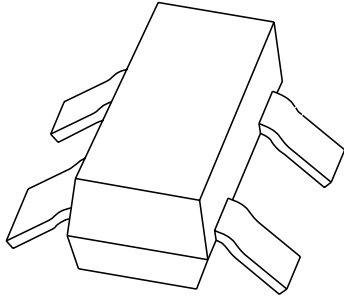


# DATA SHEET



## **BAS56** High-speed double diode

Product specification  
Supersedes data of April 1996

1996 Sep 10

# High-speed double diode

# BAS56

### FEATURES

- Small plastic SMD package
- High switching speed: max. 6 ns
- Continuous reverse voltage: max. 60 V
- Repetitive peak reverse voltage: max. 60 V
- Repetitive peak forward current: max. 600 mA.

### APPLICATIONS

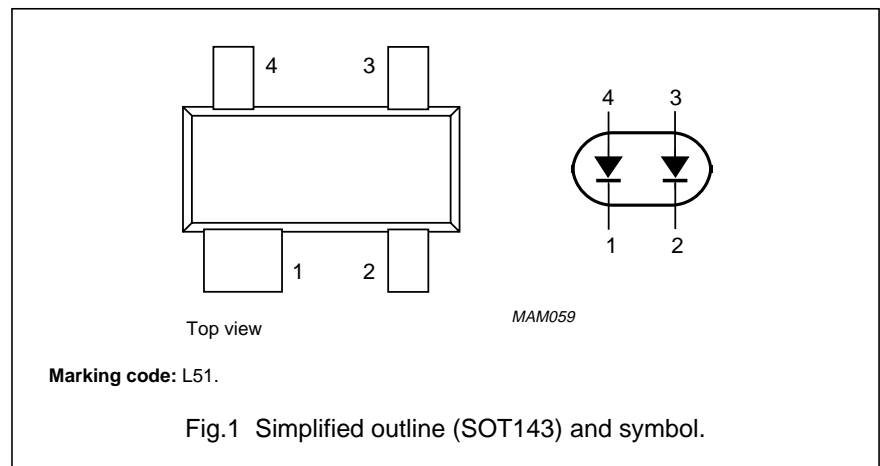
- High speed switching in e.g. surface mounted circuits.

### DESCRIPTION

The BAS56 consists of two high-speed switching diodes fabricated in planar technology, and encapsulated in the small rectangular plastic SMD SOT143 package. The diodes are not connected.

### PINNING

| PIN | DESCRIPTION  |
|-----|--------------|
| 1   | cathode (k1) |
| 2   | cathode (k2) |
| 3   | anode (a2)   |
| 4   | anode (a1)   |



## High-speed double diode

## BAS56

**LIMITING VALUES**

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

| SYMBOL    | PARAMETER                           | CONDITIONS   | MIN. | MAX. | UNIT |
|-----------|-------------------------------------|--|------|------|------|
| $V_{RRM}$ | repetitive peak reverse voltage     |  | –    | 60   | V    |
| $V_{RRM}$ | repetitive peak reverse voltage     | series connection  |      | 120  | V    |
| $V_R$     | continuous reverse voltage          |  | –    | 60   | V    |
| $V_R$     | continuous reverse voltage          | series connection  | –    | 120  | V    |
| $I_F$     | continuous forward current          | single diode loaded; see Fig.2;<br>note 1                      | –    | 200  | mA   |
|           |                                     | double diode loaded; see Fig.2;<br>note 1                      | –    | 150  | mA   |
| $I_{FRM}$ | repetitive peak forward current     | single diode loaded  | –    | 600  | mA   |
|           |                                     | double diode loaded  | –    | 430  | mA   |
| $I_{FSM}$ | non-repetitive peak forward current | square wave; $T_j = 25\text{ °C}$ prior to<br>surge; see Fig.4 |      |      |      |
|           |                                     | $t = 1\ \mu\text{s}$   | –    | 9    | A    |
|           |                                     | $t = 100\ \mu\text{s}$   | –    | 3    | A    |
|           |                                     | $t = 10\ \text{ms}$  | –    | 1.7  | 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

