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Should be replaced with:

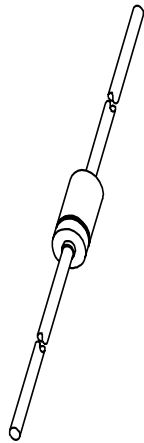
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If you have any questions related to the data sheet, please contact our nearest sales office via e-mail or telephone (details via **[salesaddresses@nexperia.com](mailto:salesaddresses@nexperia.com)**). Thank you for your cooperation and understanding,

Kind regards,

Team Nexperia

# DATA SHEET



## **1N4531; 1N4532** High-speed diodes

Product data sheet  
Supersedes data of April 1996

1996 Sep 03

## High-speed diodes

## 1N4531; 1N4532

### FEATURES

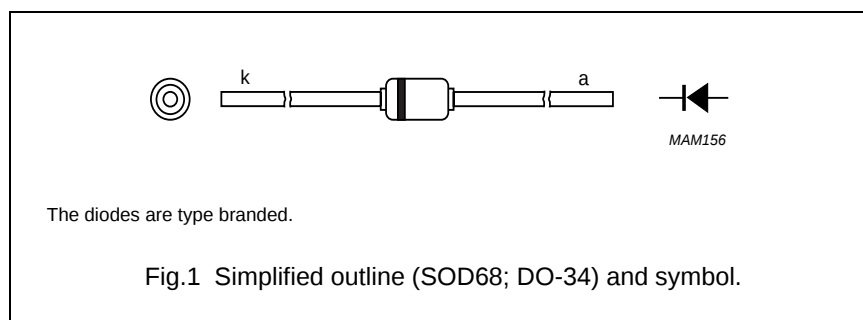
- Hermetically sealed leaded glass SOD68 (DO-34) package
- High switching speed: max. 4 ns
- Continuous reverse voltage: max. 75 V
- Repetitive peak reverse voltage: max. 75 V
- Repetitive peak forward current: max. 450 mA.

### APPLICATIONS

- High-speed switching
- Protection diodes in reed relays.

### DESCRIPTION

The 1N4531, 1N4532 are high-speed switching diodes fabricated in planar technology, and encapsulated in hermetically sealed leaded glass SOD68 (DO-34) packages.



### 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                                                                                                                          | —           | 200           | mA          |
| $I_{FRM}$ | repetitive peak forward current     |                                                                                                                                    | —           | 450           | mA          |
| $I_{FSM}$ | non-repetitive peak forward current | square wave; $T_j = 25\text{ °C}$ prior to surge; see Fig.4<br>$t = 1\text{ }\mu\text{s}$<br>$t = 1\text{ ms}$<br>$t = 1\text{ s}$ | —<br>—<br>— | 4<br>1<br>0.5 | A<br>A<br>A |
| $P_{tot}$ | total power dissipation             | $T_{amb} = 25\text{ °C}$                                                                                                           | —           | 500           | mW          |
| $T_{stg}$ | storage temperature                 |                                                                                                                                    | −65         | +200          | °C          |
| $T_j$     | junction temperature                |                                                                                                                                    | —           | 200           | °C          |

## High-speed diodes

## 1N4531; 1N4532

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

| SYMBOL   | PARAMETER                | CONDITIONS                                                                                                                                | MIN. | MAX. | UNIT          |
|----------|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|------|------|---------------|
| $V_F$    | forward voltage          | $I_F = 10\text{ mA}$ ; see Fig.3                                                                                                          | —    | 1000 | mV            |
| $I_R$    | reverse current          | see Fig.5                                                                                                                                 |      |      |               |
|          | IN4531                   | $V_R = 20\text{ V}$                                                                                                                       | —    | 25   | nA            |
|          |                          | $V_R = 20\text{ V}$ ; $T_j = 150\text{ }^{\circ}\text{C}$                                                                                 | —    | 50   | $\mu\text{A}$ |
|          | IN4532                   | $V_R = 50\text{ V}$                                                                                                                       | —    | 100  | nA            |
|          |                          | $V_R = 50\text{ V}$ ; $T_j = 150\text{ }^{\circ}\text{C}$                                                                                 | —    | 100  | $\mu\text{A}$ |
| $C_d$    | diode capacitance        | $f = 1\text{ MHz}$ ; $V_R = 0$ ; see Fig.6                                                                                                |      |      |               |
|          | IN4531                   |                                                                                                                                           | —    | 4    | pF            |
|          | IN4532                   |                                                                                                                                           | —    | 2    | pF            |
| $t_{rr}$ | reverse recovery time    | when switched from $I_F = 10\text{ mA}$ to $I_R = 60\text{ mA}$ ; $R_L = 100\text{ }\Omega$ ; measured at $I_R = 1\text{ mA}$ ; see Fig.7 | —    | 4    | ns            |
|          | IN4531                   |                                                                                                                                           | —    | 2    | ns            |
|          | IN4532                   |                                                                                                                                           |      |      |               |
|          | reverse recovery time    | when switched from $I_F = 10\text{ mA}$ to $I_R = 10\text{ mA}$ ; $R_L = 100\text{ }\Omega$ ; measured at $I_R = 1\text{ mA}$ ; see Fig.7 | —    | 4    | ns            |
| $V_{fr}$ | forward recovery voltage | when switched from $I_F = 100\text{ mA}$ ; $t_r \leq 30\text{ ns}$ ; see Fig.8                                                            | —    | 3    | V             |

