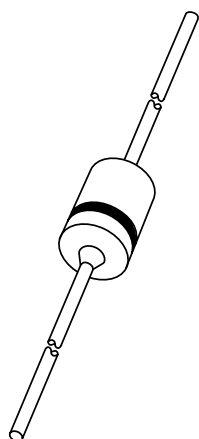


DATA SHEET



1N4150; 1N4151 High-speed diodes

Product specification
Supersedes data of 1996 Sep 03

1999 Jun 01

High-speed diodes

1N4150; 1N4151

FEATURES

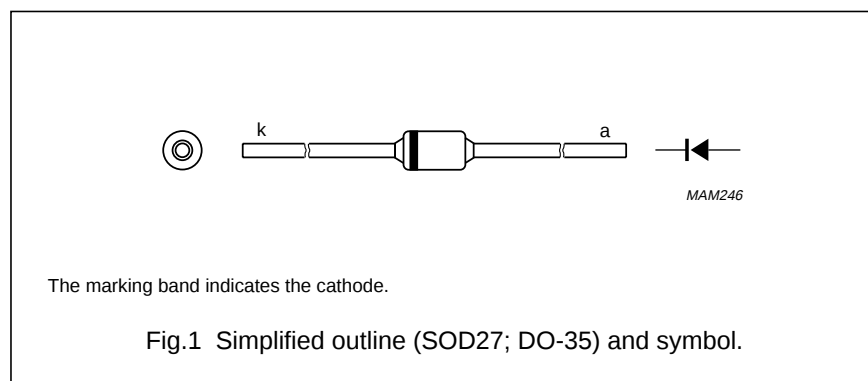
- Hermetically sealed leaded glass SOD27 (DO-35) package
- High switching speed: max. 4 ns
- General application
- Continuous reverse voltage: max. 50 V
- Repetitive peak reverse voltage: max. 75 V
- Repetitive peak forward current: max. 600 mA and 450 mA respectively.

APPLICATIONS

- High-speed switching
- 1N4150: general purpose use in computer and industrial applications
- 1N4151: military and industrial applications.

DESCRIPTION

The 1N4150 and 1N4151 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 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{RRM}	repetitive peak reverse voltage		–	75	V
V_R	continuous reverse voltage		–	50	V
I_F	continuous forward current	see Fig.2; note 1			
	1N4150		–	300	mA
	1N4151		–	200	mA
I_{FRM}	repetitive peak forward current				
	1N4150		–	600	mA
	1N4151		–	450	mA
I_{FSM}	non-repetitive peak forward current	square wave; $T_j = 25\text{ °C}$ prior to surge; see Fig.4			
		$t = 1\text{ }\mu\text{s}$	–	4	A
		$t = 1\text{ ms}$	–	1	A
		$t = 1\text{ s}$	–	0.5	A
P_{tot}	total power dissipation	$T_{amb} = 25\text{ °C}$; 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.

High-speed diodes

1N4150; 1N4151

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_F	forward voltage 1N4150	see Fig.3 $I_F = 1\text{ mA}$	540	620	mV
		$I_F = 10\text{ mA}$	660	740	mV
		$I_F = 50\text{ mA}$	760	860	mV
		$I_F = 100\text{ mA}$	820	920	mV
		$I_F = 200\text{ mA}$	870	1000	mV
	1N4151	$I_F = 50\text{ mA}$	–	1000	mV
I_R	reverse current 1N4150	$V_R = 50\text{ V}$; see Fig.5	–	0.1	μA
	1N4151		–	0.05	μA
I_R	reverse current 1N4150	$V_R = 50\text{ V}$; $T_j = 150\text{ }^{\circ}\text{C}$; see Fig.5	–	100	μA
	1N4151		–	50	μA
C_d	diode capacitance 1N4150	$f = 1\text{ MHz}$; $V_R = 0$; see Fig.6	–	2.5	pF
	1N4151		–	2	pF
t_{rr}	reverse recovery time 1N4150	when switched from $I_F = 10\text{ mA}$ to $I_R = 1\text{ mA}$; $R_L = 100\text{ }\Omega$; measured at $I_R = 0.1\text{ mA}$; see Fig.7	–	6	ns
		when switched from $I_F = 10\text{ mA}$ to 200 mA to $I_R = 10\text{ mA}$ to 200 mA ; $R_L = 100\text{ }\Omega$; measured at $I_R = 0.1 \times I_F$; see Fig.7	–	4	ns
		when switched from $I_F = 200\text{ mA}$ to 400 mA to $I_R = 200\text{ mA}$ to 400 mA ; $R_L = 100\text{ }\Omega$; measured at $I_R = 0.1 \times I_F$; see Fig.7	–	6	ns
t_{rr}	reverse recovery time 1N4151	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
		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	–	2	ns
t_{fr}	forward recovery time	when switched to $I_F = 200\text{ mA}$; $t_r = 0.4\text{ ns}$; measured at $V_F = 1\text{ V}$; see Fig.8	–	10	ns

