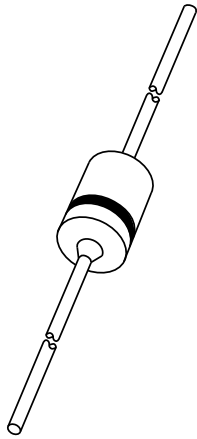


# DATA SHEET



## **BA220** High-speed diode

Product specification  
Supersedes data of April 1996  
File under Discrete Semiconductors, SC01

1996 Sep 03

# High-speed diode

# BA220

## FEATURES

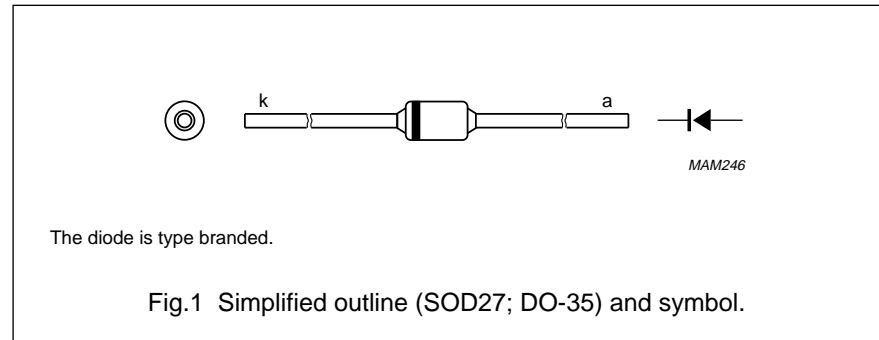
- Hermetically sealed leaded glass SOD27 (DO-35) package
- High switching speed: max. 4 ns
- General application
- Continuous reverse voltage: max. 10 V
- Repetitive peak reverse voltage: max. 10 V
- Repetitive peak forward current: max. 400 mA.

## APPLICATIONS

- High-speed switching.

## DESCRIPTION

The BA220 is a high-speed switching diode fabricated in planar technology, and encapsulated in the hermetically sealed leaded glass SOD27 (DO-35) package.



## LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 134).

| SYMBOL    | PARAMETER                           | CONDITIONS   | MIN. | MAX.        | UNIT        |
|-----------|-------------------------------------|--|------|-------------|-------------|
| $V_{RRM}$ | repetitive peak reverse voltage     |  | –    | 10          | V           |
| $V_R$     | continuous reverse voltage          |  | –    | 10          | V           |
| $I_F$     | continuous forward current          | see Fig.2; note 1  | –    | 200         | mA          |
| $I_{FRM}$ | repetitive peak forward current     |  | –    | 400         | mA          |
| $I_{FSM}$ | non-repetitive peak forward current | square wave; $T_j = 25\text{ °C}$ prior to surge; see Fig.4<br>$t = 1\ \mu\text{s}$<br>$t = 100\ \mu\text{s}$<br>$t = 1\ \text{s}$ | –    | 9<br>3<br>1 | A<br>A<br>A |
| $P_{tot}$ | total power dissipation             | $T_{amb} = 25\text{ °C}$ ; note 1  | –    | 350         | 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 diode

BA220

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

| SYMBOL   | PARAMETER                | CONDITIONS  | MIN.                            | MAX.                            | UNIT                           |
|----------|--------------------------|---|---------------------------------|---------------------------------|--------------------------------|
| $V_F$    | forward voltage          | see Fig.3<br>$I_F = 0.1\text{ mA}$<br>$I_F = 1\text{ mA}$<br>$I_F = 5\text{ mA}$<br>$I_F = 10\text{ mA}$<br>$I_F = 100\text{ mA}$   | 460<br>560<br>640<br>680<br>825 | 520<br>620<br>700<br>750<br>950 | mV<br>mV<br>mV<br>mV<br>mV     |
| $I_R$    | reverse current          | see Fig.5<br>$V_R = 10\text{ V}$<br>$V_R = 10\text{ V}; T_j = 150\text{ }^\circ\text{C}$  | –<br>–                          | 1.5<br>50                       | $\mu\text{A}$<br>$\mu\text{A}$ |
| $C_d$    | diode capacitance        | $f = 1\text{ MHz}; V_R = 0$ ; see Fig.6   | –                               | 2.5                             | 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 $I_F = 400\text{ mA}$ ; $t_r = 30\text{ ns}$ ; see Fig.8   | –                               | 2.0                             | 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 | 500   | K/W  |

