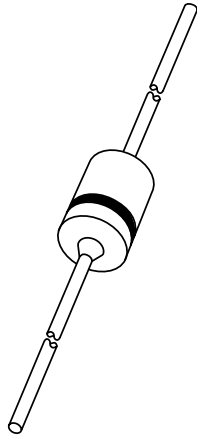


# DATA SHEET



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

Product specification  
Supersedes data of 2002 Jan 23

2004 Aug 10

# High-speed diodes

# 1N4148; 1N4448

### FEATURES

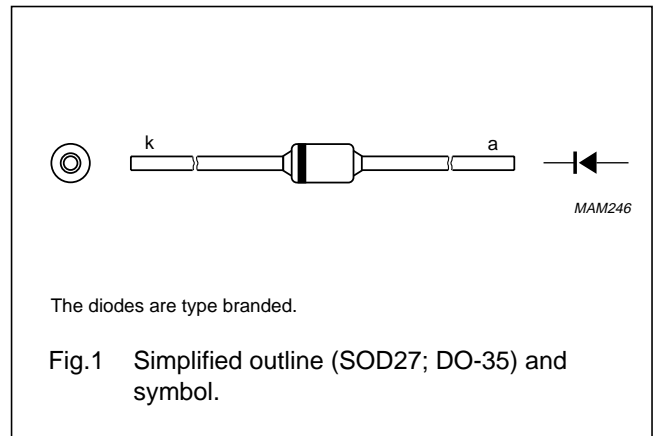
- Hermetically sealed leaded glass SOD27 (DO-35) package
- High switching speed: max. 4 ns
- General application
- Continuous reverse voltage: max. 100 V
- Repetitive peak reverse voltage: max. 100 V
- Repetitive peak forward current: max. 450 mA.

### 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.



### MARKING

TYPE NUMBER	MARKING CODE
1N4148	1N4148PH or 4148PH
1N4448	1N4448

### ORDERING INFORMATION

TYPE NUMBER	PACKAGE		
	NAME	DESCRIPTION	VERSION
1N4148	-	hermetically sealed glass package; axial leaded; 2 leads	SOD27
1N4448			

## High-speed diodes

1N4148; 1N4448

**LIMITING VALUES**

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$V_{RRM}$	repetitive peak reverse voltage		–	100	V
$V_R$	continuous reverse voltage		–	100	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; $T_j = 25\text{ °C}$ 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	$T_{amb} = 25\text{ °C}$ ; 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.

**ELECTRICAL CHARACTERISTICS** $T_j = 25\text{ °C}$  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 $V_R = 20\ \text{V}$ ; $T_j = 150\text{ °C}$ ; see Fig.5	–	25 50	nA $\mu\text{A}$
$I_R$	reverse current; 1N4448	$V_R = 20\ \text{V}$ ; $T_j = 100\text{ °C}$ ; see Fig.5	–	3	$\mu\text{A}$
$C_d$	diode capacitance	$f = 1\ \text{MHz}$ ; $V_R = 0\ \text{V}$ ; 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
$R_{th(j-tp)}$	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

