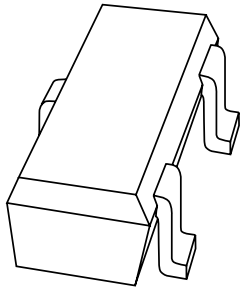


# DATA SHEET



**1PS181**

High-speed double diode

Product specification  
Supersedes data of April 1996

1996 Sep 03

# High-speed double diode

# 1PS181

### FEATURES

- Small plastic SMD package
- High switching speed: max. 4 ns
- Continuous reverse voltage: max. 80 V
- Repetitive peak reverse voltage: max. 85 V
- Repetitive peak forward current: max. 500 mA.

### APPLICATIONS

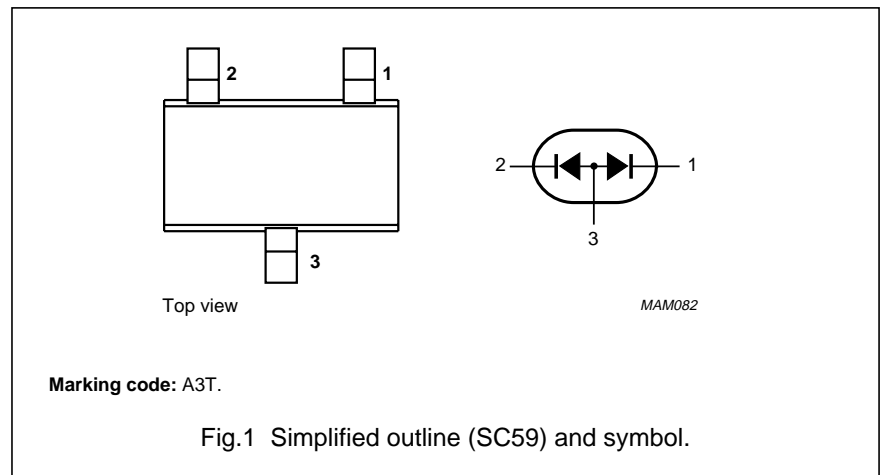
- High-speed switching in e.g. surface mounted circuits.

### DESCRIPTION

The 1PS181 consists of two high-speed switching diodes with common anodes, fabricated in planar technology, and encapsulated in the small plastic SMD SC59 package.

### PINNING

| PIN | DESCRIPTION  |
|-----|--------------|
| 1   | cathode (k1) |
| 2   | cathode (k2) |
| 3   | common anode |



### LIMITING VALUES

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

| SYMBOL           | PARAMETER                           | CONDITIONS                                       | MIN. | MAX. | UNIT |
|------------------|-------------------------------------|--|------|------|------|
| <b>Per diode</b> |                                     |  |      |      |      |
| $V_{RRM}$        | repetitive peak reverse voltage     |  | –    | 85   | V    |
| $V_R$            | continuous reverse voltage          |  | –    | 80   | V    |
| $I_F$            | continuous forward current          | single diode loaded; see Fig.2; note 1           | –    | 215  | mA   |
|                  |                                     | double diode loaded; see Fig.2; note 1           | –    | 125  | mA   |
| $I_{FRM}$        | repetitive peak forward current     |  | –    | 500  | mA   |
| $I_{FSM}$        | non-repetitive peak forward current | square wave; $T_j = 25\text{ °C}$ prior to surge |      |      |      |
|                  |                                     | $t = 1\ \mu\text{s}$                             | –    | 4    | A    |
|                  |                                     | $t = 1\ \text{s}$                                | –    | 0.5  | A    |
| $P_{tot}$        | total power dissipation             | $T_{amb} = 25\text{ °C}$ ; note 1                | –    | 250  | mW   |
| $T_{stg}$        | storage temperature                 |  | –65  | +150 | °C   |
| $T_j$            | junction temperature                |  | –    | 150  | °C   |