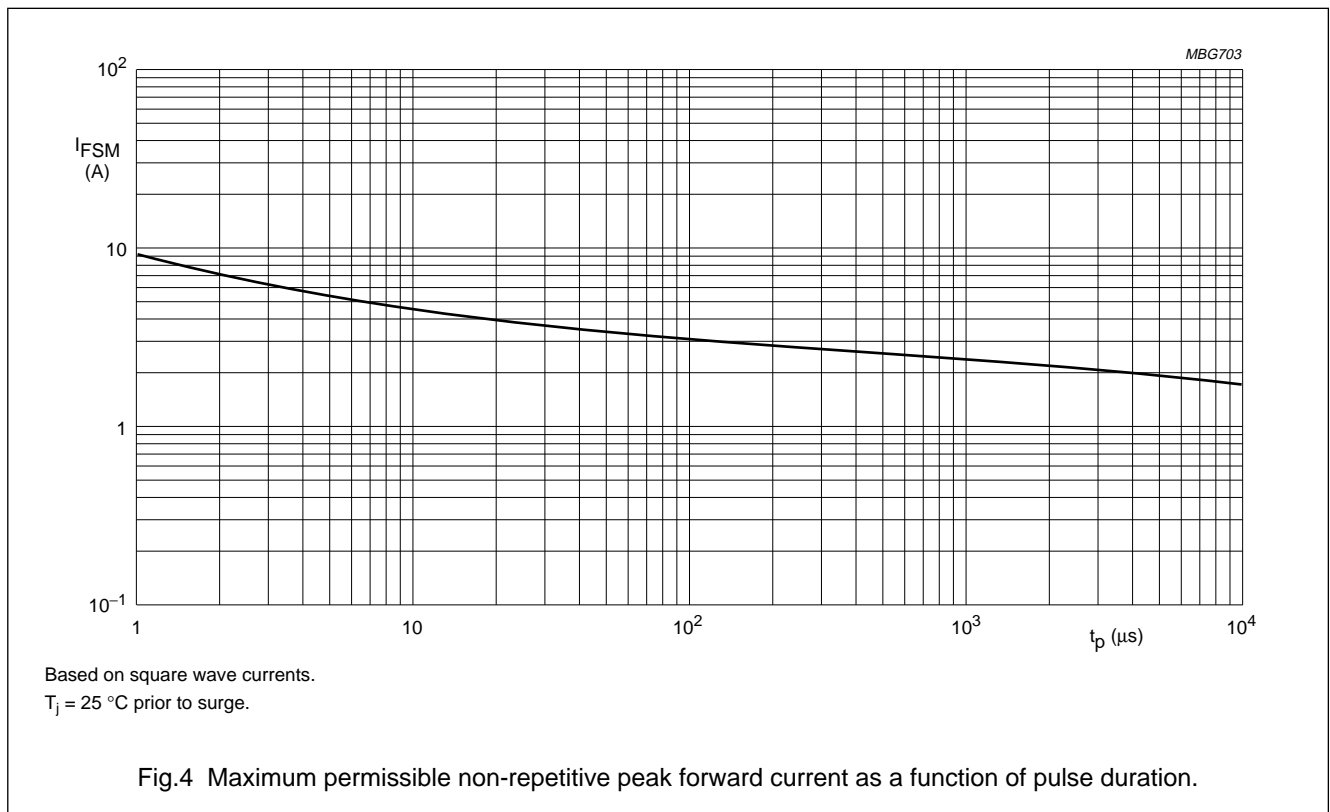
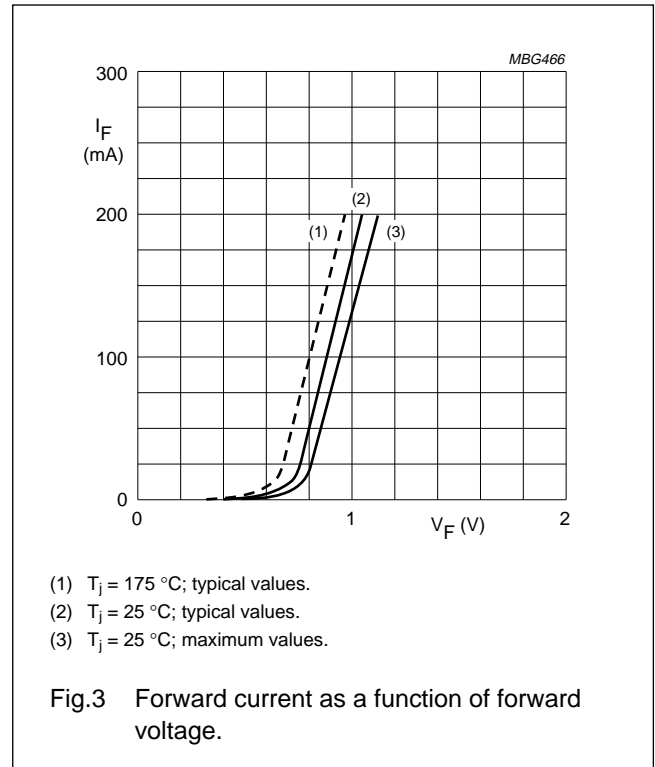
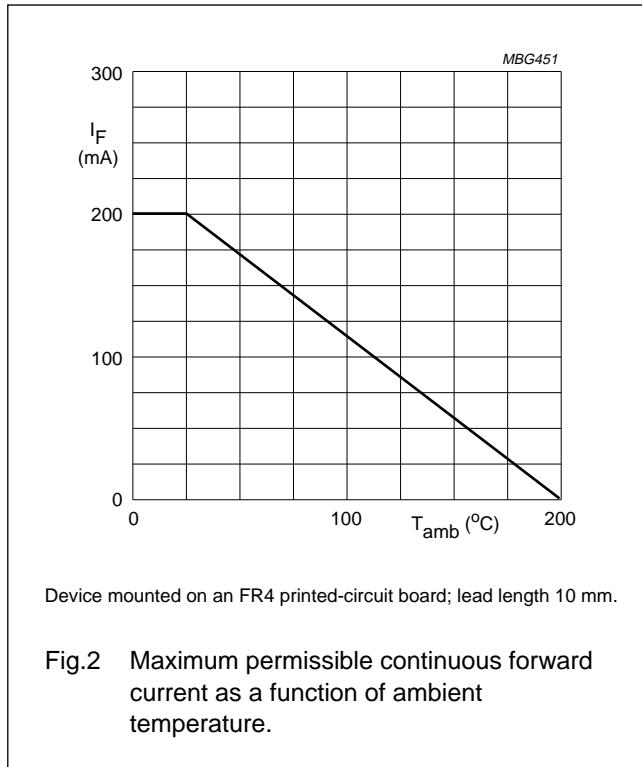
**Note**

