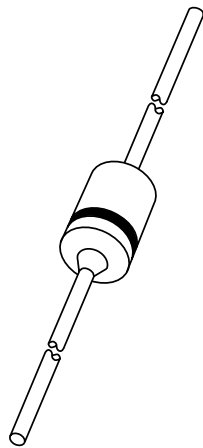


DATA SHEET



BYD63 Ripple blocking diode

Product specification
Supersedes data of 1996 June 10

2003 Mar 06

Ripple blocking diode

BYD63

FEATURES

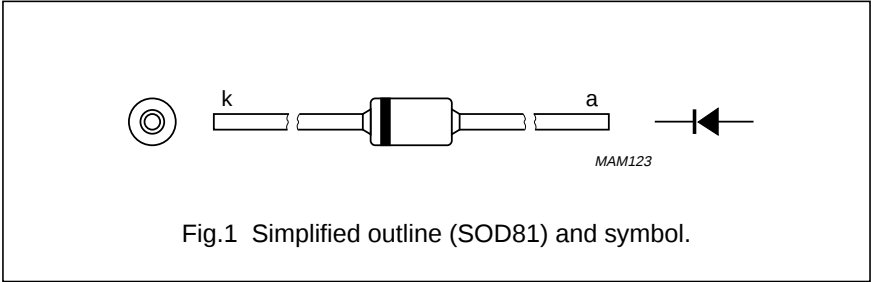
- Glass passivated
- High maximum operating temperature
- Low leakage current
- Excellent stability
- Guaranteed minimum turn-on time for absorbing forward current transients and oscillations
- Specially designed as rectifier in the auxiliary power supply in e.g. switched mode power supplies
- Available in ammo-pack.

DESCRIPTION

Cavity free cylindrical glass package through Implotec™(1) technology.

(1) Implotec is a trademark of Philips.

This package is hermetically sealed and fatigue free as coefficients of expansion of all used parts are matched.



LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 60134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V _{RRM}	repetitive peak reverse voltage		–	300	V
V _R	continuous reverse voltage		–	300	V
I _{F(AV)}	average forward current	averaged over any 20 ms period; T _{tp} = 55 °C; lead length = 10 mm; see Fig.2; see also Fig.4	–	0.85	A
		averaged over any 20 ms period; T _{amb} = 65 °C; PCB mounting (Fig.8); see Fig.3; see also Fig.4	–	0.45	A
I _{FRM}	repetitive peak forward current	T _{tp} = 55 °C	–	8.25	A
		T _{amb} = 65 °C	–	4.45	A
I _{FSM}	non-repetitive peak forward current	t = 10 ms half sine wave; T _j = T _{j max} prior to surge; V _R = V _{RRMmax}	–	5	A
T _{stg}	storage temperature		–65	+175	°C
T _j	junction temperature		–65	+175	°C

Ripple blocking diode

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ELECTRICAL CHARACTERISTICS

$T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	forward voltage	$I_F = 1\text{ A}$; $T_j = T_{j\text{ max}}$; see Fig.5	—	—	1.7	V
		$I_F = 1\text{ A}$; see Fig.5	—	—	2.3	V
I_R	reverse current	$V_R = V_{RRM\text{ max}}$; see Fig.6	—	—	1	μA
		$V_R = V_{RRM\text{ max}}$; $T_j = 165\text{ }^{\circ}\text{C}$; see Fig.6	—	—	100	μA
t_{fr}	forward recovery time	when switched to $I_F = 1\text{ A}$ in 50 ns; see Fig.9	—	—	350	ns
t_{on}	turn-on time	when switched from $V_F = 0\text{ V}$ to $V_F = 3\text{ V}$; measured between 10% and 90% of $I_{F\text{ max}}$; see Fig.11	500	—	—	ns
t_{rr}	reverse recovery time	when switched from $I_F = 0.5\text{ A}$ to $I_R = 1\text{ A}$; measured at $I_R = 0.25\text{ A}$; see Fig.11	—	—	150	ns
C_d	diode capacitance	$f = 1\text{ MHz}$; $V_R = 0\text{ V}$; see Fig.7	—	17	—	pF

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\text{ j-tp}}$	thermal resistance from junction to tie-point	lead length = 10 mm	60	K/W
$R_{th\text{ j-a}}$	thermal resistance from junction to ambient	note 1	120	K/W