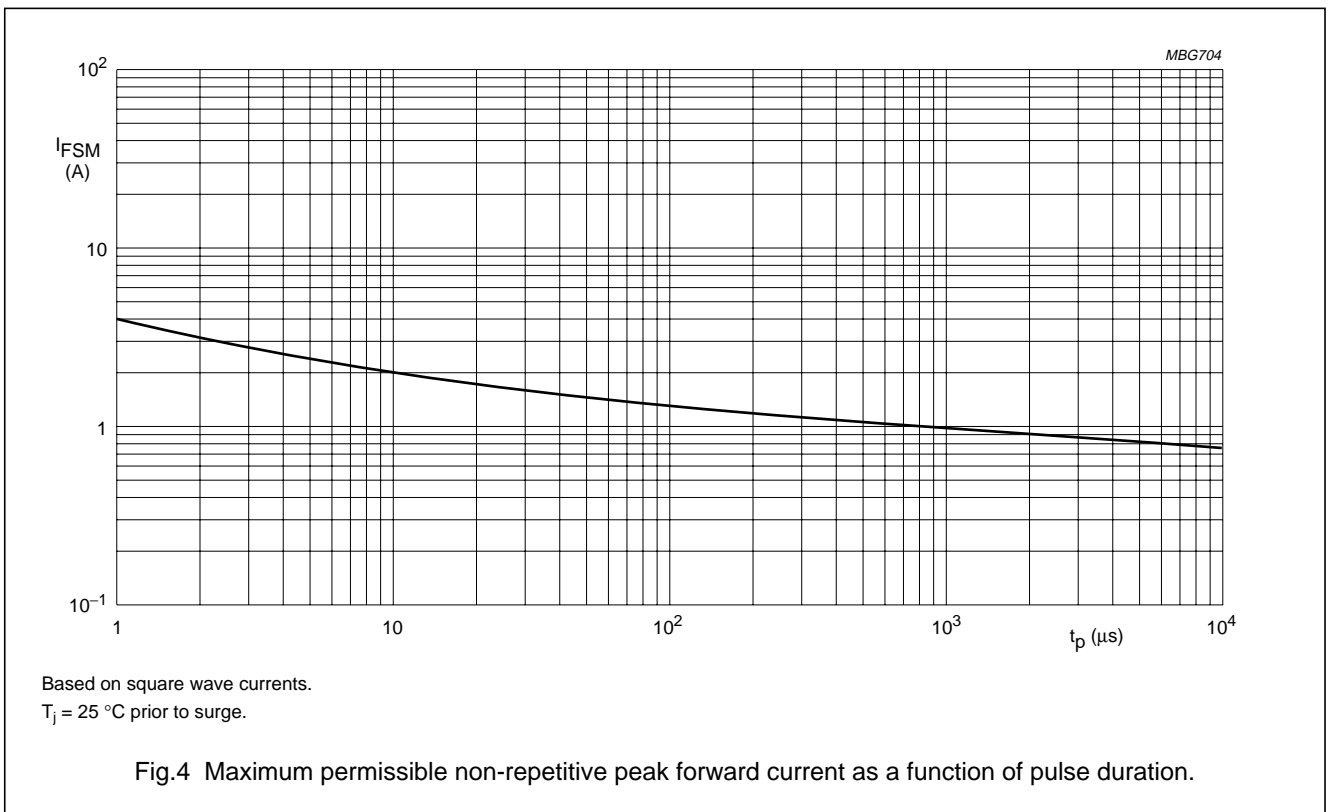
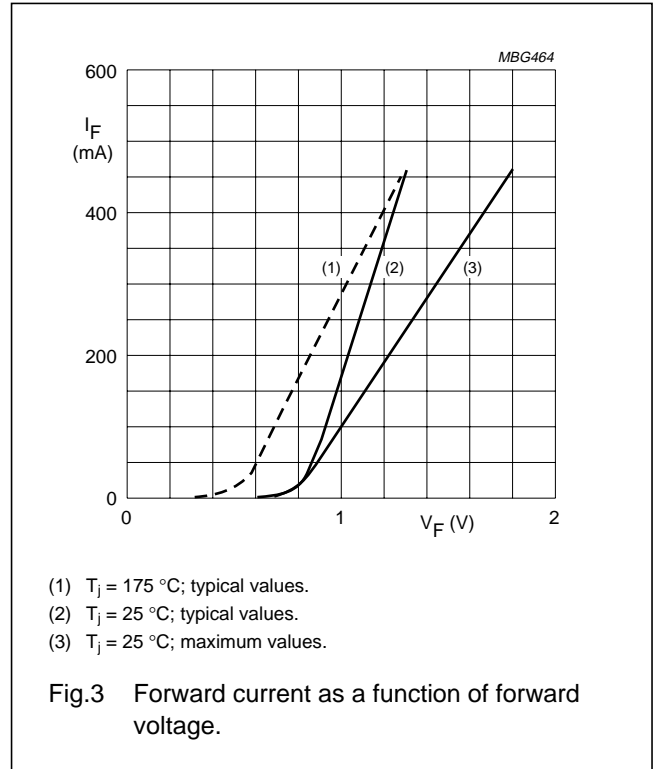
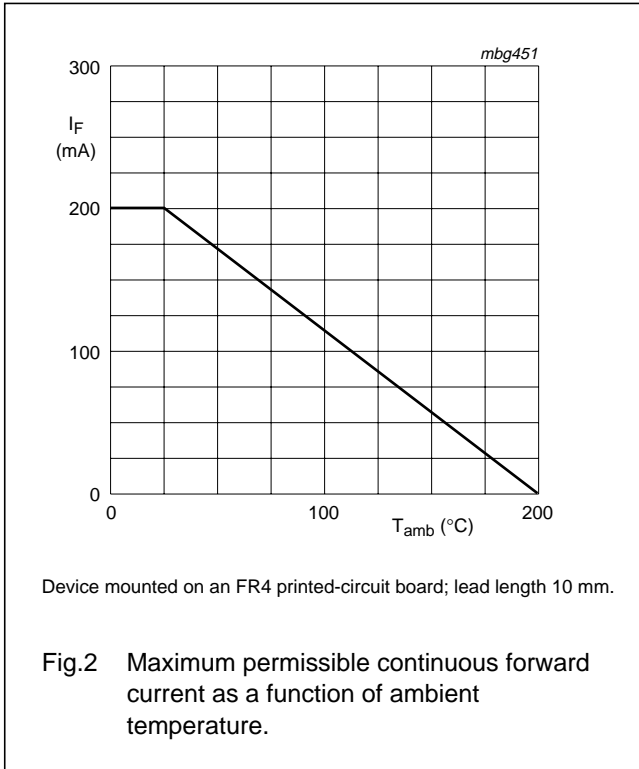
**Note**