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

High-speed diode

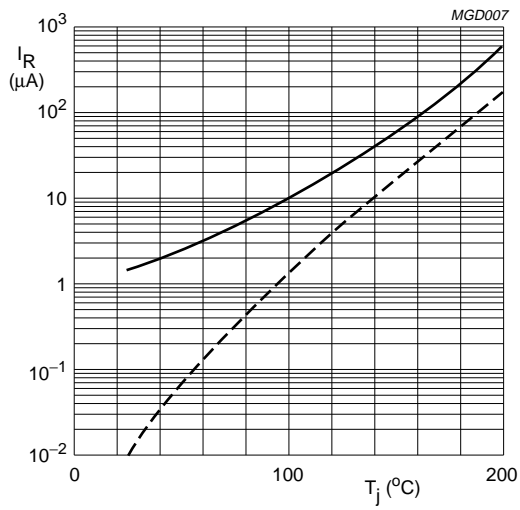
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GRAPHICAL DATA



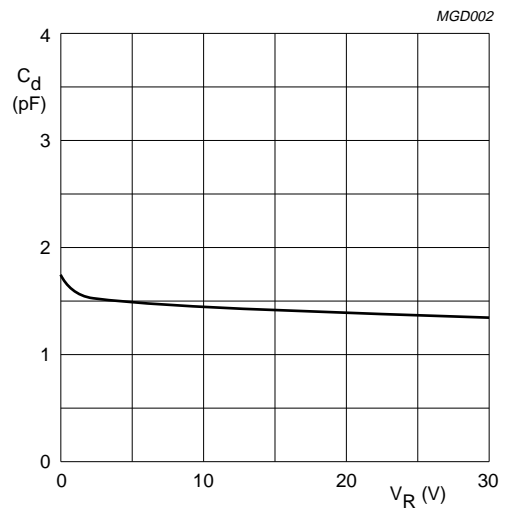
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$V_R = 10$  V.  
 Solid line; maximum values.  
 Dotted line; typical values.

