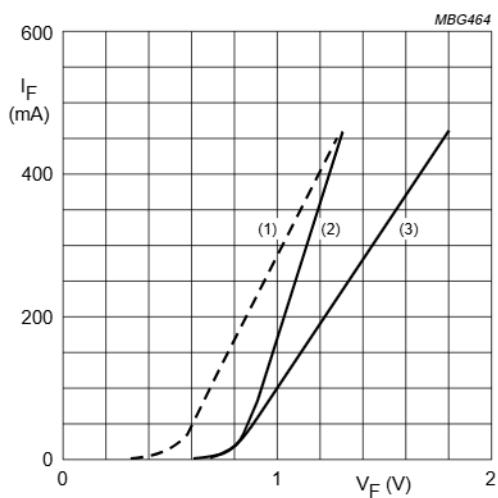
1N4148; 1N4448

GRAPHICAL DATA



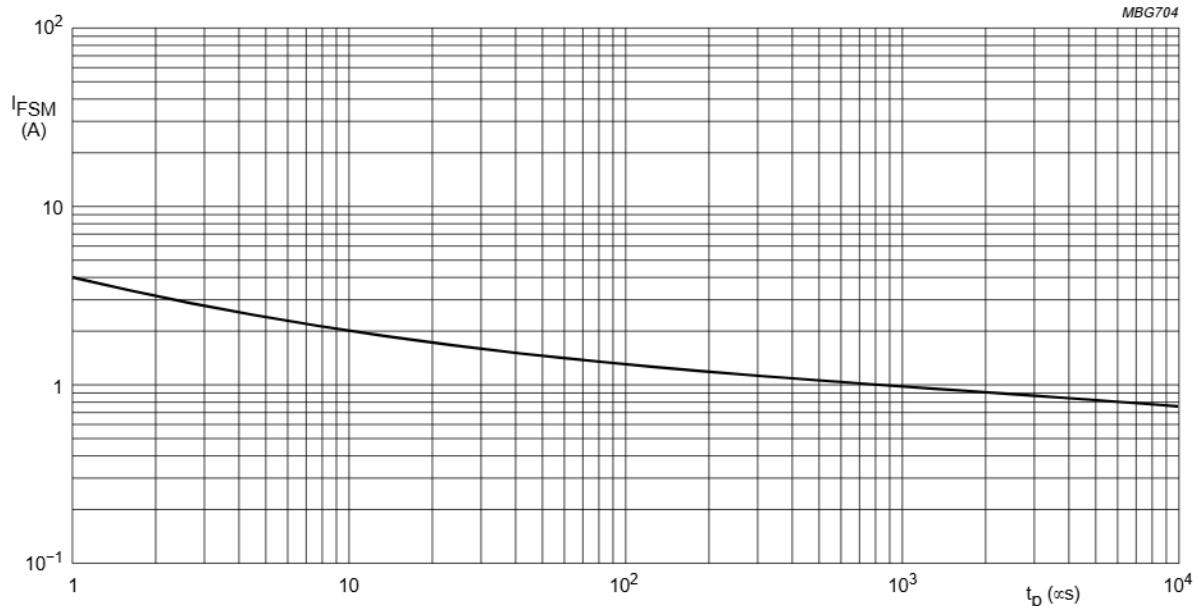
Device mounted on an FR4 printed-circuit board; lead length 10 mm.

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



- (1) $T_j = 175 \text{ }^\circ\text{C}$; typical values.
- (2) $T_j = 25 \text{ }^\circ\text{C}$; typical values.
- (3) $T_j = 25 \text{ }^\circ\text{C}$; maximum values.

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



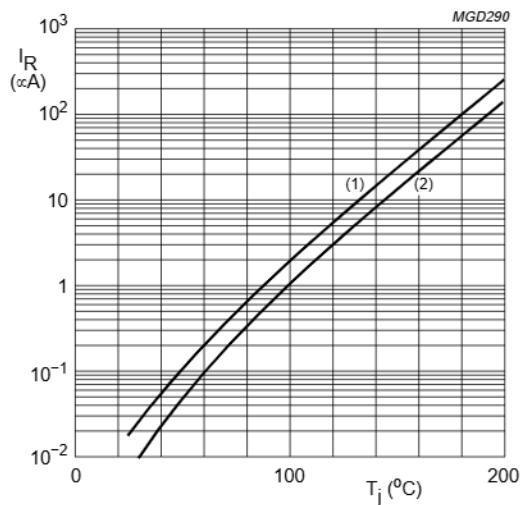
Based on square wave currents.

$T_j = 25 \text{ }^\circ\text{C}$ prior to surge.