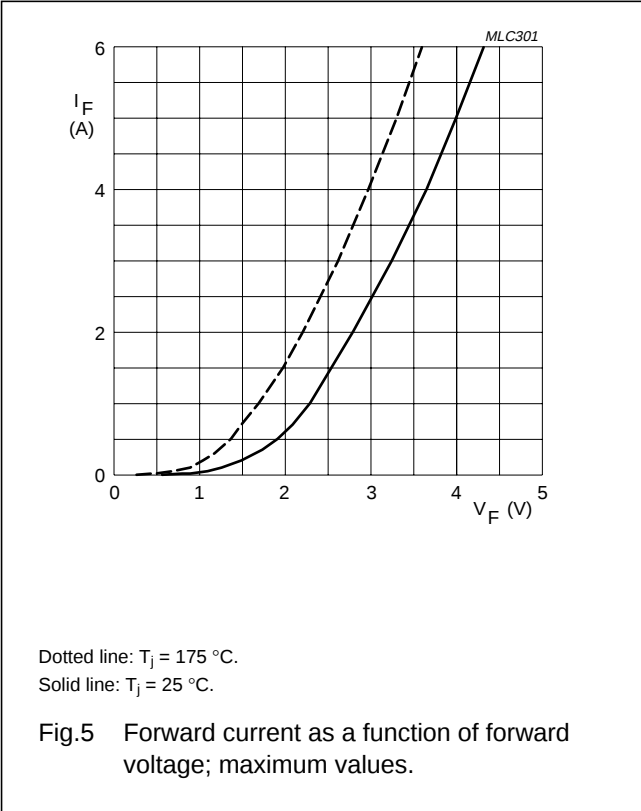
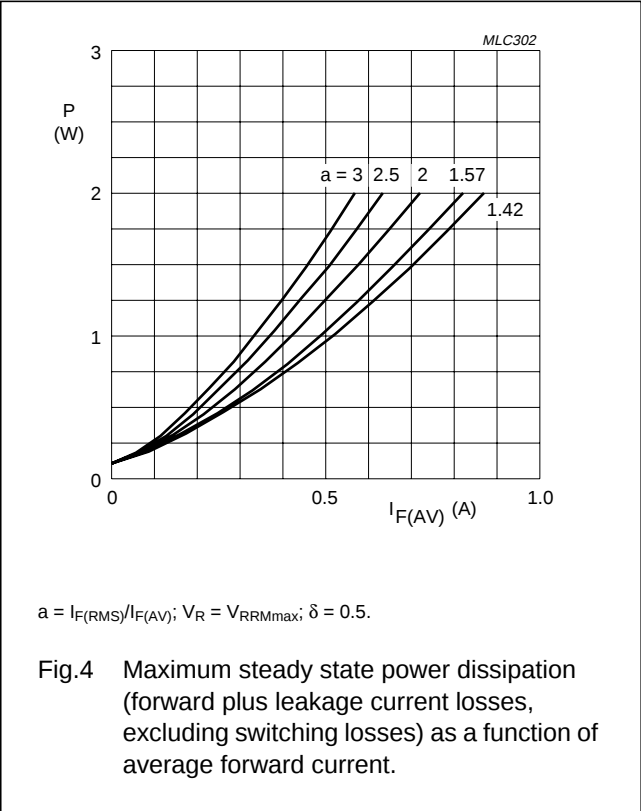
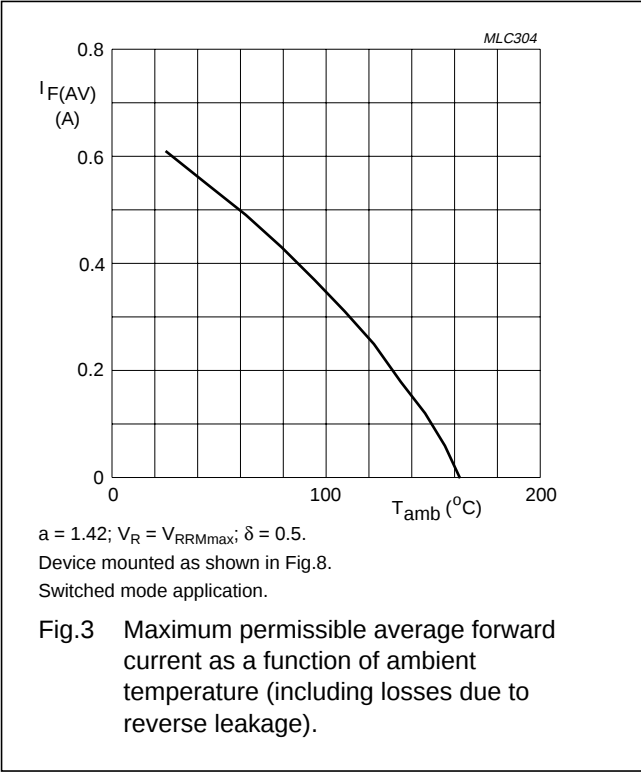
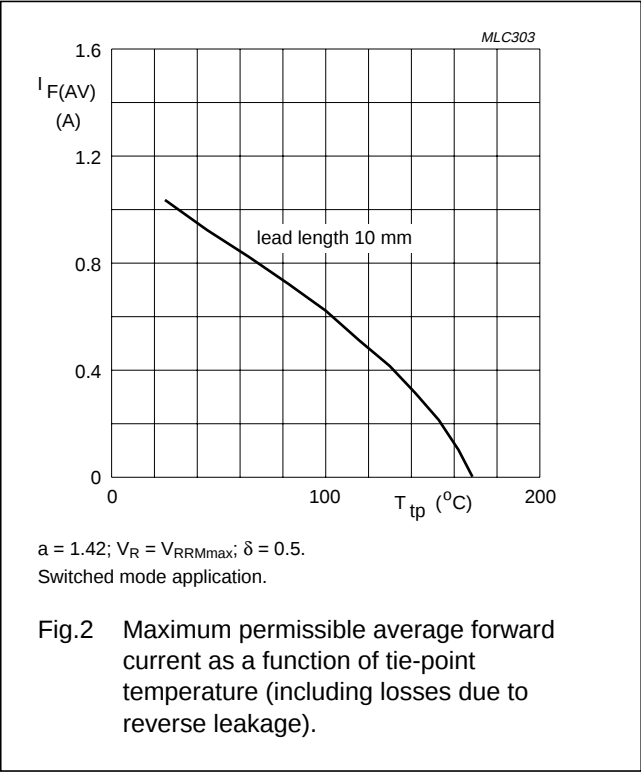
Note

