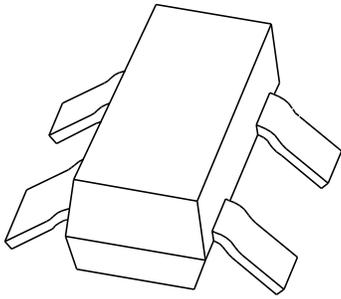


# DATA SHEET



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

Product specification  
Supersedes data of November 1993  
File under Discrete Semiconductors, SC01

1996 Apr 23

# 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
- Forward voltage: max. 1 V.

### APPLICATIONS

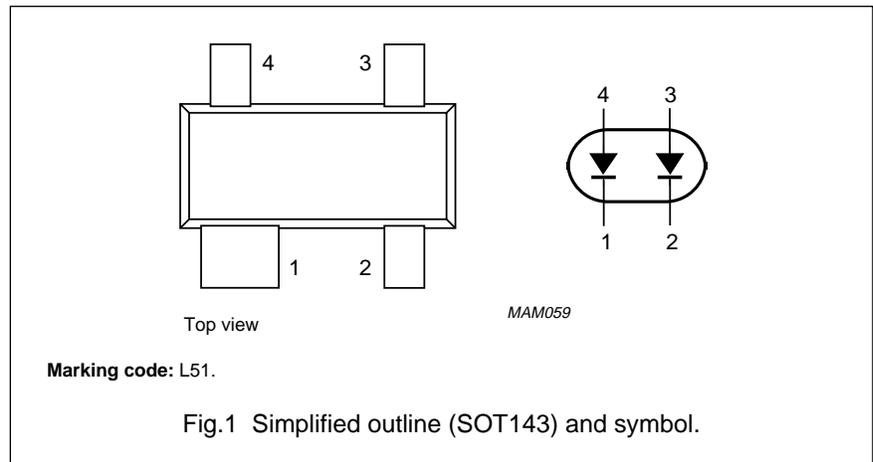
- High speed switching in e.g. surface mounted circuits.

### 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

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**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; note 1	–	200	mA
		double diode loaded; see Fig.2; 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 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

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**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 $V_R = 60\text{ V}$ $V_R = 60\text{ V}$ ; $T_j = 150\text{ °C}$	–	100	nA
$I_R$	reverse current	series connection $V_R = 120\text{ V}$ $V_R = 120\text{ V}$ ; $T_j = 150\text{ °C}$	–	100	nA
$C_d$	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 $I_R = 400\text{ mA}$ ; $R_L = 100\text{ }\Omega$ ; 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