## BAS56

**ELECTRICAL CHARACTERISTICS**

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

| SYMBOL   | PARAMETER                | CONDITIONS   | MIN.        | MAX.       | UNIT                |
|----------|--------------------------|--|-------------|------------|---------------------|
| $V_F$    | forward voltage          | see Fig.3; $I_F = 200\text{ mA}$ ; DC value; note 1  | –           | 1.0        | V                   |
| $I_R$    | reverse current          | see Fig.5<br>$V_R = 60\text{ V}$<br>$V_R = 60\text{ V}; T_j = 150\text{ °C}$   | –<br>–      | 100<br>100 | nA<br>$\mu\text{A}$ |
| $I_R$    | reverse current          | series connection<br>$V_R = 120\text{ V}$<br>$V_R = 120\text{ V}; T_j = 150\text{ °C}$   | –<br>–<br>– | 100<br>100 | nA<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 $I_F = 400\text{ mA}$ to $I_R = 400\text{ mA}$ ; $R_L = 100\ \Omega$ ; measured at $I_R = 40\text{ mA}$ ; see Fig.7 | –           | 6          | 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                   |
|          |                          | when switched from $I_F = 400\text{ mA}$ ; $t_r = 100\text{ ns}$ ; see Fig.8   | –           | 1.5        | V                   |

**Note**

- $T_{amb} = 25\text{ °C}$ ; device has reached the thermal equilibrium when mounted on an FR4 printed-circuit board.

**THERMAL CHARACTERISTICS**

| SYMBOL         | PARAMETER                                     | CONDITIONS | VALUE | UNIT |
|----------------|---|------------|-------|------|
| $R_{th\ j-tp}$ | thermal resistance from junction to tie-point |            | 360   | K/W  |
| $R_{th\ j-a}$  | thermal resistance from junction to ambient   | note 1     | 500   | K/W  |