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

High-speed diodes

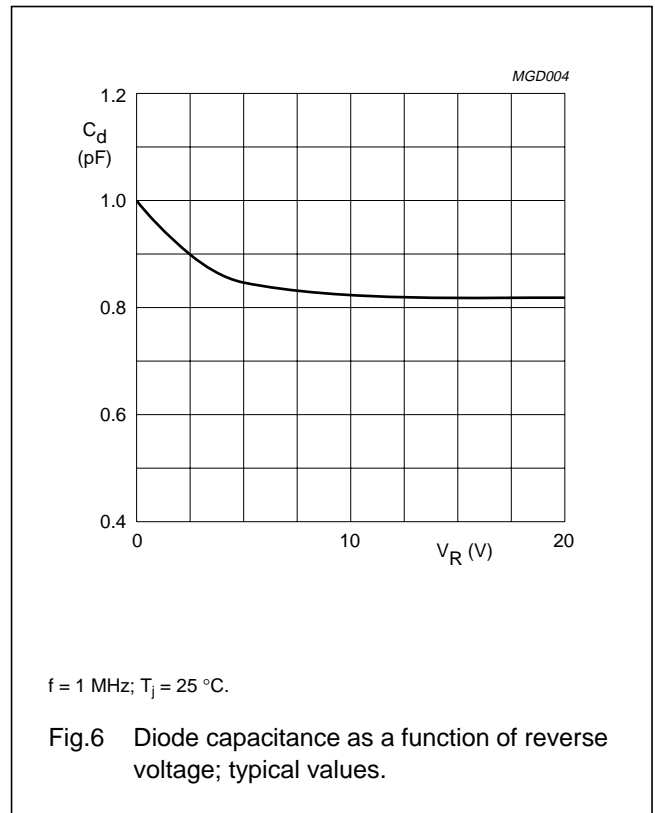
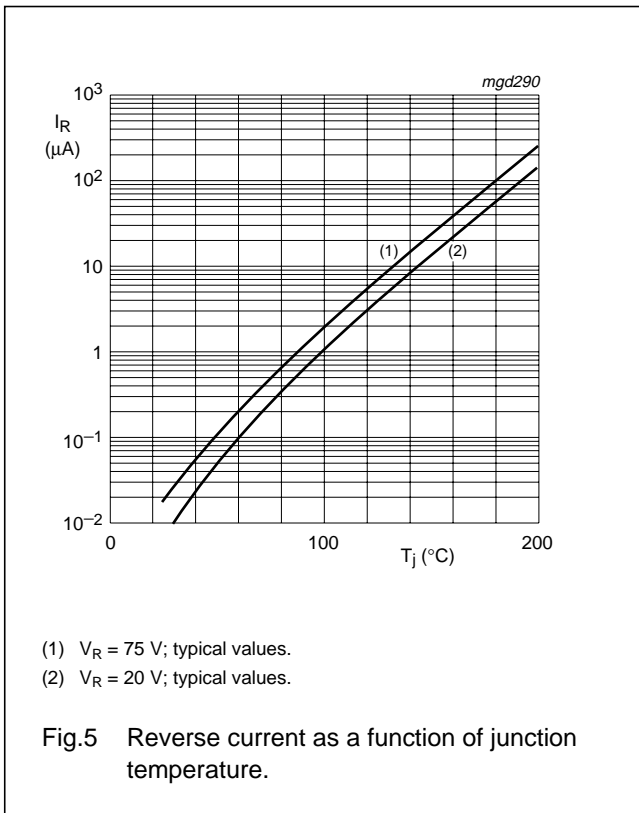
1N4148; 1N4448