THERMAL CHARACTERISTICS

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

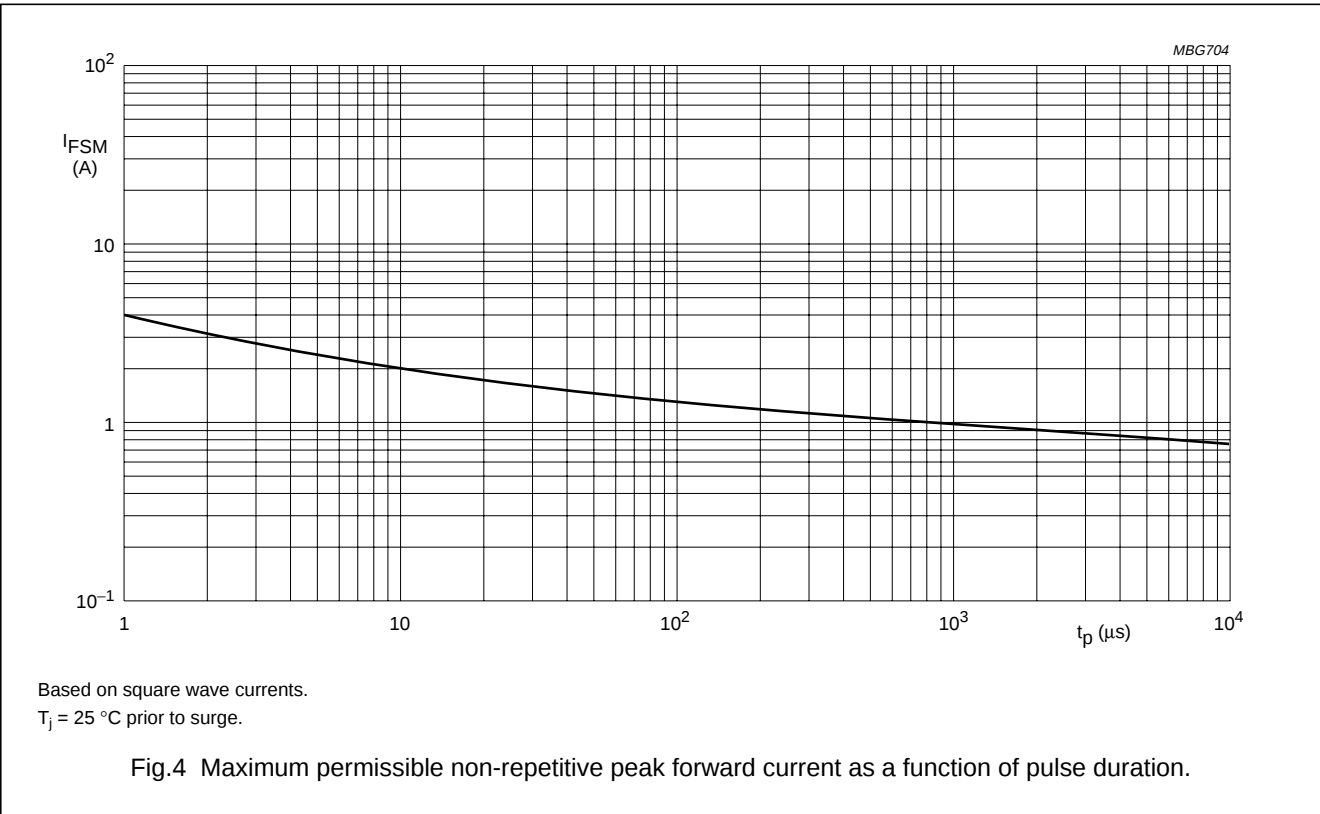
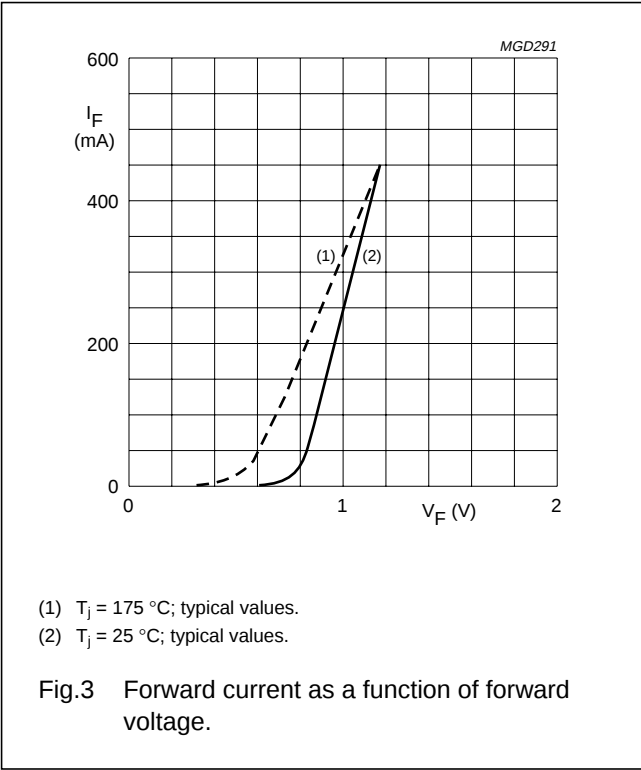
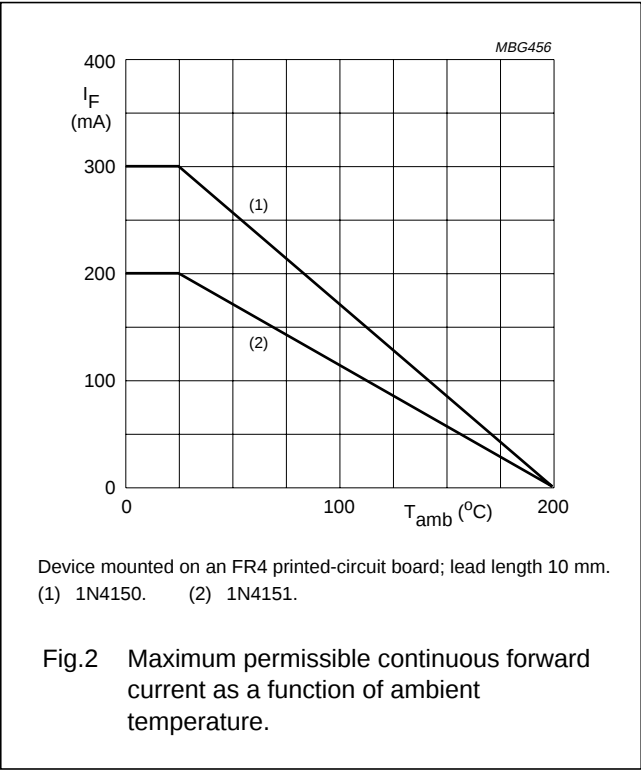
Note