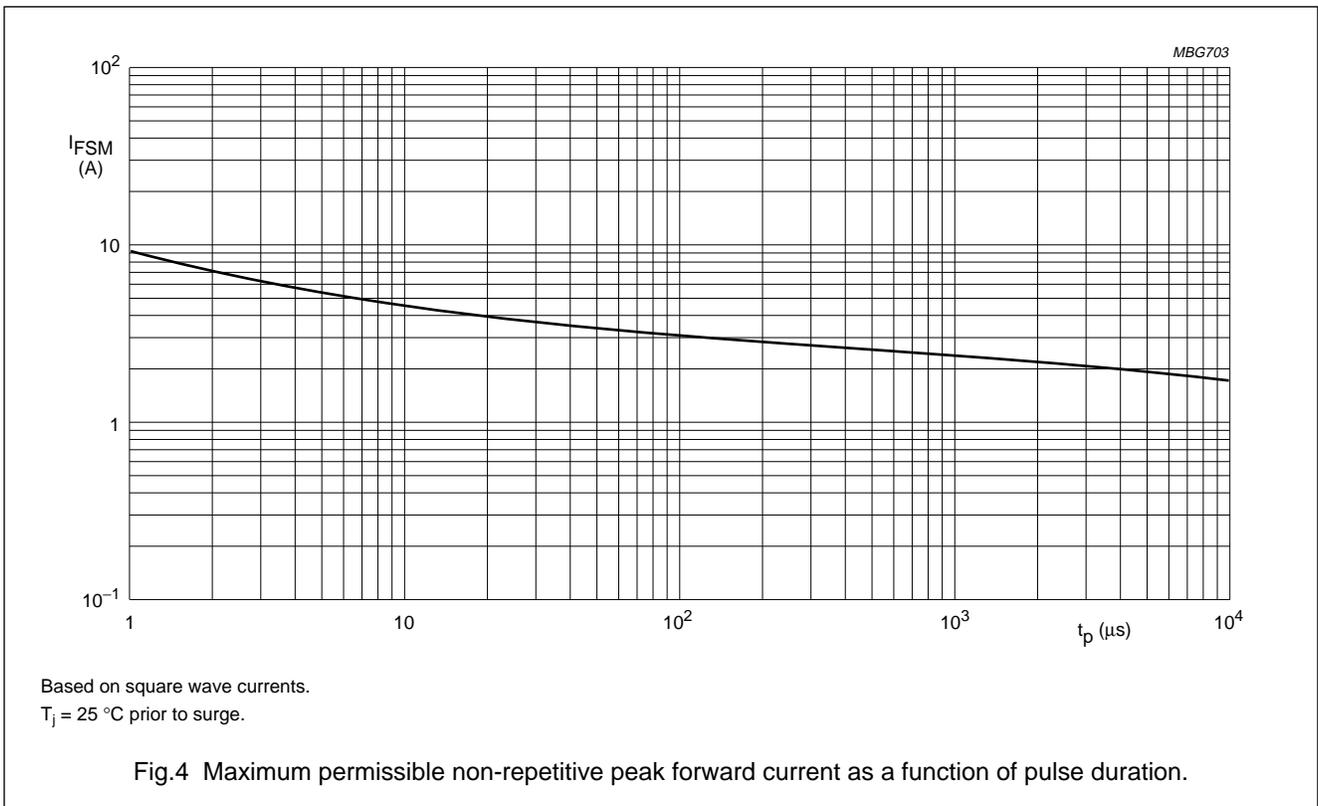
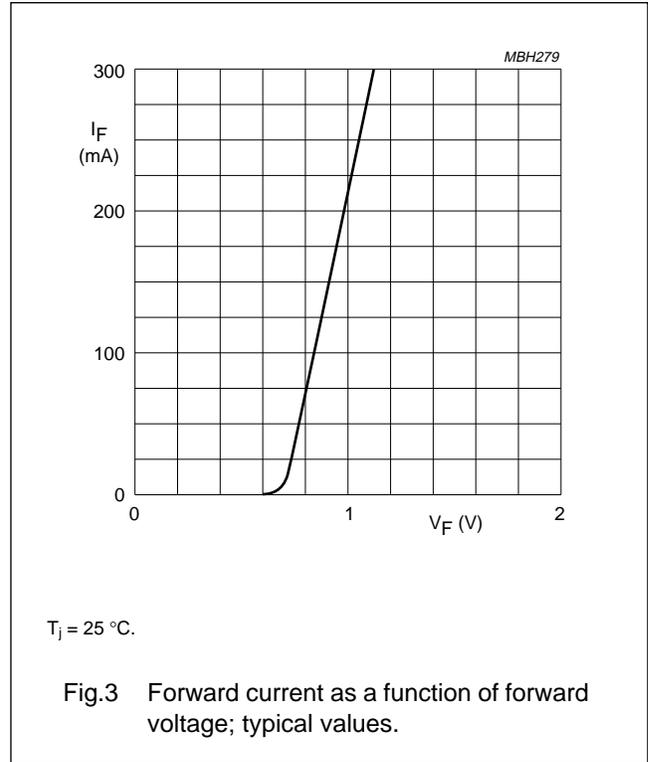
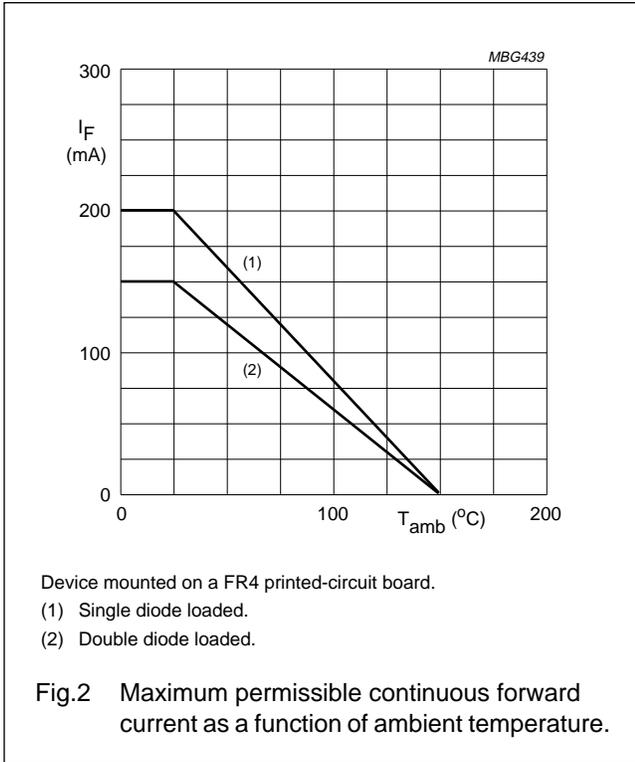
**Note**

