### **DISCRETE SEMICONDUCTORS**

# DATA SHEET



1N4148; 1N4448 High-speed diodes

Product specification Supersedes data of 1999 May 25 2002 Jan 23





### **High-speed diodes**

1N4148; 1N4448

### **FEATURES**

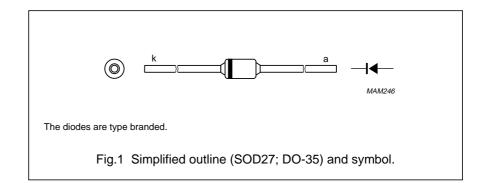
- Hermetically sealed leaded glass SOD27 (DO-35) package
- High switching speed: max. 4 ns
- · General application
- Continuous reverse voltage: max. 75 V
- Repetitive peak reverse voltage: max. 100 V
- Repetitive peak forward current: max. 450 mA.

### **APPLICATIONS**

· High-speed switching.

### **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.



### **LIMITING VALUES**

In accordance with the Absolute Maximum Rating System (IEC 60134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V <sub>RRM</sub>	repetitive peak reverse voltage		_	100	V
V <sub>R</sub>	continuous reverse voltage		_	75	V
I <sub>F</sub>	continuous forward current	see Fig.2; note 1	_	200	mA
I <sub>FRM</sub>	repetitive peak forward current		_	450	mA
I <sub>FSM</sub>	non-repetitive peak forward current	square wave; T <sub>j</sub> = 25 °C prior to surge; see Fig.4			
		t = 1 μs	_	4	Α
		t = 1 ms	_	1	Α
		t = 1 s	_	0.5	Α
P <sub>tot</sub>	total power dissipation	T <sub>amb</sub> = 25 °C; note 1	_	500	mW
T <sub>stg</sub>	storage temperature		-65	+200	°C
Tj	junction temperature		_	200	°C

### Note

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

# High-speed diodes

1N4148; 1N4448

### **ELECTRICAL CHARACTERISTICS**

 $T_i = 25$  °C unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V <sub>F</sub>	forward voltage	see Fig.3			
	1N4148	I <sub>F</sub> = 10 mA	_	1	V
	1N4448	I <sub>F</sub> = 5 mA	0.62	0.72	V
		I <sub>F</sub> = 100 mA	_	1	V
I <sub>R</sub>	reverse current	V <sub>R</sub> = 20 V; see Fig.5		25	nA
		V <sub>R</sub> = 20 V; T <sub>j</sub> = 150 °C; see Fig.5	_	50	μΑ
I <sub>R</sub>	reverse current; 1N4448	$V_R = 20 \text{ V}; T_j = 100 ^{\circ}\text{C}; \text{ see Fig.5}$	_	3	μΑ
C <sub>d</sub>	diode capacitance	f = 1 MHz; V <sub>R</sub> = 0; see Fig.6	_	4	pF
t <sub>rr</sub>	reverse recovery time	when switched from $I_F$ = 10 mA to $I_R$ = 60 mA; $R_L$ = 100 $\Omega$ ; measured at $I_R$ = 1 mA; see Fig.7	_	4	ns
V <sub>fr</sub>	forward recovery voltage	when switched from $I_F = 50$ mA; $t_r = 20$ ns; see Fig.8	_	2.5	V

### THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
R <sub>th j-tp</sub>	thermal resistance from junction to tie-point	lead length 10 mm	240	K/W
R <sub>th j-a</sub>	thermal resistance from junction to ambient	lead length 10 mm; note 1	350	K/W

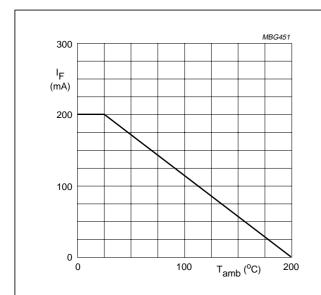
### Note

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

### High-speed diodes

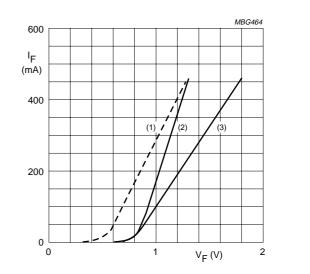
1N4148; 1N4448

### **GRAPHICAL DATA**



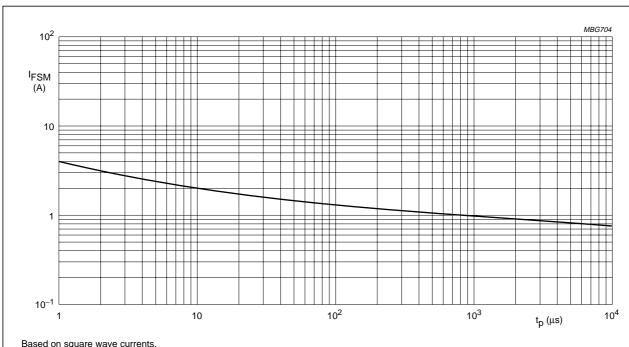
Device mounted on an FR4 printed-circuit board; lead length 10 mm.