**THERMAL CHARACTERISTICS**

| SYMBOL         | PARAMETER                                     | CONDITIONS               | VALUE | UNIT |
|----------------|-----------------------------------------------|--------------------------|-------|------|
| $R_{th\ j-tp}$ | thermal resistance from junction to tie-point | lead length 5 mm         | 120   | K/W  |
| $R_{th\ j-a}$  | thermal resistance from junction to ambient   | lead length 5 mm; note 1 | 350   | K/W  |

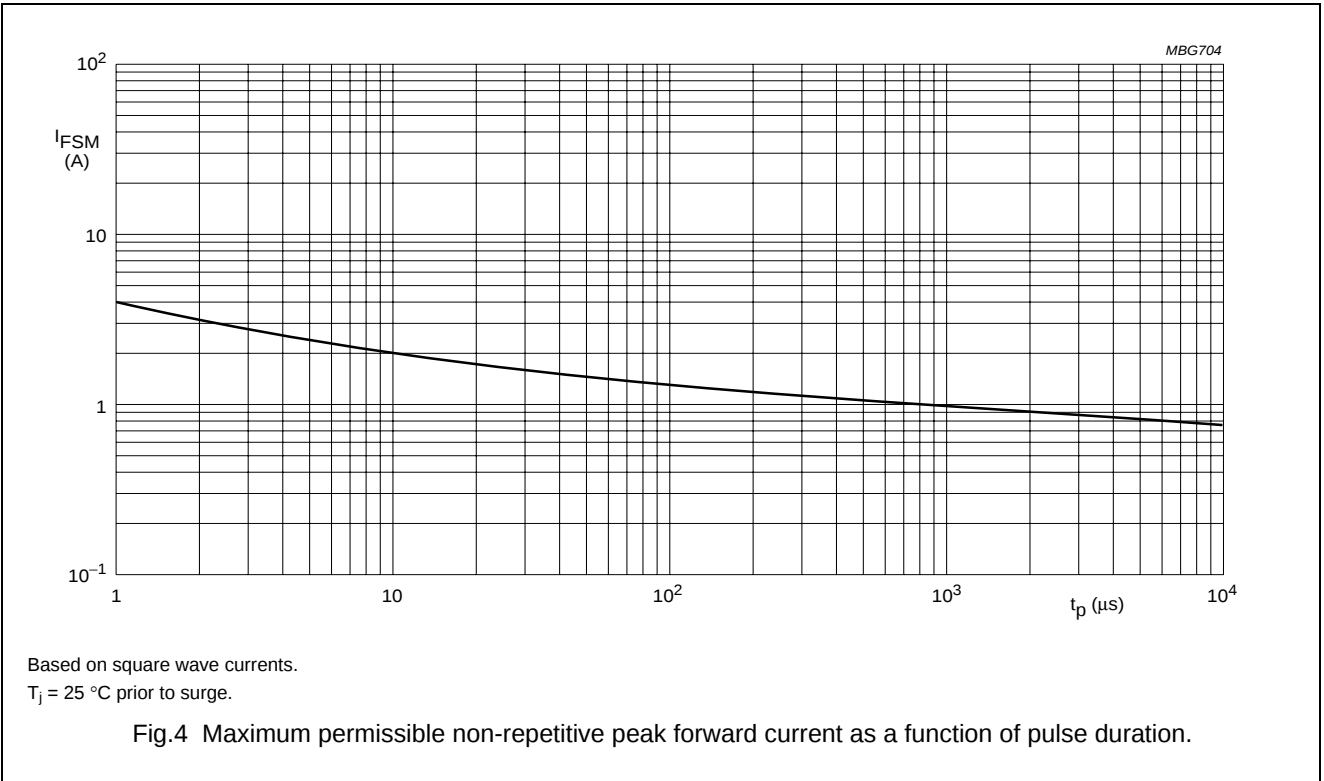
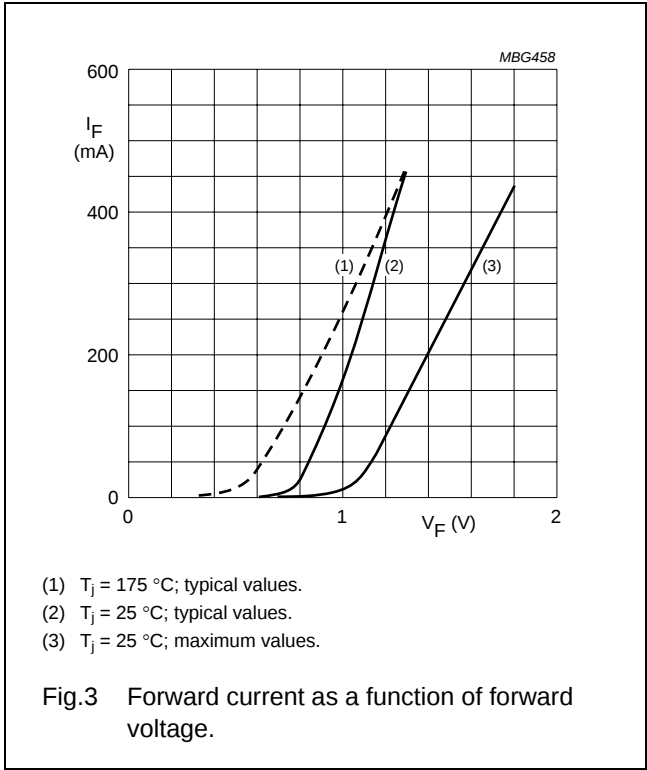
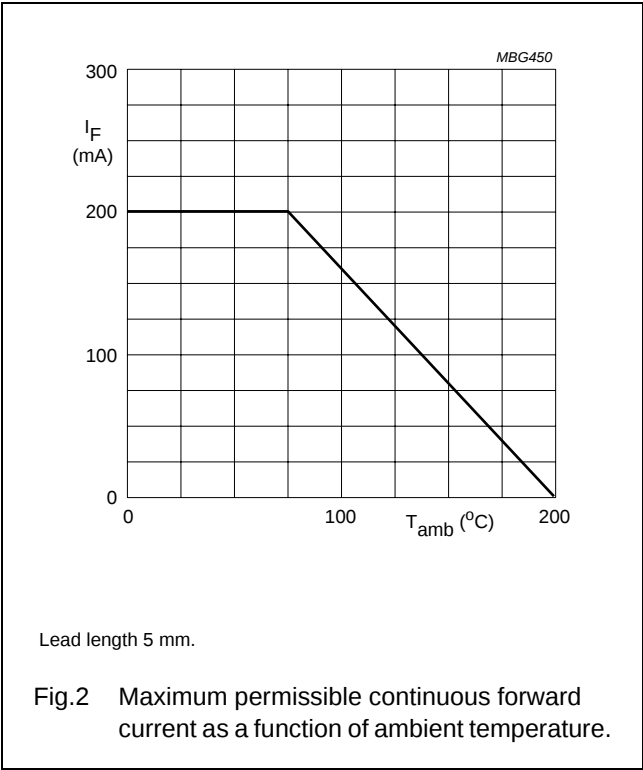
**Note**