- Device mounted on an FR4 printed-circuit board.

# High-speed double diode

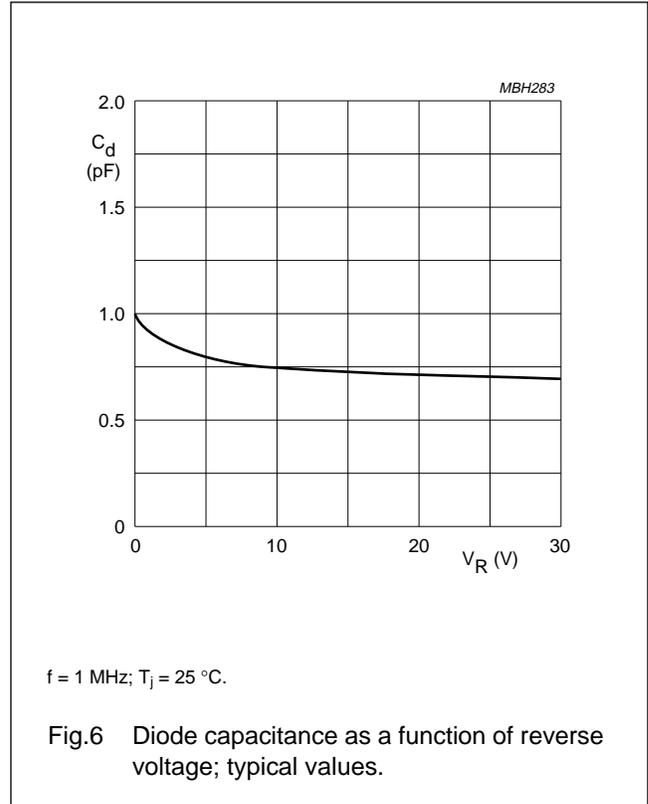
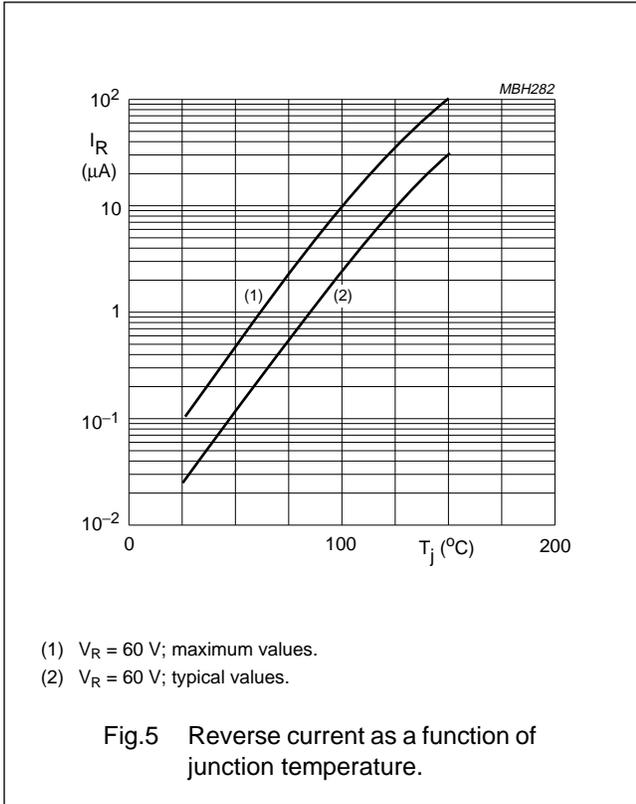
# BAS56