1. Device mounted on an epoxy-glass printed-circuit board, 1.5 mm thick; thickness of Cu-layer $\geq 40\text{ }\mu\text{m}$, see Fig.8. For more information please refer to the "General Part of associated Handbook".

Ripple blocking diode

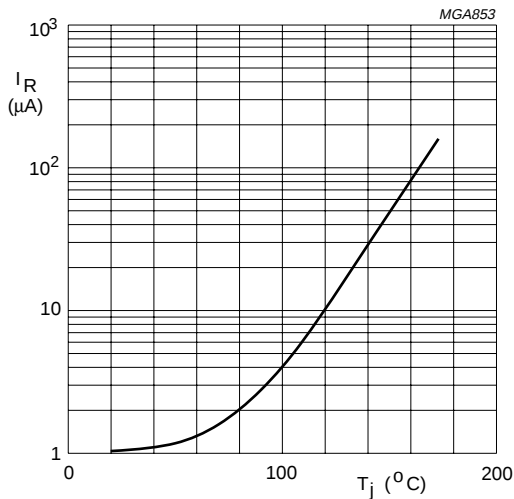
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GRAPHICAL DATA



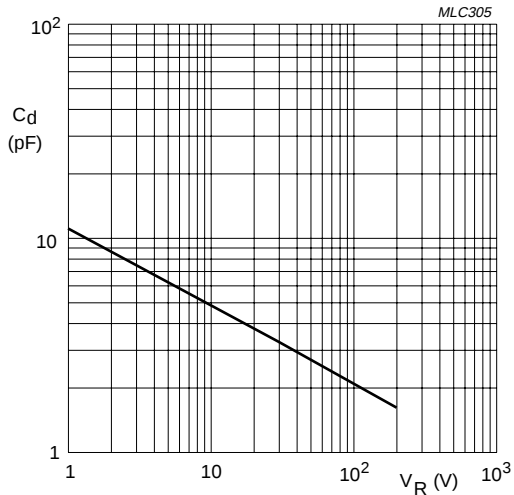
Ripple blocking diode

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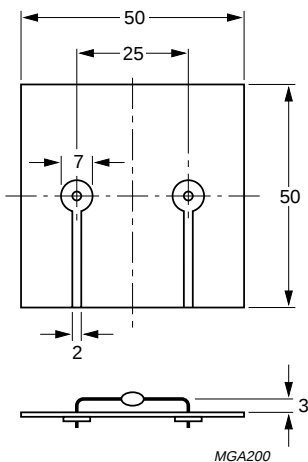
$V_R = V_{RRMmax}$

Fig.6 Reverse current as a function of junction temperature; maximum values.