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

High-speed diodes

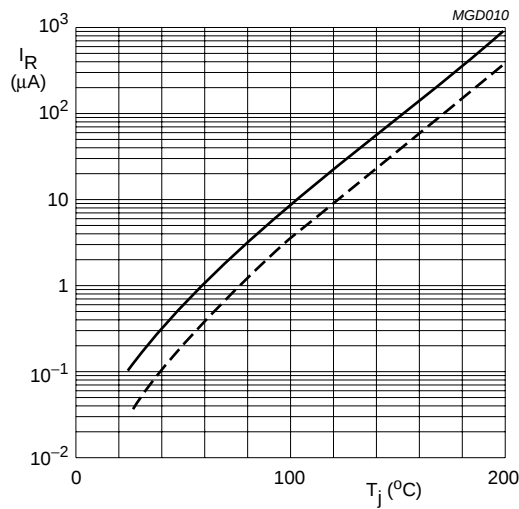
1N4531; 1N4532

GRAPHICAL DATA



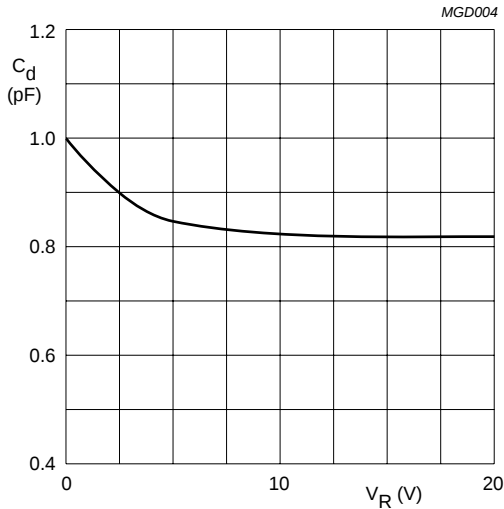
High-speed diodes

1N4531; 1N4532