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

High-speed diodes

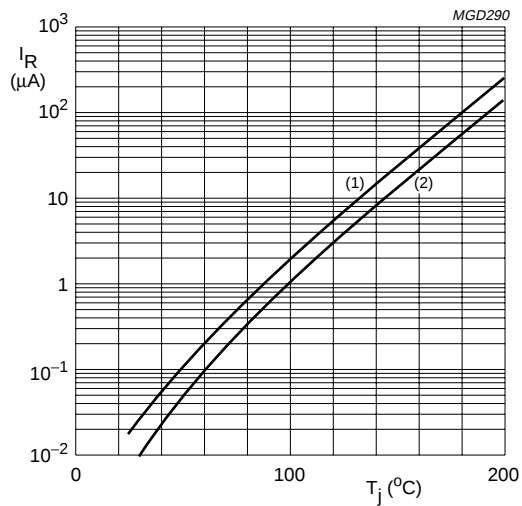
1N4150; 1N4151

GRAPHICAL DATA



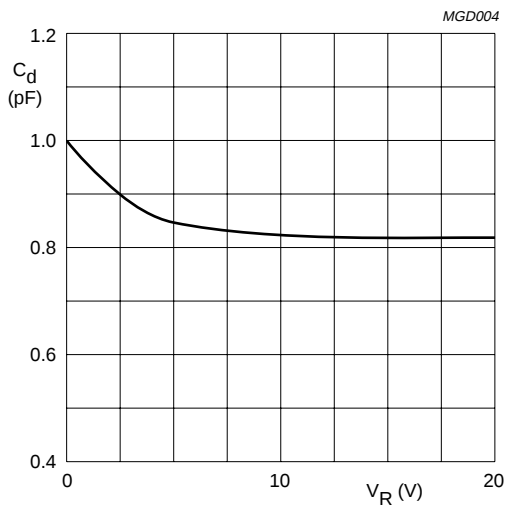
High-speed diodes

1N4150; 1N4151



- (1) $V_R = 75$ V; typical values.
- (2) $V_R = 20$ V; typical values.