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

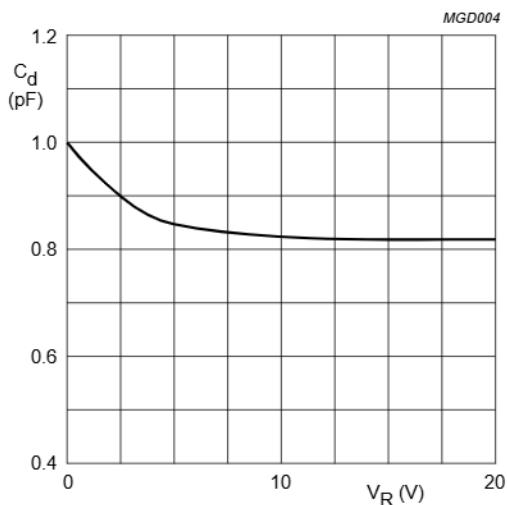
High-speed diodes

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- (1) $V_R = 75\text{ V}$; typical values.
(2) $V_R = 20\text{ V}$; typical values.

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



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

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

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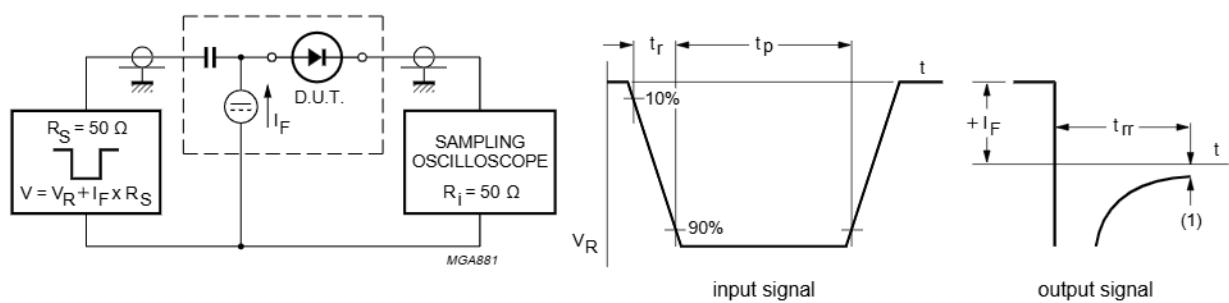
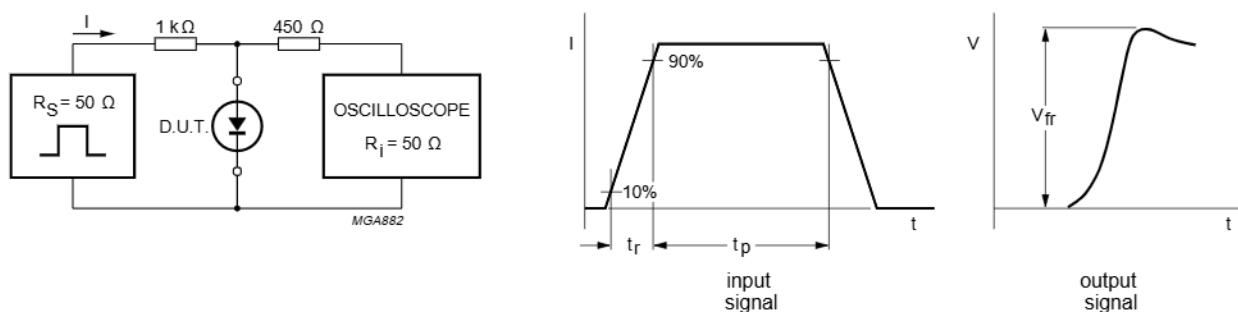


Fig.7 Reverse recovery voltage test circuit and waveforms.



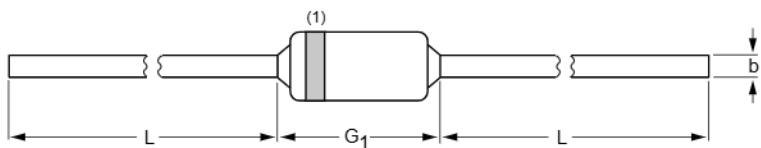
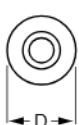
High-speed diodes

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PACKAGE OUTLINE

Hermetically sealed glass package; axial leaded; 2 leads

SOD27



DIMENSIONS (mm are the original dimensions)

UNIT	b max.	D max.	G ₁ max.	L min.
mm	0.56	1.85	4.25	25.4

0 1 2 mm
scale

Note

1. The marking band indicates the cathode.

OUTLINE VERSION	REFERENCES			EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ		
SOD27	A24	DO-35	SC-40		97-06-09

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.	

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