### Note

1. Device mounted on an FR4 printed-circuit board.

## High-speed double diode

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

| SYMBOL           | PARAMETER                | CONDITIONS  | TYP. | MAX. | UNIT          |
|------------------|--------------------------|---|------|------|---------------|
| <b>Per diode</b> |                          |   |      |      |               |
| $V_F$            | forward voltage          | see Fig.3   |      |      |               |
|                  |                          | $I_F = 1\text{ mA}$   | 610  | –    | mV            |
|                  |                          | $I_F = 10\text{ mA}$  | 740  | –    | mV            |
|                  |                          | $I_F = 50\text{ mA}$  | –    | 1.0  | V             |
|                  |                          | $I_F = 100\text{ mA}$   | –    | 1.2  | V             |
| $I_R$            | reverse current          | see Fig.4   |      |      |               |
|                  |                          | $V_R = 25\text{ V}$   | –    | 30   | nA            |
|                  |                          | $V_R = 80\text{ V}$   | –    | 0.5  | $\mu\text{A}$ |
|                  |                          | $V_R = 25\text{ V}; T_j = 150\text{ °C}$  | –    | 30   | $\mu\text{A}$ |
|                  |                          | $V_R = 80\text{ V}; T_j = 150\text{ °C}$  | –    | 100  | $\mu\text{A}$ |
| $C_d$            | diode capacitance        | $f = 1\text{ MHz}; V_R = 0$ ; see Fig.5   | –    | 2.0  | pF            |
| $t_{rr}$         | reverse recovery time    | when switched from $I_F = 10\text{ mA}$ to $I_R = 10\text{ mA}$ ; $R_L = 100\ \Omega$ ; measured at $I_R = 1\text{ mA}$ ; see Fig.6 | –    | 4    | ns            |
| $V_{fr}$         | forward recovery voltage | when switched from $I_F = 10\text{ mA}$ ; $t_r = 20\text{ ns}$ ; see Fig.7  | –    | 1.75 | V             |

**THERMAL CHARACTERISTICS**

| SYMBOL         | PARAMETER                                     | CONDITIONS | VALUE | UNIT |
|----------------|---|------------|-------|------|
| $R_{th\ j-tp}$ | thermal resistance from junction to tie-point |            | 250   | K/W  |
| $R_{th\ j-a}$  | thermal resistance from junction to ambient   | note 1     | 500   | K/W  |