$V_R = 50\text{ V}$   
Solid line; maximum values.  
Dotted line; typical values.

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

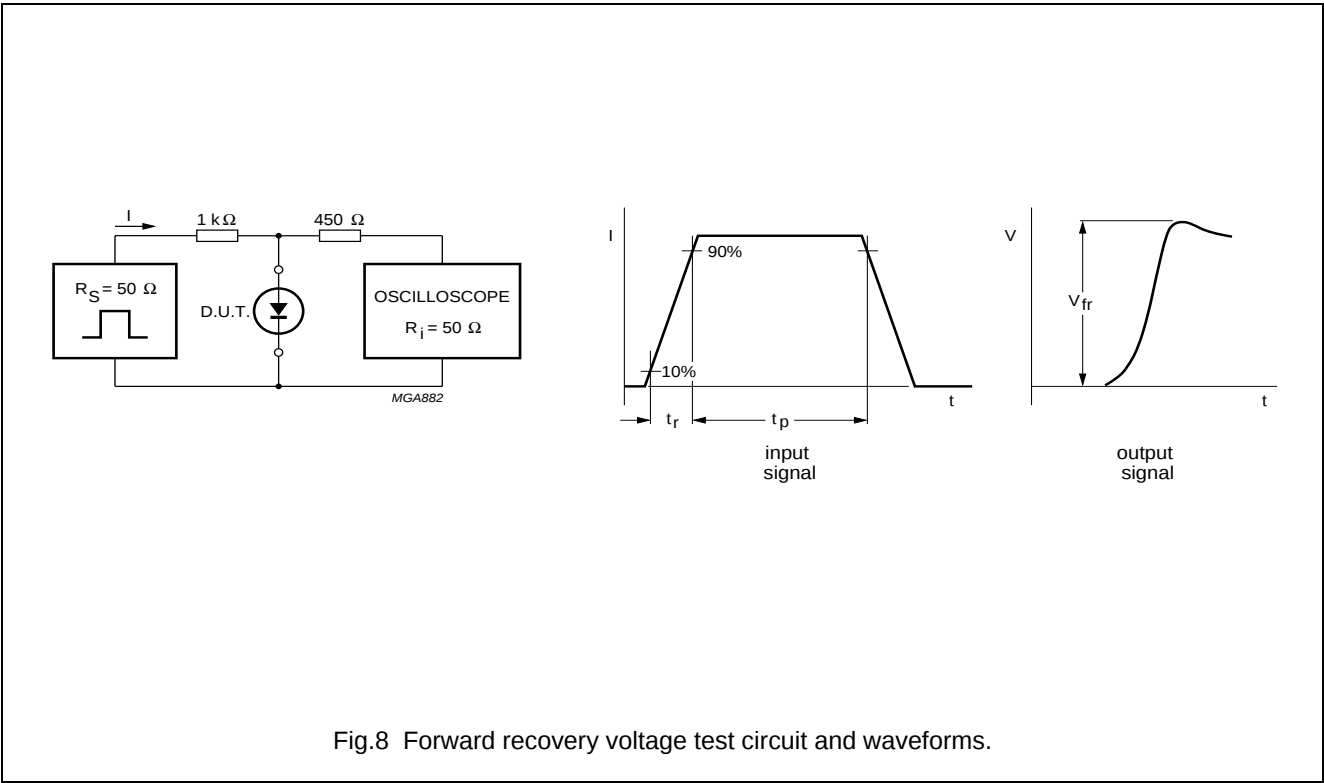
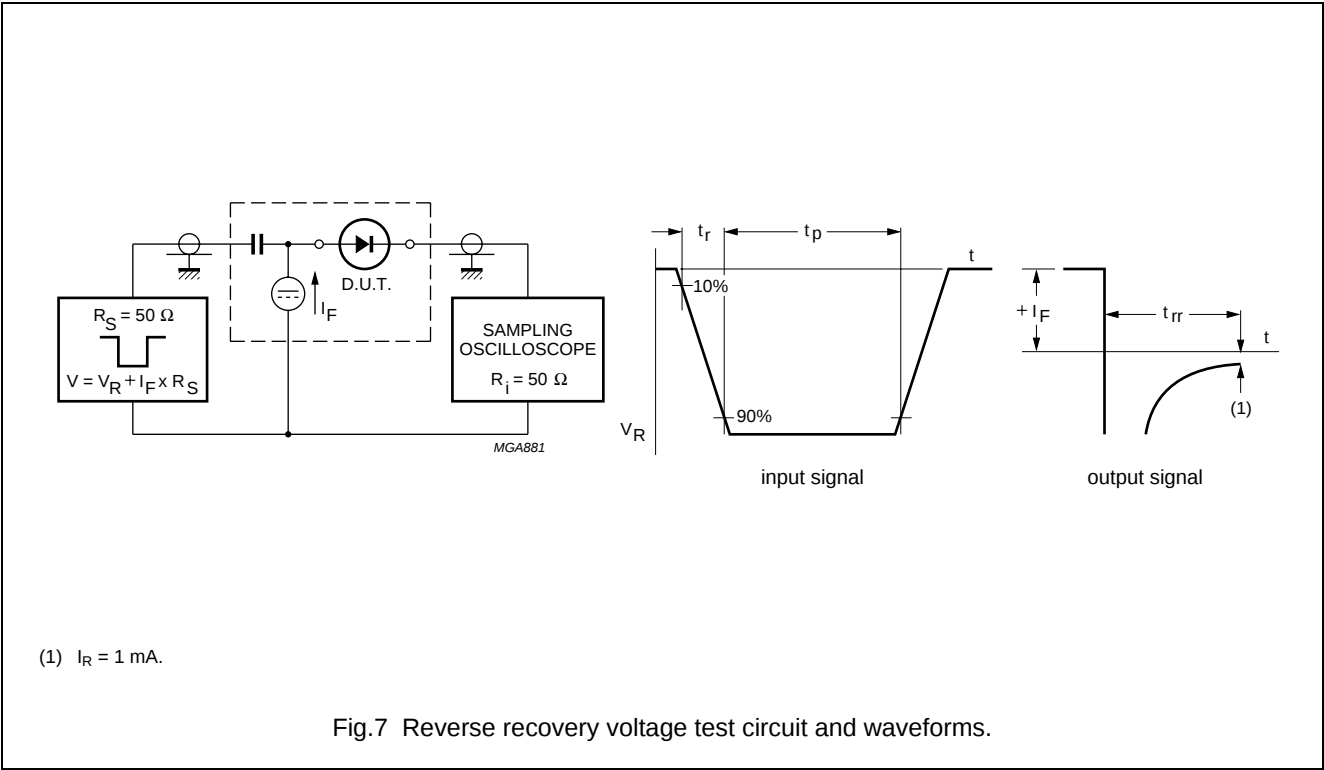


