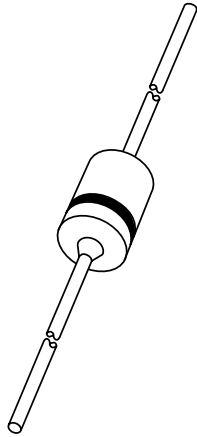


DATA SHEET



1N4148; 1N4448 High-speed diodes

Product data sheet
Supersedes data of 2002 Jan 23

2004 Aug 10

High-speed diodes

1N4148; 1N4448

FEATURES

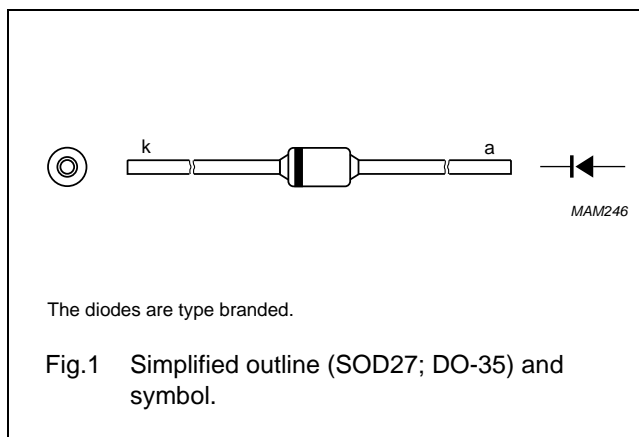
- Hermetically sealed leaded glass SOD27 (DO-35) package
- High switching speed: max. 4 ns
- General application
- Continuous reverse voltage: max. 100 V
- Repetitive peak reverse voltage: max. 100 V
- Repetitive peak forward current: max. 450 mA.

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 | | | |
| | | $t = 1\ \mu\text{s}$ | – | 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

- 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 $I_F = 10\ \text{mA}$ | – | 1 | V |
| | | $I_F = 5\ \text{mA}$ | 0.62 | 0.72 | V |
| | | $I_F = 100\ \text{mA}$ | – | 1 | V |
| I_R | reverse current | $V_R = 20\ \text{V}$; see Fig.5 | | 25 | nA |
| | | $V_R = 20\ \text{V}$; $T_j = 150\text{ °C}$; see Fig.5 | – | 50 | μA |
| I_R | reverse current; 1N4448 | $V_R = 20\ \text{V}$; $T_j = 100\text{ °C}$; see Fig.5 | – | 3 | μA |
| 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 |