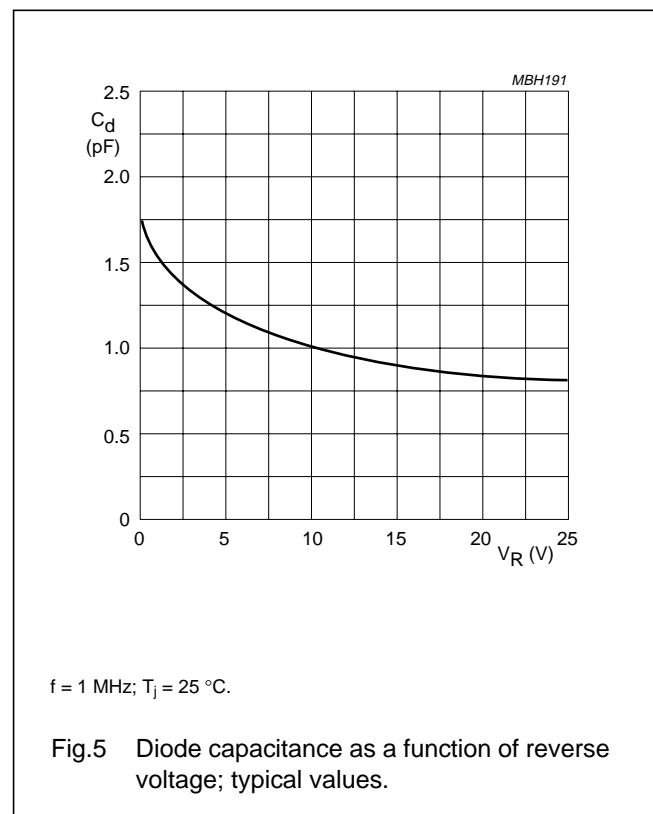
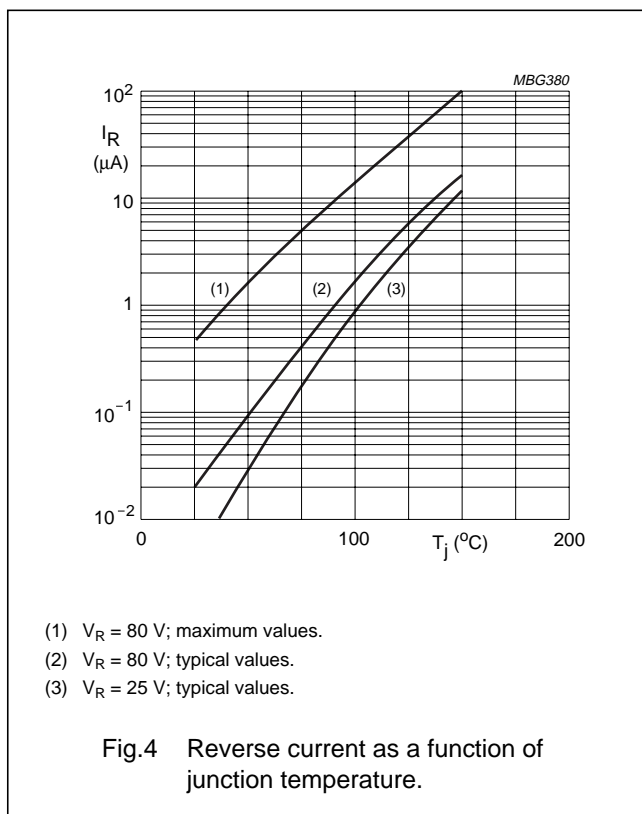
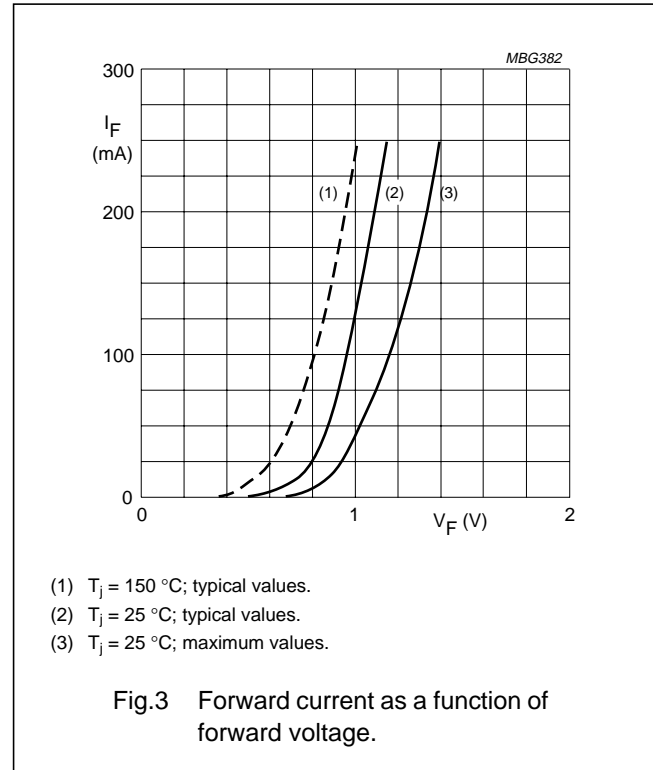
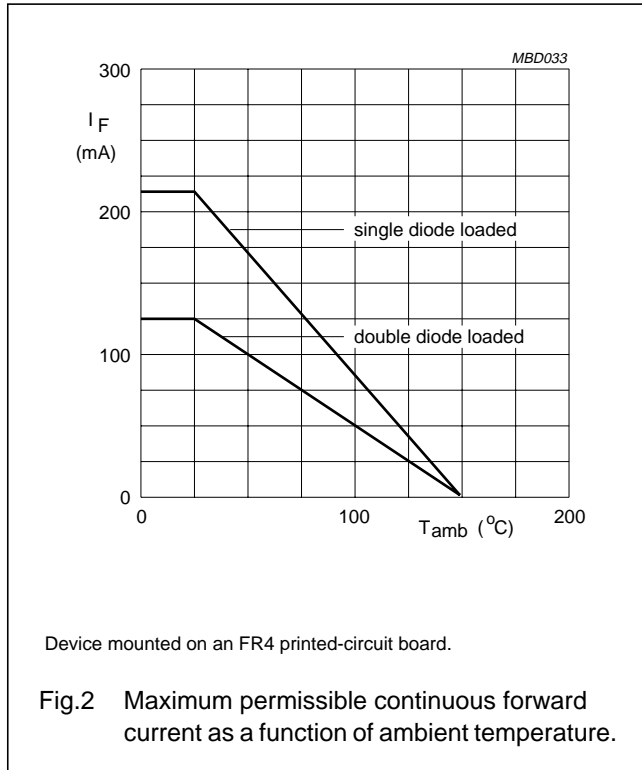
**Note**