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

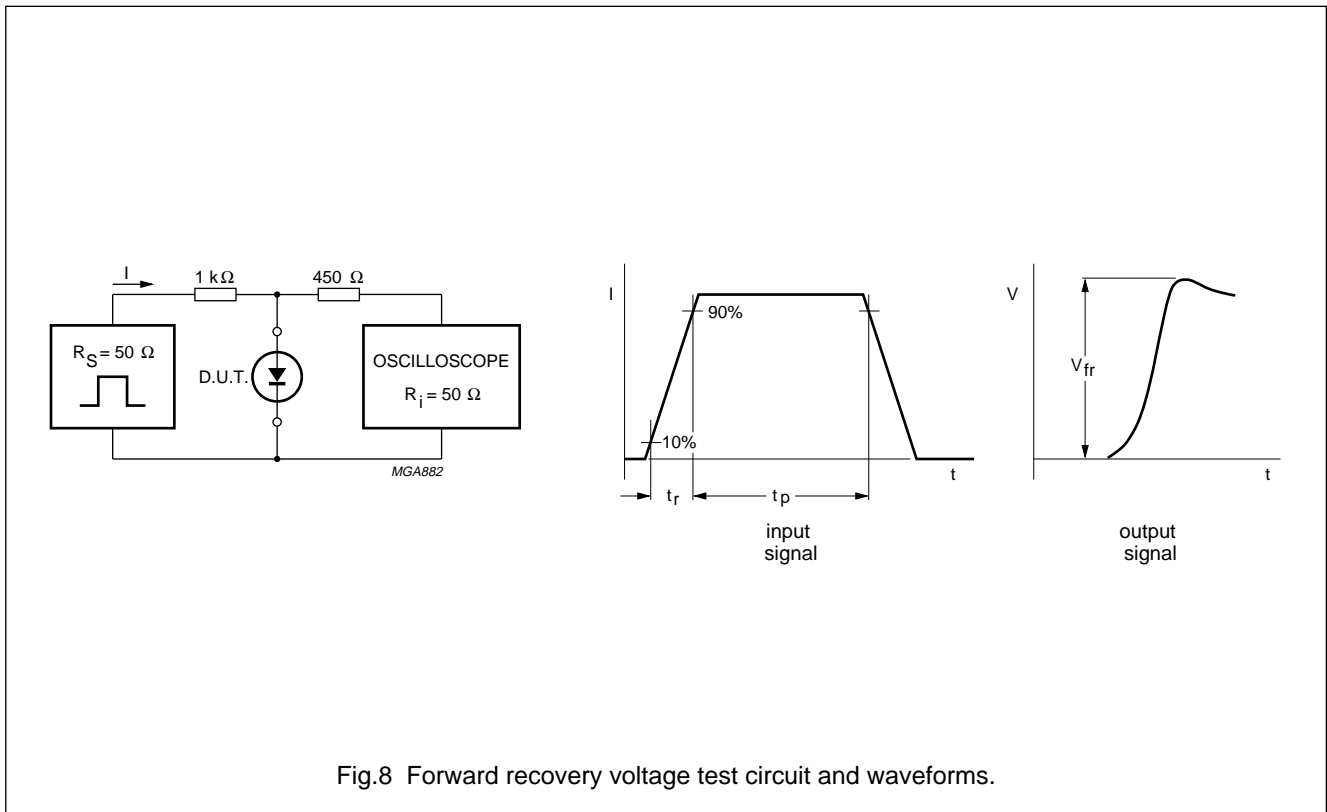
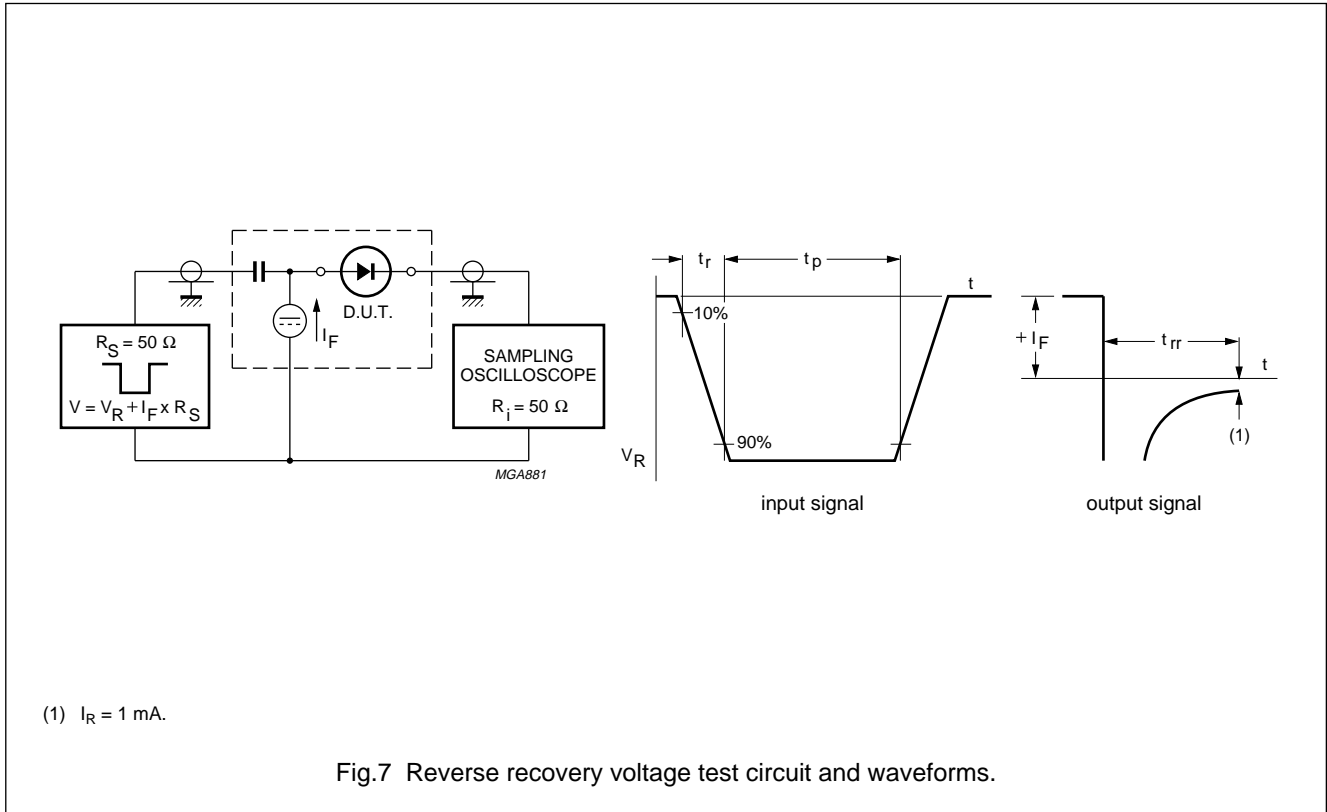