$f = 1\text{ MHz}; T_j = 25\text{ }^{\circ}C$ .

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

High-speed diodes

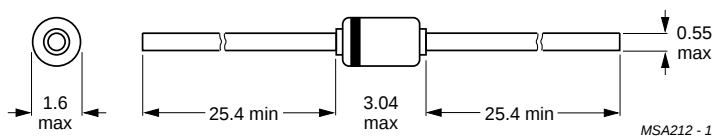
1N4531; 1N4532



## High-speed diodes

1N4531; 1N4532

## PACKAGE OUTLINE



Dimensions in mm.

Fig.9 SOD68 (DO-34).

## High-speed diodes

## 1N4531; 1N4532

## DATA SHEET STATUS

| DOCUMENT STATUS <sup>(1)</sup> | PRODUCT STATUS <sup>(2)</sup> | DEFINITION                                                                            |
|--------------------------------|-------------------------------|---------------------------------------------------------------------------------------|
| Objective data sheet           | Development                   | This document contains data from the objective specification for product development. |
| Preliminary data sheet         | Qualification                 | This document contains data from the preliminary specification.                       |
| Product data sheet             | Production                    | This document contains the product specification.                                     |

## Notes

1. Please consult the most recently issued document before initiating or completing a design.
2. 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.nxp.com>.

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# ***NXP Semiconductors***

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## **Contact information**

For additional information please visit: **<http://www.nxp.com>**

For sales offices addresses send e-mail to: **[salesaddresses@nxp.com](mailto:salesaddresses@nxp.com)**

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