GRAPHICAL DATA



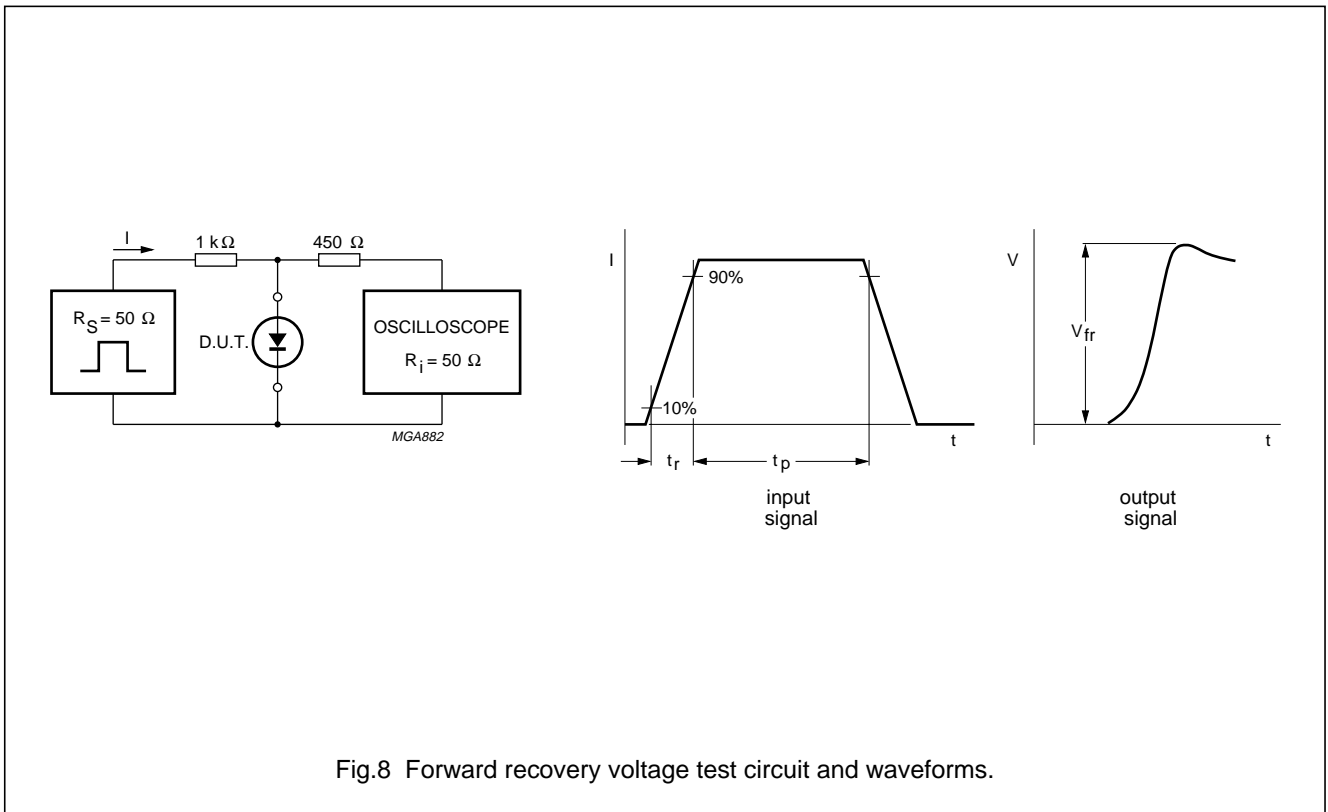
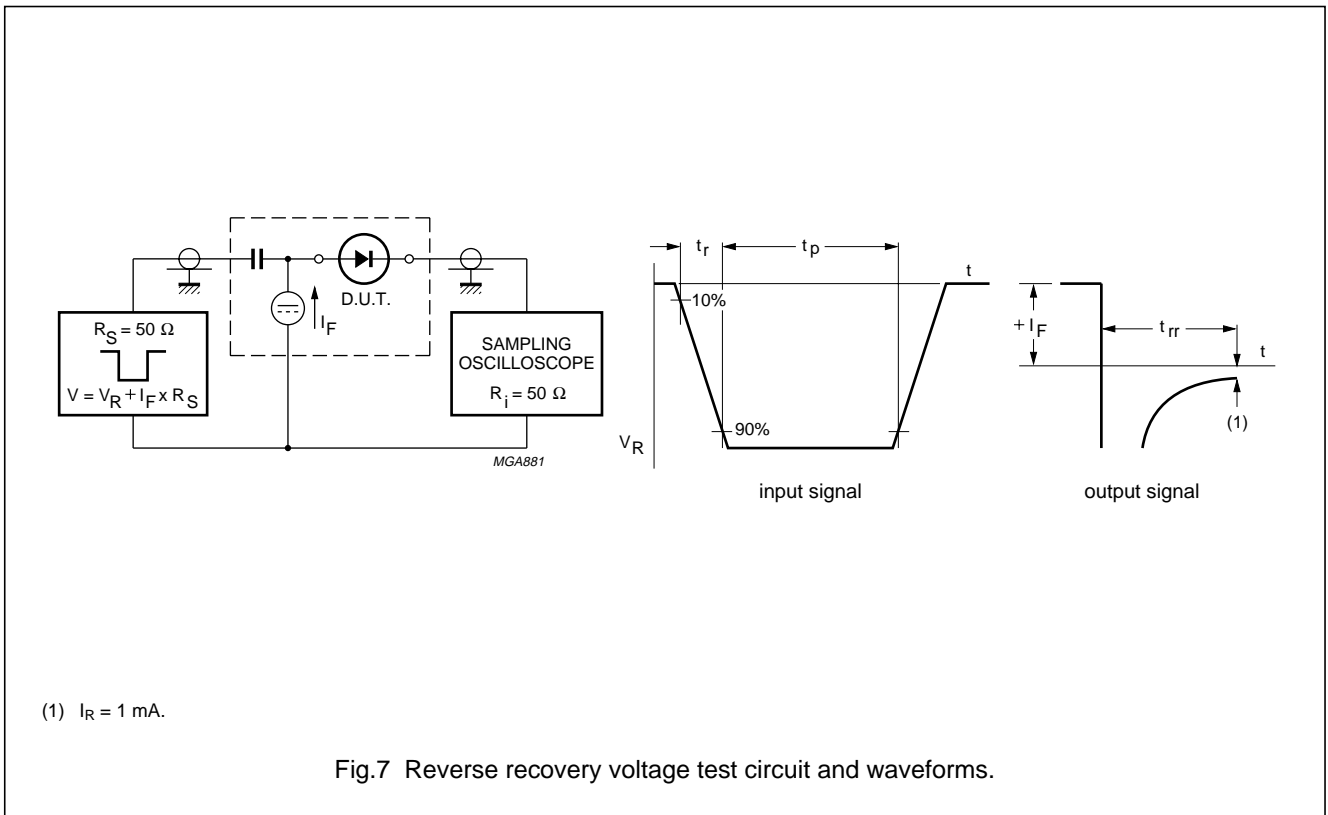
High-speed diodes