## GRAPHICAL DATA



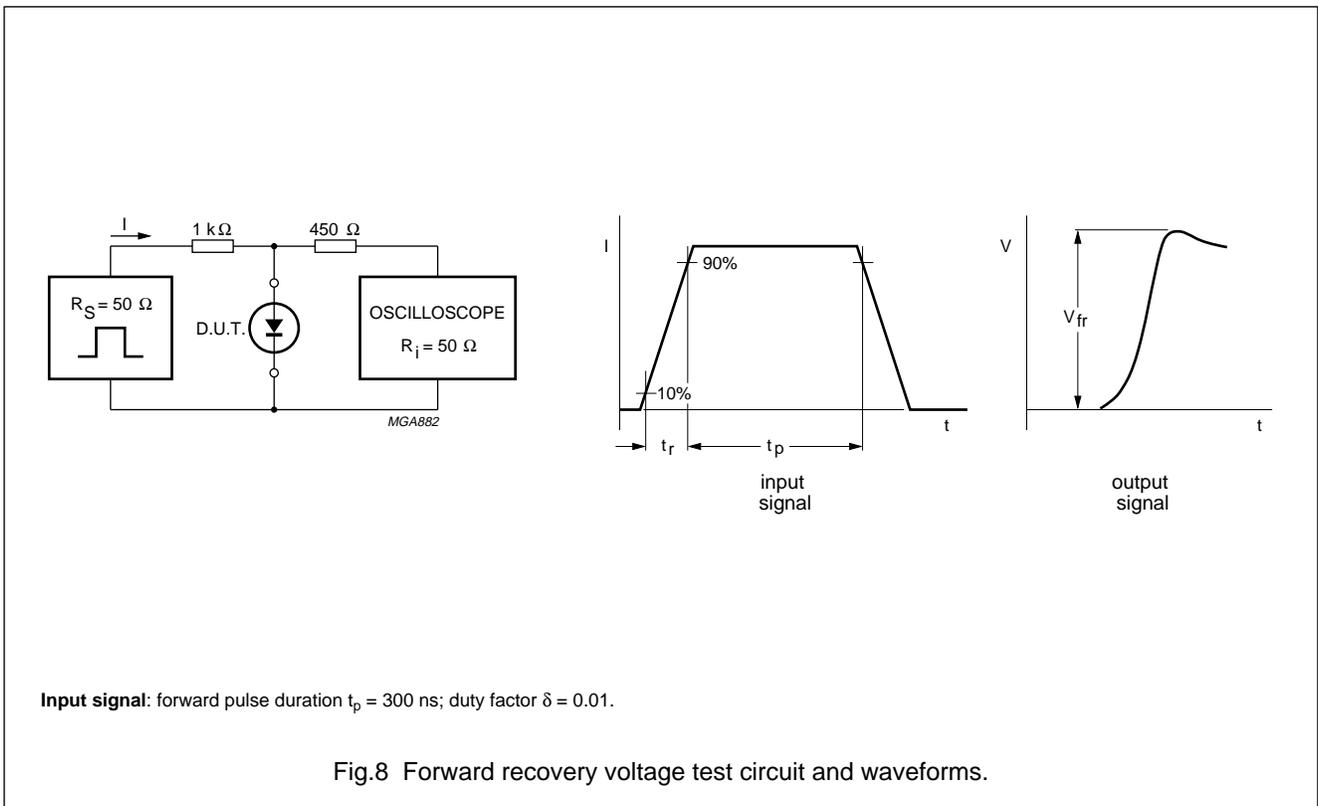