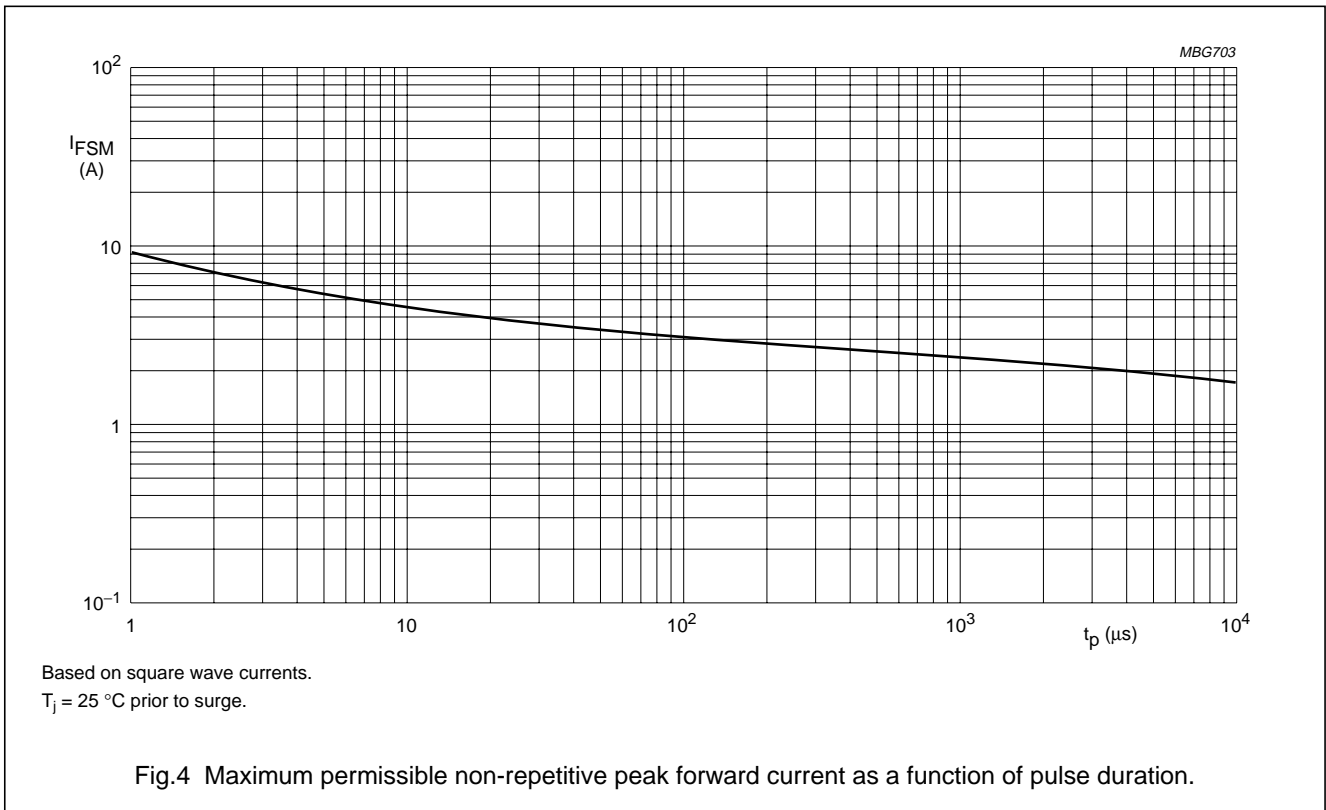
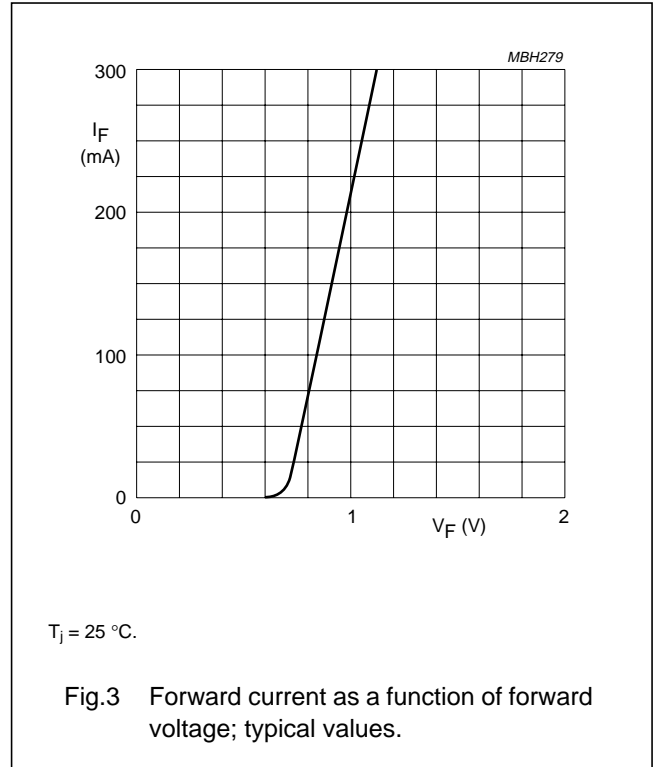
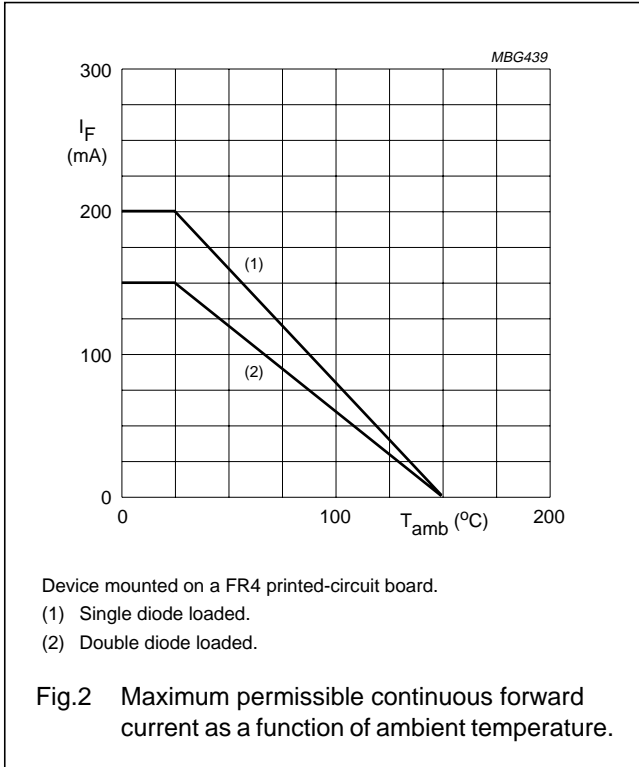
**Note**