1N4148; 1N4448



High-speed diodes

1N4148; 1N4448



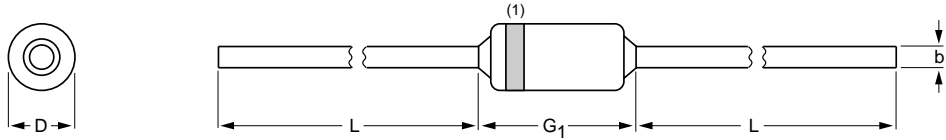
High-speed diodes

1N4148; 1N4448

PACKAGE OUTLINE

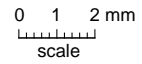
Hermetically sealed glass package; axial leaded; 2 leads

SOD27



DIMENSIONS (mm are the original dimensions)

UNIT	b max.	D max.	G <sub>1</sub> 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

## High-speed diodes

1N4148; 1N4448

## DATA SHEET STATUS

LEVEL	DATA SHEET STATUS <sup>(1)</sup>	PRODUCT STATUS <sup>(2)(3)</sup>	DEFINITION
I	Objective data	Development	This data sheet contains data from the objective specification for product development. Philips Semiconductors reserves the right to change the specification in any manner without notice.
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III	Product data	Production	This data sheet contains data from the product specification. Philips Semiconductors reserves the right to make changes at any time in order to improve the design, manufacturing and supply. Relevant changes will be communicated via a Customer Product/Process Change Notification (CPCN).

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2. The product status of the device(s) described in this data sheet may have changed since this data sheet was published. The latest information is available on the Internet at URL <http://www.semiconductors.philips.com>.
3. For data sheets describing multiple type numbers, the highest-level product status determines the data sheet status.

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**Limiting values definition** — Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 60134). 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.

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