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



- (1)  $T_j = 175$  °C; typical values.
- (2)  $T_j = 25$  °C; typical values.
- (3)  $T_j = 25$  °C; maximum values.

Forward current as a function of forward voltage.



Based on square wave currents.

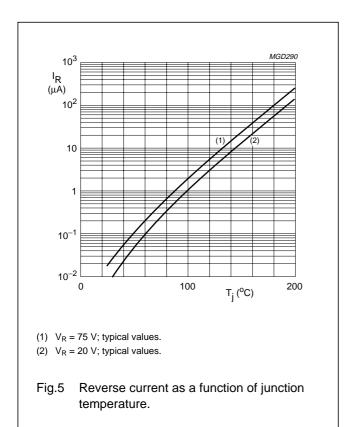
 $T_j = 25$  °C prior to surge.

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

2002 Jan 23 4

# High-speed diodes

### 1N4148; 1N4448



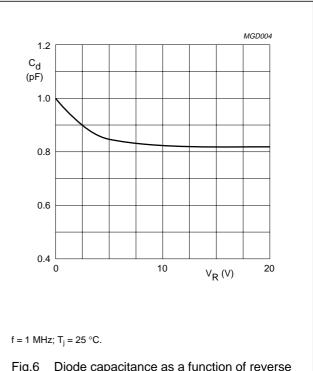


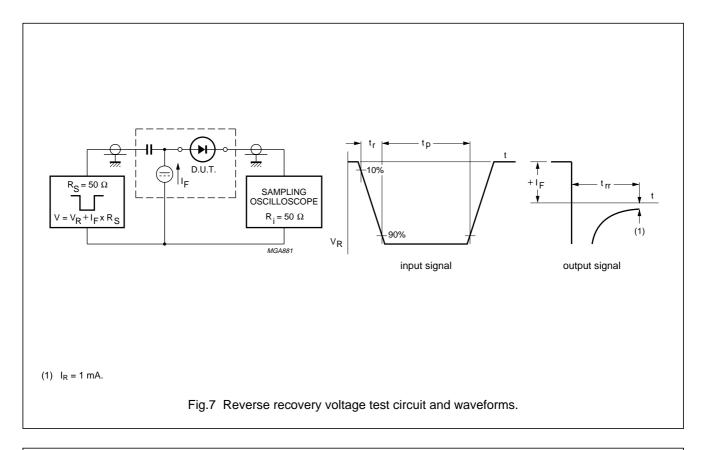
Fig.6 Diode capacitance as a function of reverse voltage; typical values.

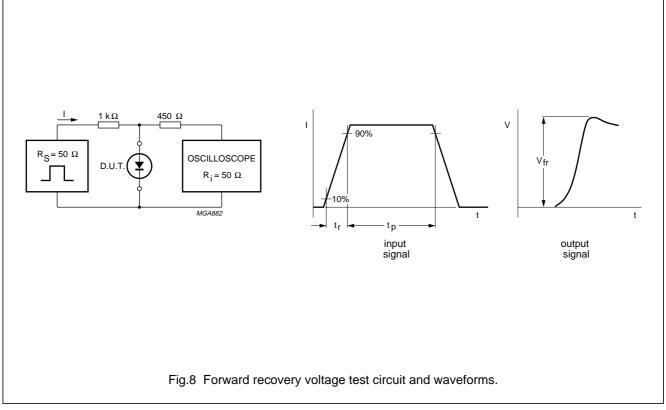
2002 Jan 23

5

### High-speed diodes

### 1N4148; 1N4448





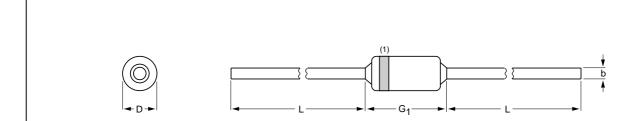
### High-speed diodes

1N4148; 1N4448

### **PACKAGE OUTLINE**

### Hermetically sealed glass package; axial leaded; 2 leads

SOD27



### **DIMENSIONS** (mm are the original dimensions)

UNIT	UNIT b max.		G <sub>1</sub> 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	REFERENCES			EUROPEAN	ISSUE DATE	
VERSION	IEC	JEDEC	EIAJ		PROJECTION	ISSUE DATE
SOD27	A24	DO-35	SC-40			97-06-09

### High-speed diodes

1N4148; 1N4448

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DATA SHEET STATUS(1)	PRODUCT STATUS <sup>(2)</sup>	DEFINITIONS
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# High-speed diodes

1N4148; 1N4448

NOTES

# High-speed diodes

1N4148; 1N4448

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# High-speed diodes

1N4148; 1N4448

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Printed in The Netherlands

613514/04/pp12

Date of release: 2002 Jan 23

Document order number: 9397 750 09263

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