- Device mounted on an FR4 printed-circuit board.

High-speed double diode

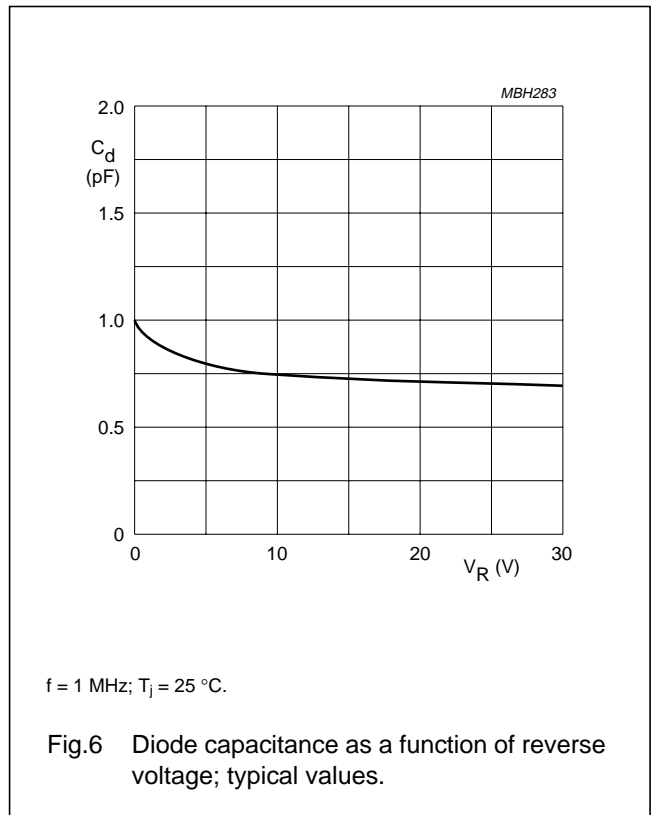
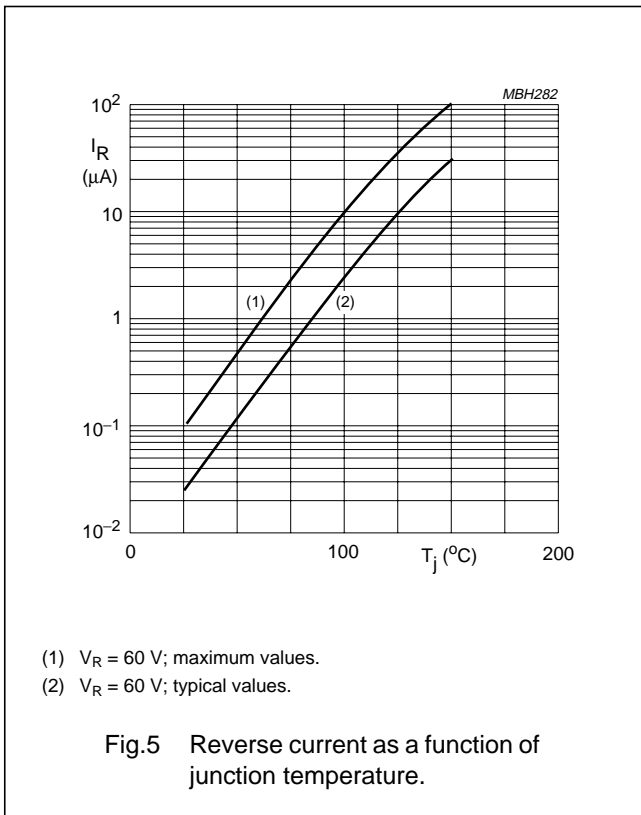
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GRAPHICAL DATA