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

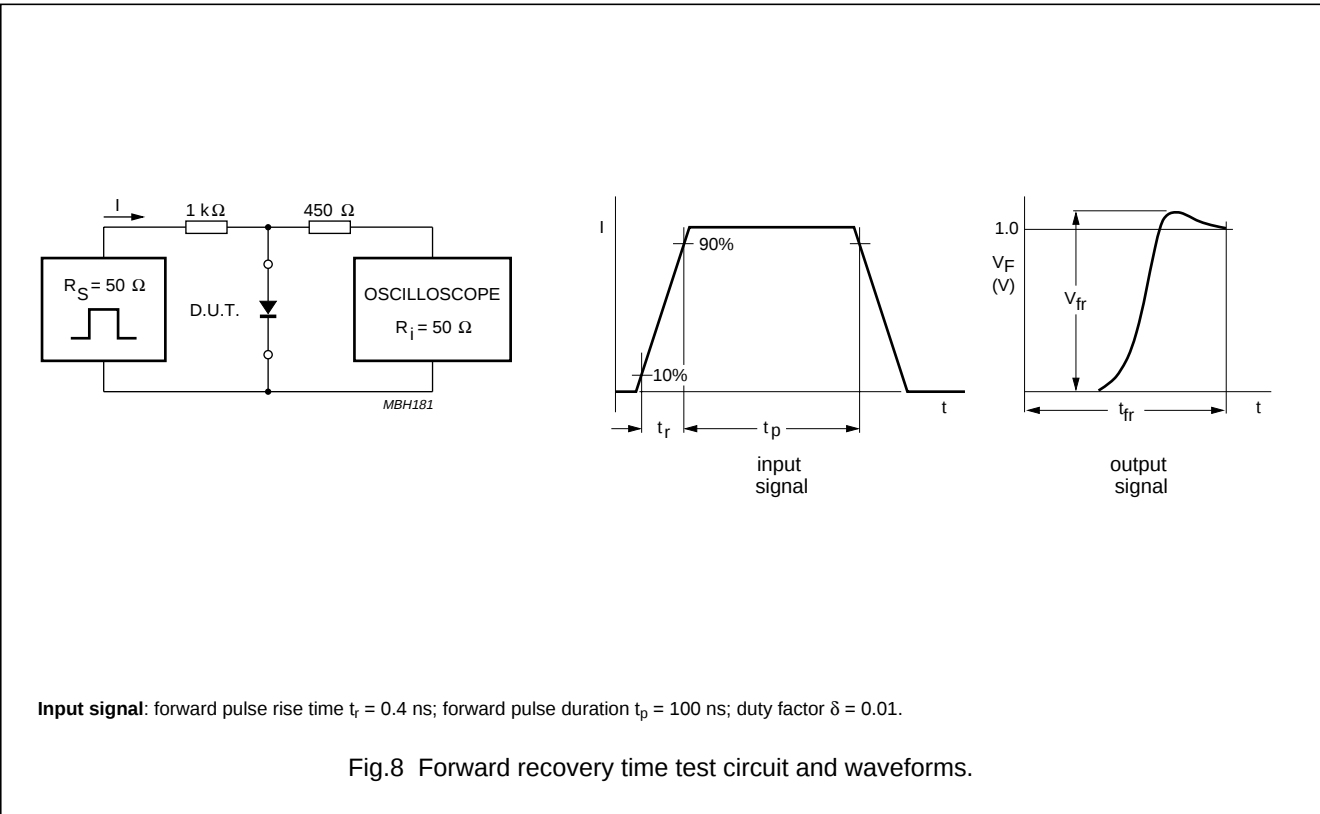
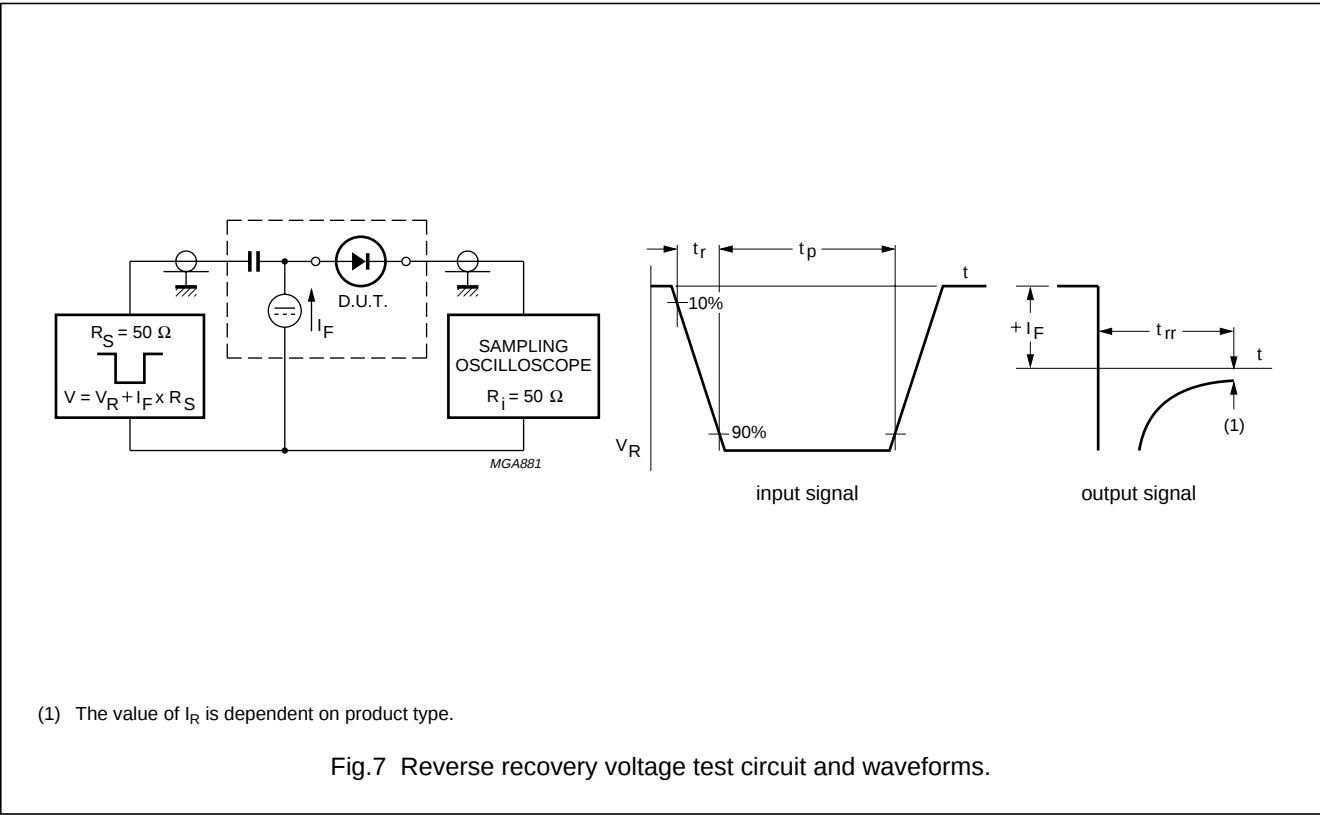


$f = 1$ MHz; $T_j = 25$ $^{\circ}C$.

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

High-speed diodes

1N4150; 1N4151



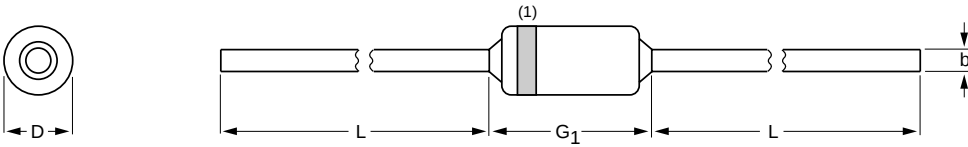
High-speed diodes

1N4150; 1N4151

PACKAGE OUTLINE

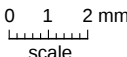
Hermetically sealed glass package; axial leaded; 2 leads

SOD27



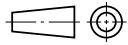
DIMENSIONS (mm are the original dimensions)

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



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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