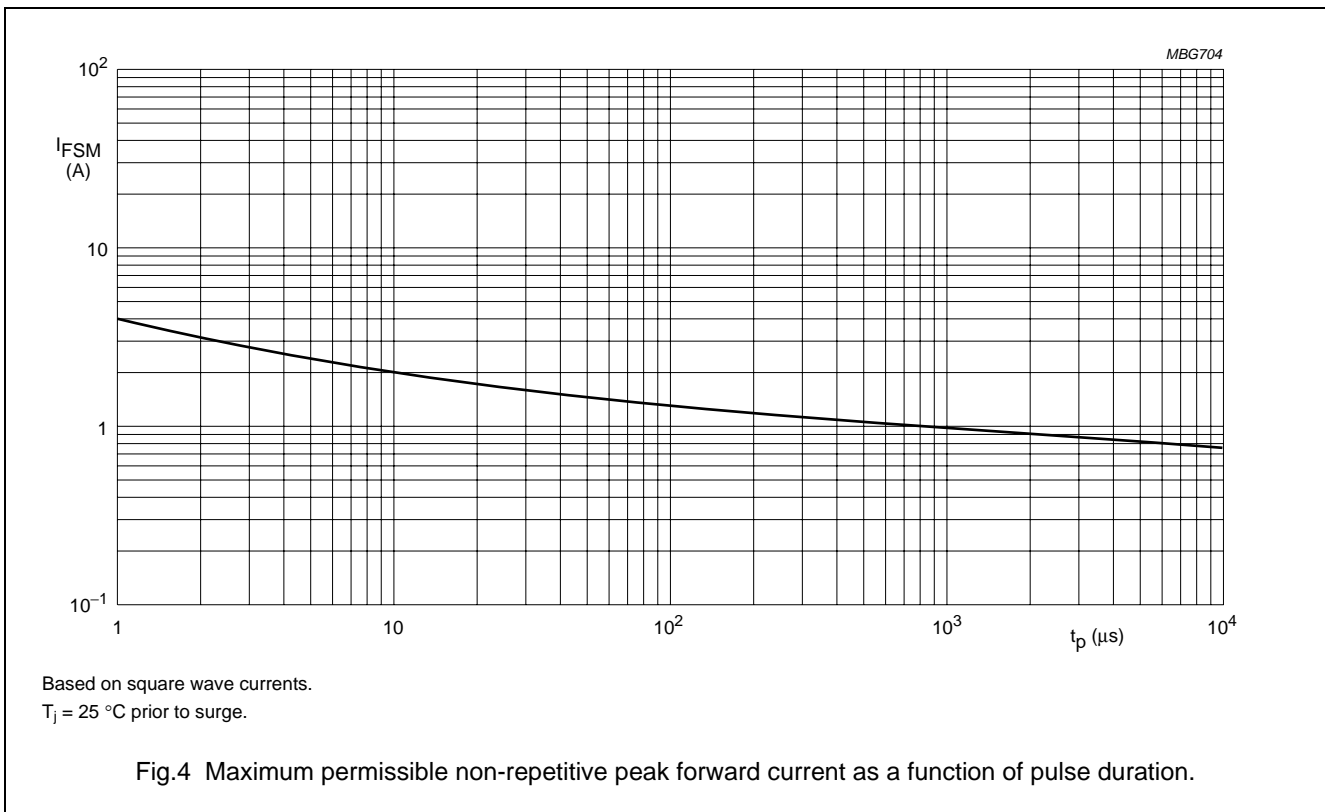
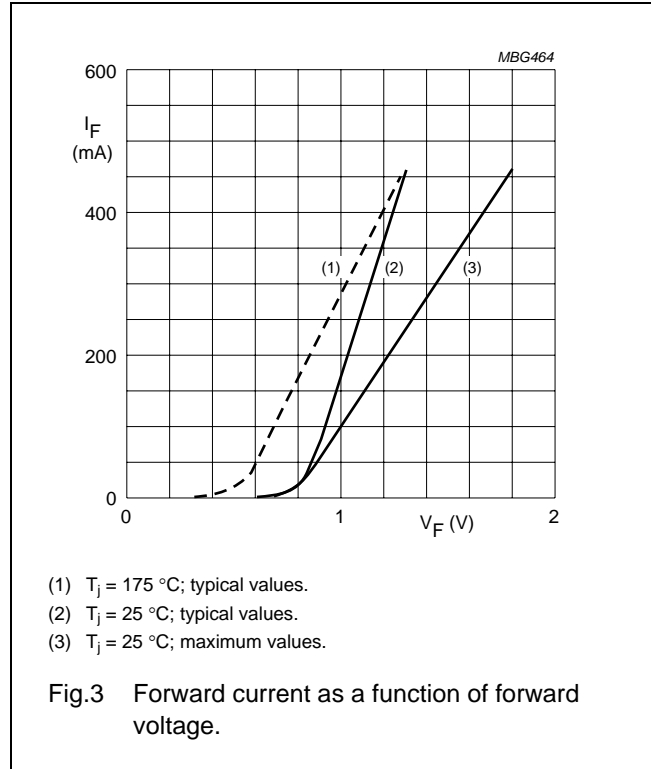
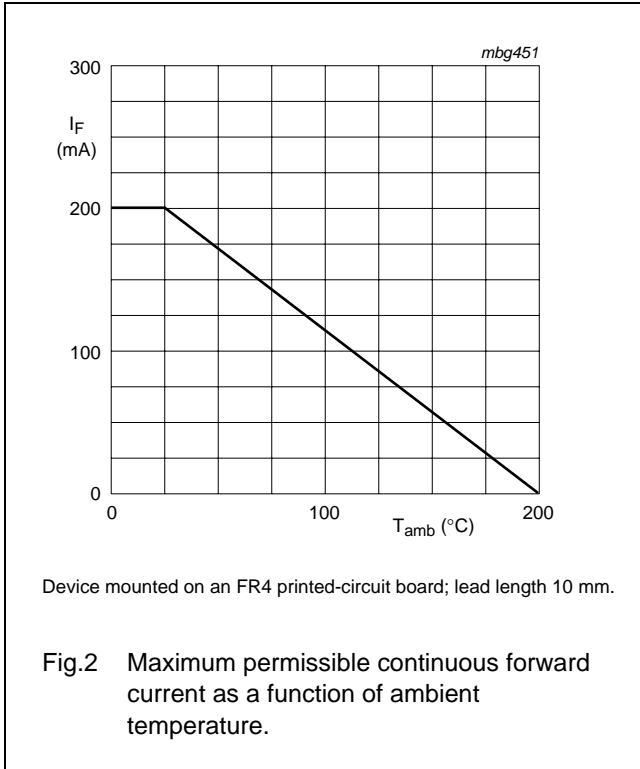
Note