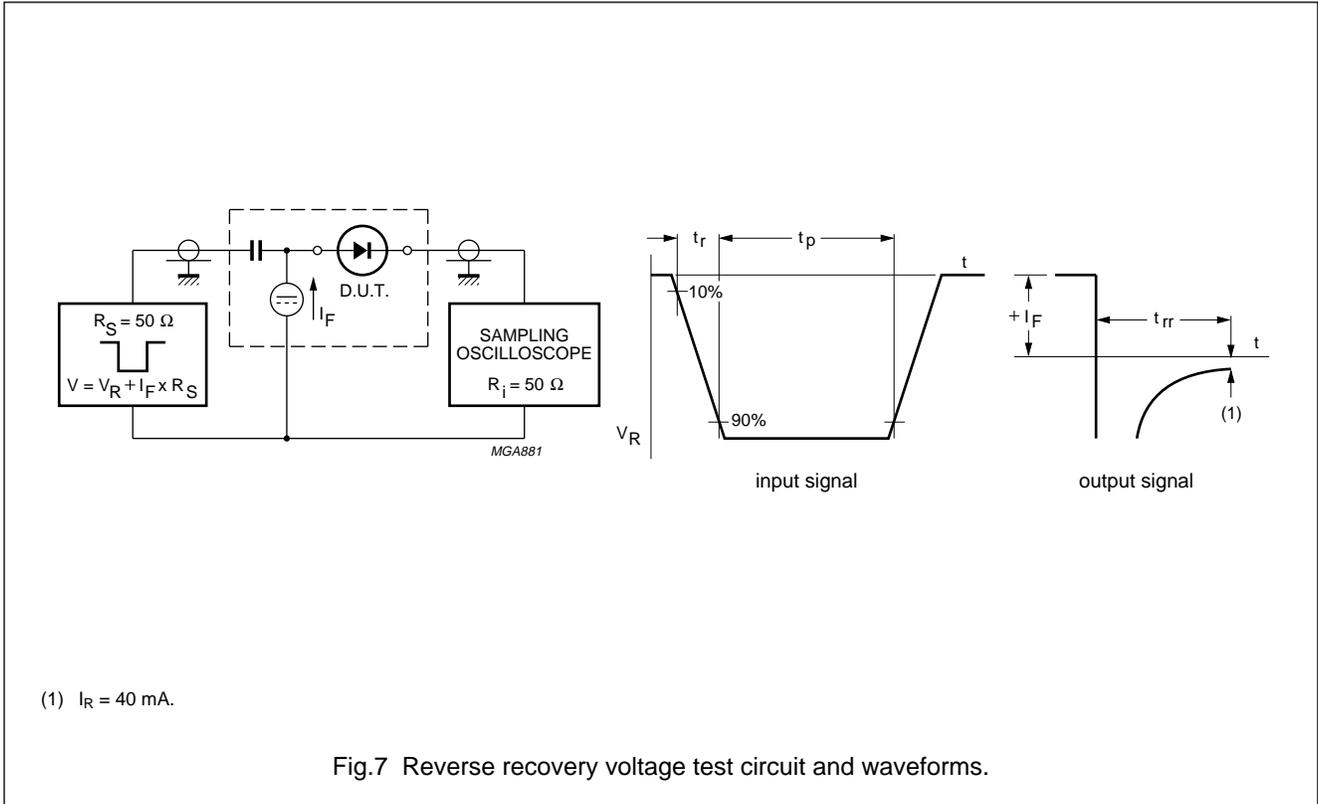
High-speed double diode