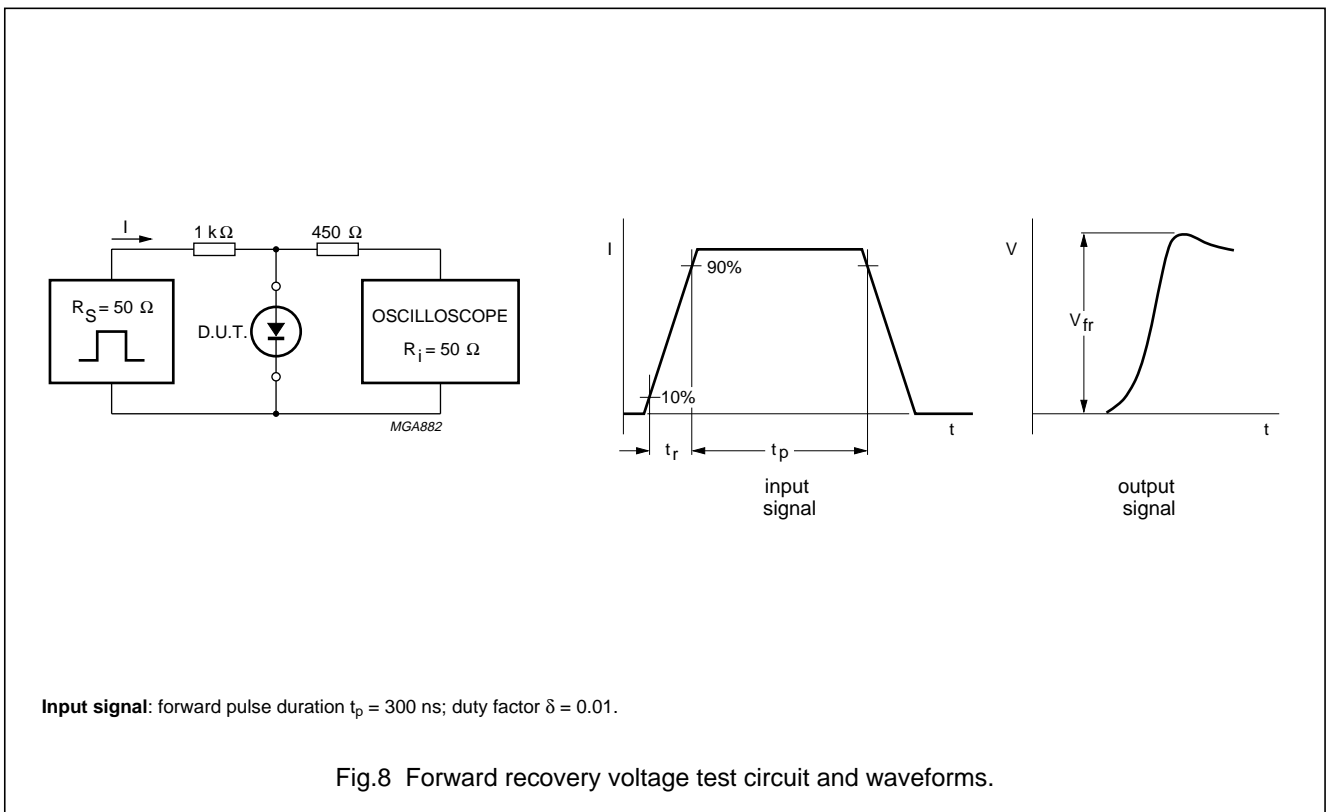