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

High-speed diodes

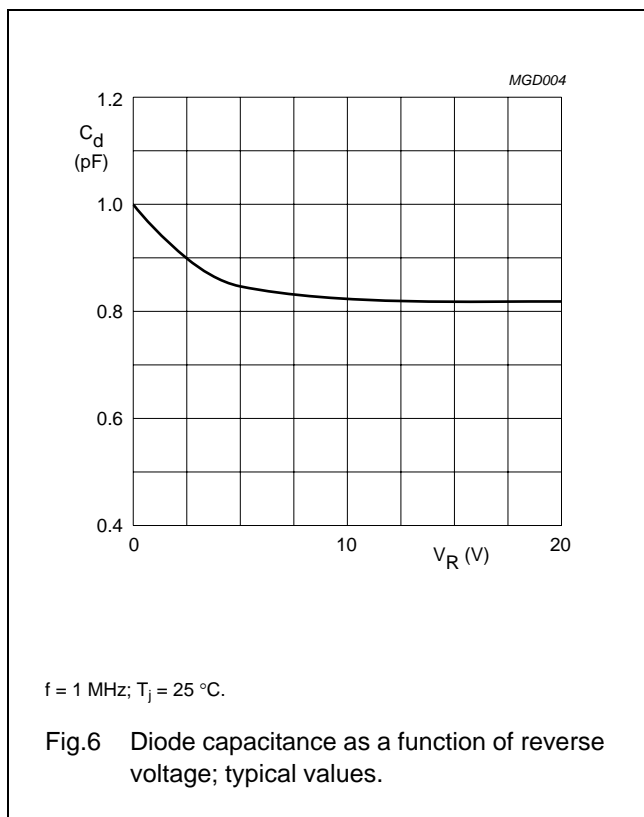
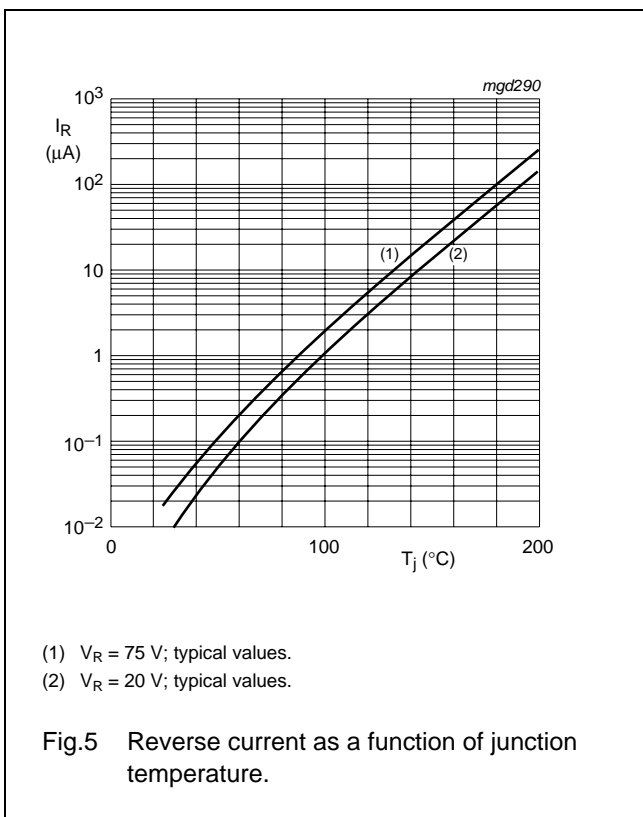
1N4148; 1N4448