$f = 1$  MHz;  $T_j = 25$  °C.

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

High-speed diode

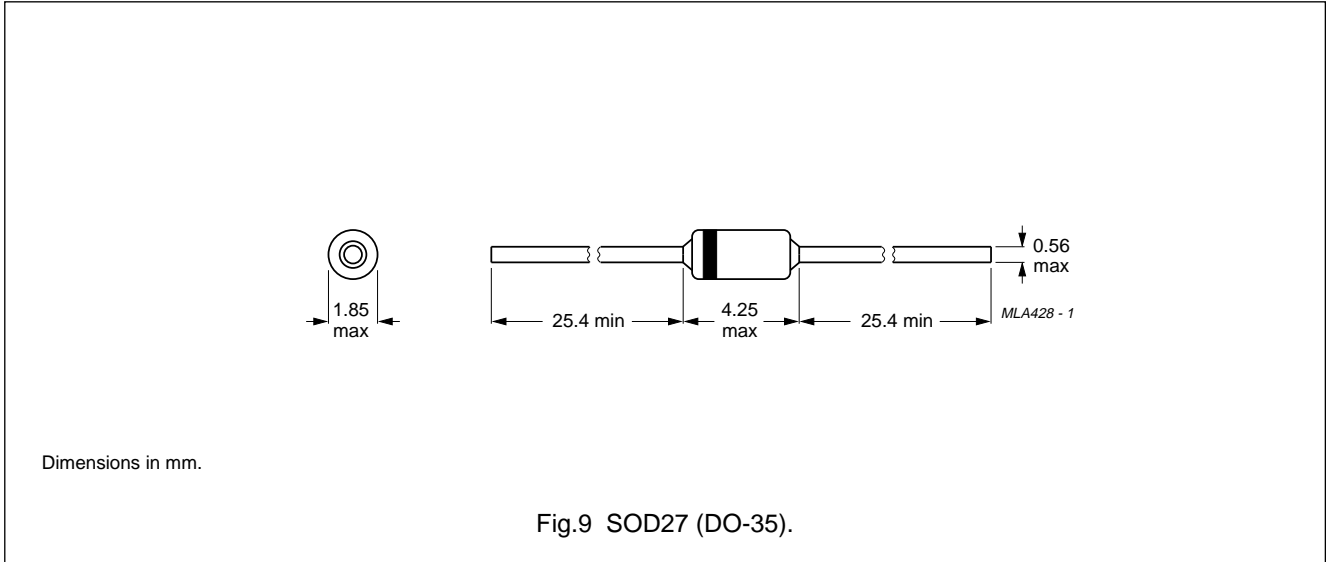
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High-speed diode

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PACKAGE OUTLINE



DEFINITIONS

|   |   |
|---|---|
| <b>Data Sheet Status</b>  |   |
| 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.                                |
| <b>Limiting values</b>  |   |
| 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. |   |
| <b>Application information</b>  |   |
| Where application information is given, it is advisory and does not form part of the specification.   |   |

LIFE SUPPORT APPLICATIONS

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