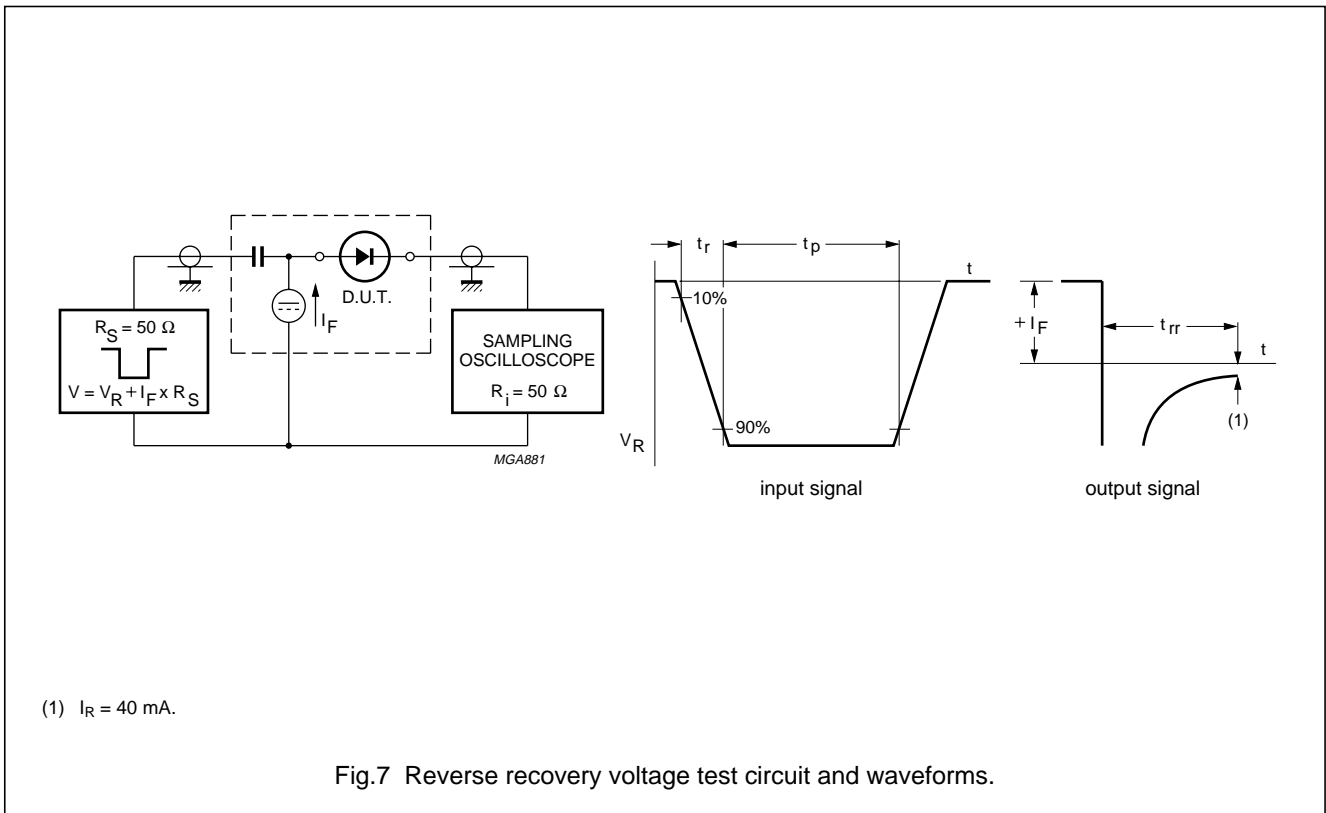
High-speed double diode