GRAPHICAL DATA



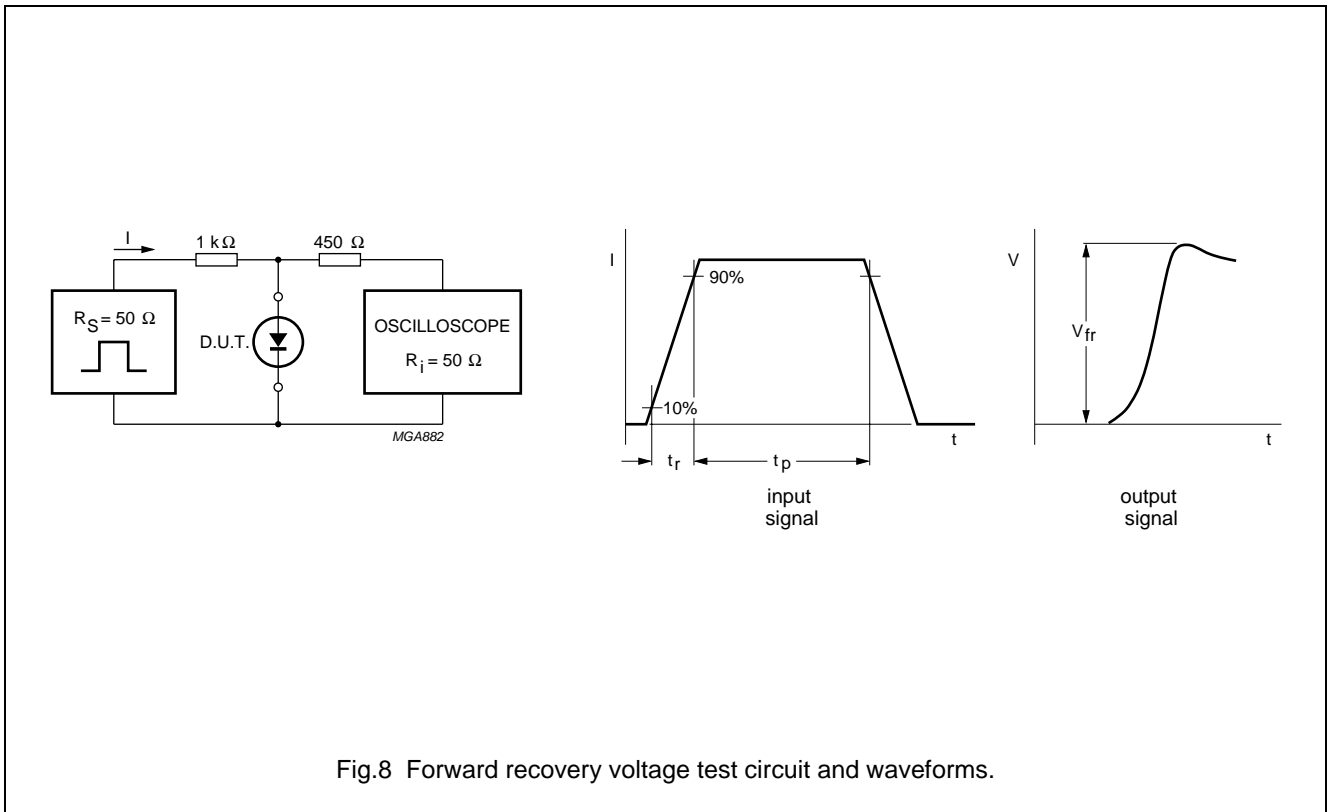
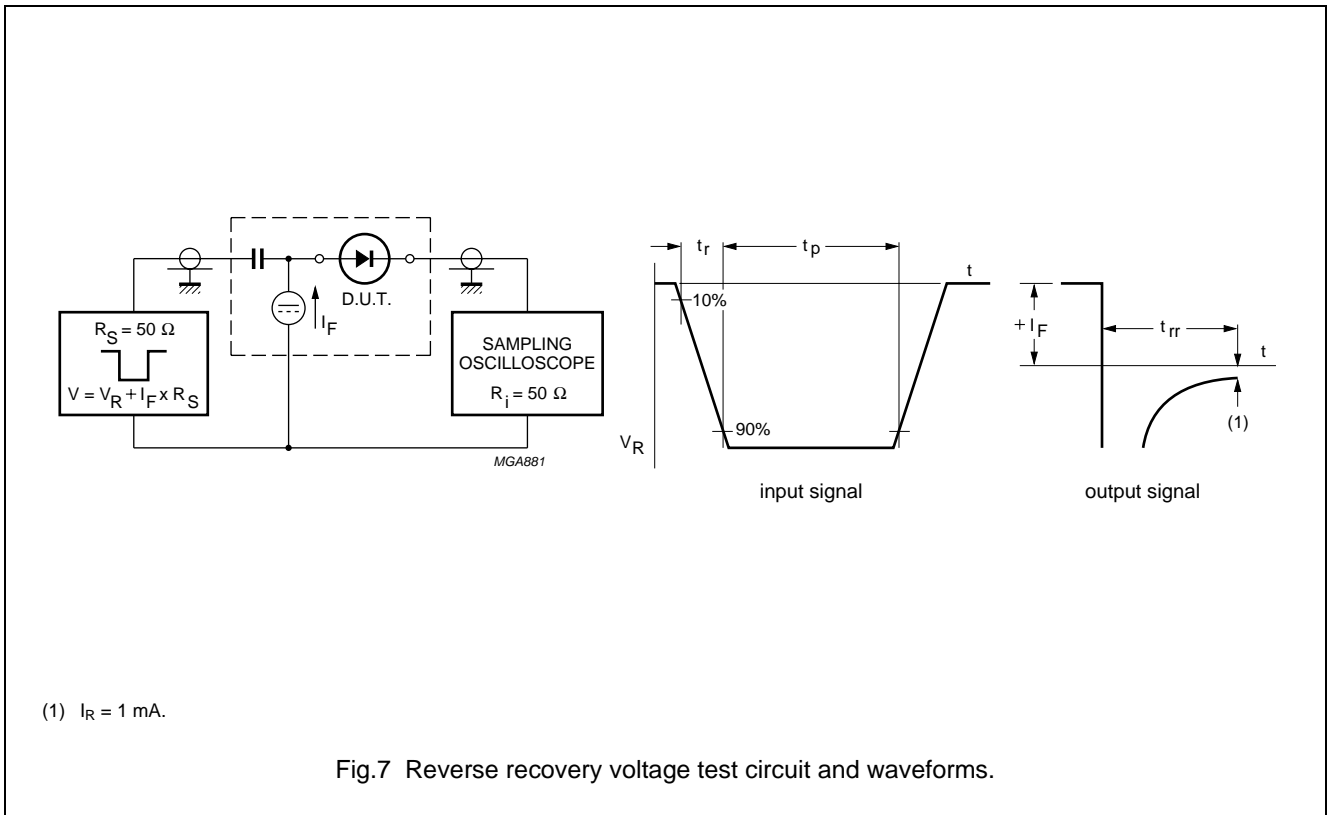
High-speed diodes

1N4148; 1N4448



High-speed diodes

1N4148; 1N4448



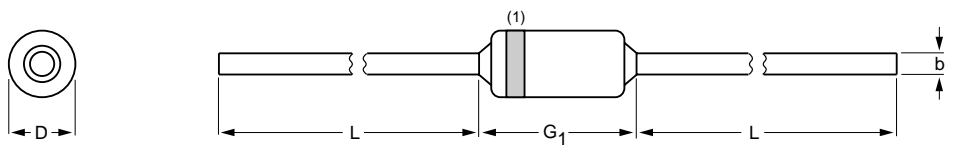
High-speed diodes

1N4148; 1N4448

PACKAGE OUTLINE

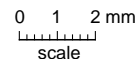
Hermetically sealed glass package; axial leaded; 2 leads

SOD27



DIMENSIONS (mm are the original dimensions)

| UNIT | b max. | D max. | G 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 | JEITA | | | |
| SOD27 | A24 | DO-35 | SC-40 | | | 97-06-09- 05-12-22 |

High-speed diodes

1N4148; 1N4448

DATA SHEET STATUS

| DOCUMENT STATUS ⁽¹⁾ | PRODUCT STATUS ⁽²⁾ | 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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Customer notification

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