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High-speed double diode

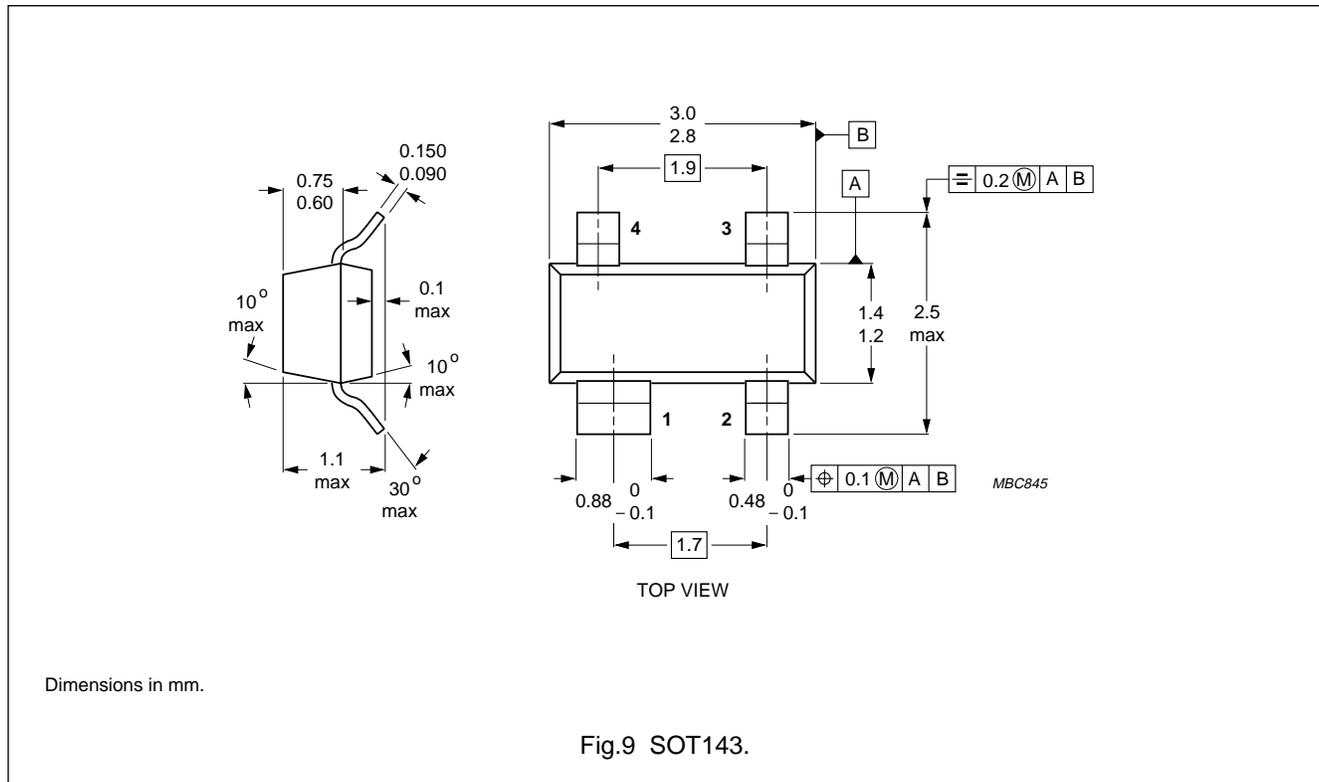
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# High-speed double diode

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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

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.