1. Device mounted on an FR4 printed-circuit board.

# High-speed double diode

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## GRAPHICAL DATA

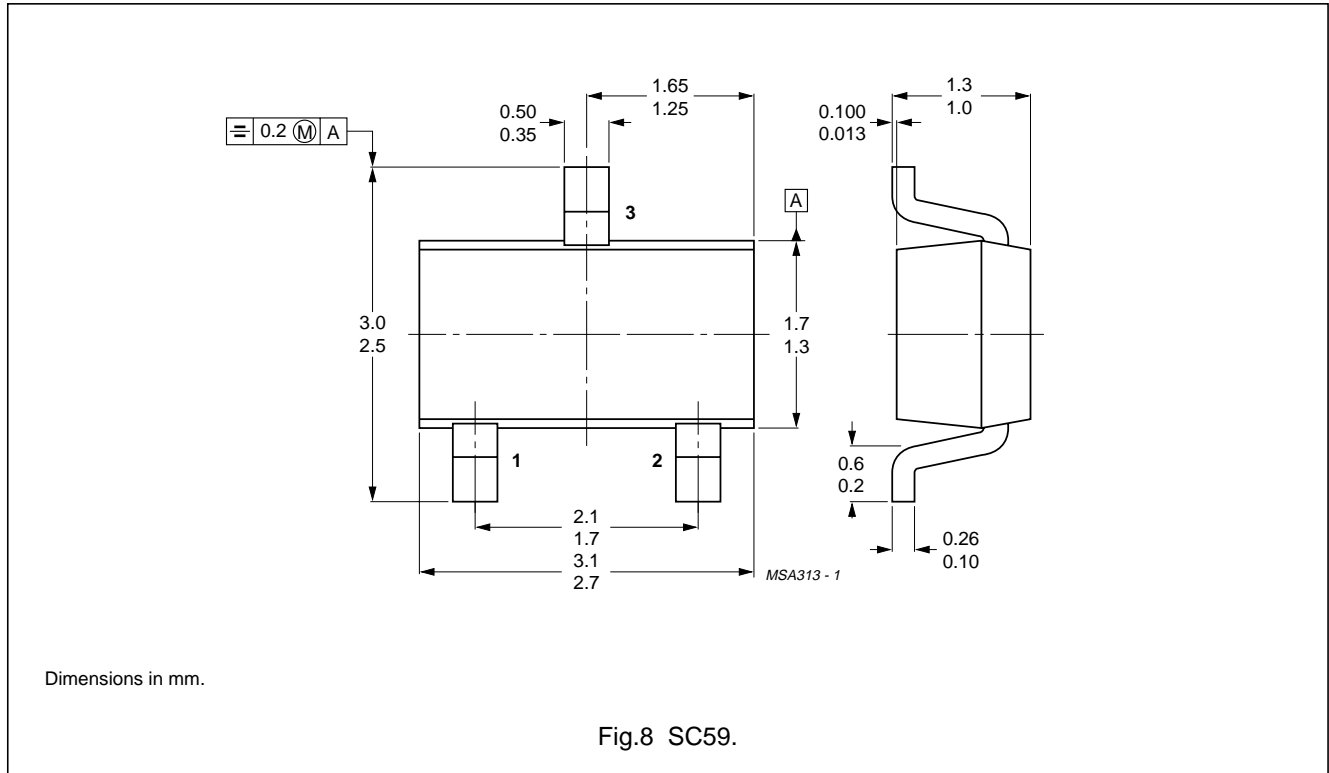




# High-speed double diode

1PS181

## PACKAGE OUTLINE



## 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.   |   |

## LIFE SUPPORT APPLICATIONS

These products are not designed for use in life support appliances, devices, or systems where malfunction of these products can reasonably be expected to result in personal injury. Philips customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Philips for any damages resulting from such improper use or sale.