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High-speed double diode

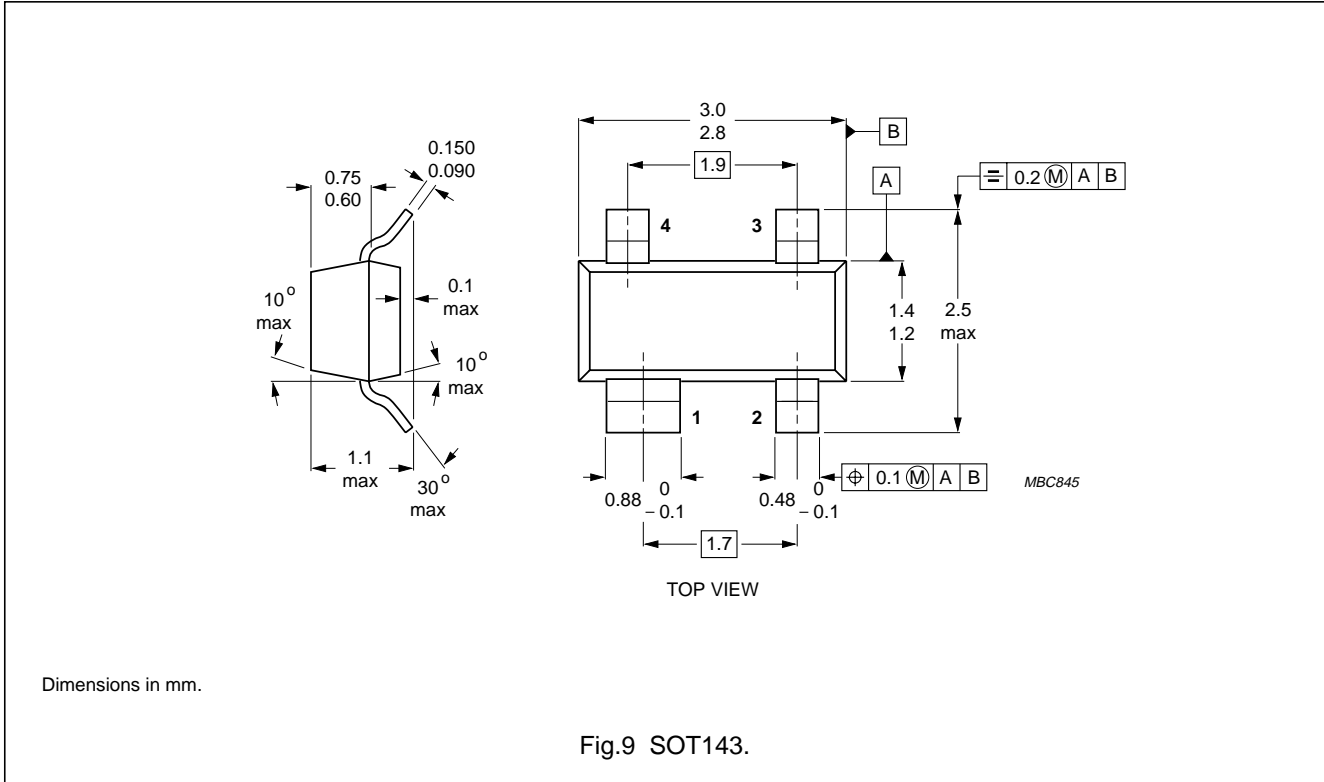
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High-speed double diode

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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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