$f = 1\text{ MHz}; T_j = 25\text{ }^{\circ}C$

Fig.7 Diode capacitance as a function of reverse voltage; typical values.



Dimensions in mm.

Fig.8 Device mounted on a printed-circuit board.

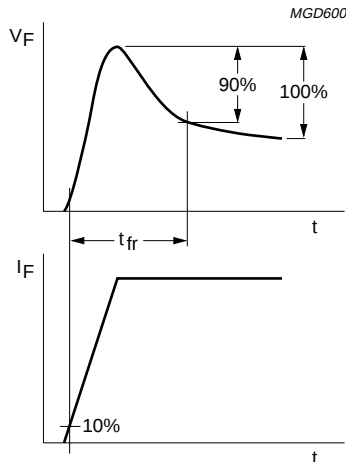
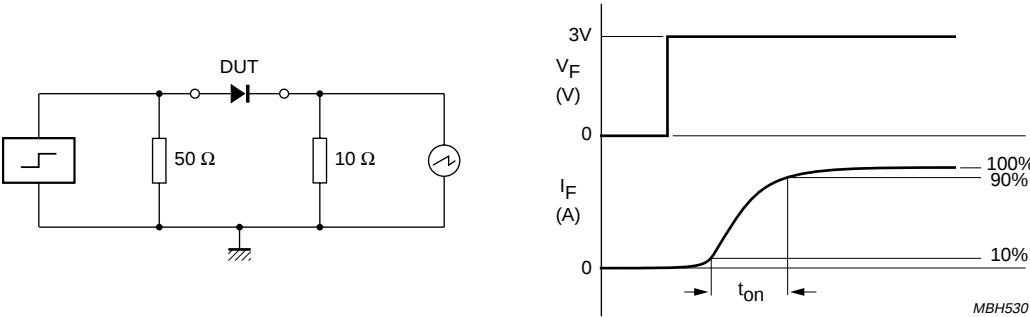


Fig.9 Forward recovery time definition.

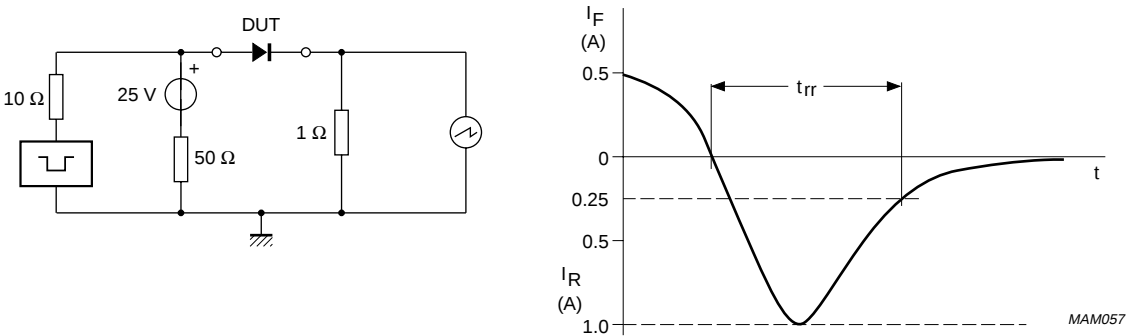
Ripple blocking diode

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Input impedance oscilloscope: 1 MΩ, 22 pF; $t_r \leq 7$ ns.
Source impedance: 50 Ω; $t_r \leq 10$ ns.

Fig.10 Test circuit and turn-on time waveform and definition.



Input impedance oscilloscope: 1 MΩ, 22 pF; $t_r \leq 7$ ns.
Source impedance: 50 Ω; $t_r \leq 15$ ns.

Fig.11 Test circuit and reverse recovery time waveform and definition.

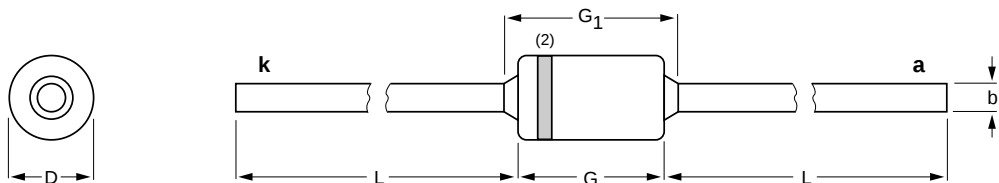
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PACKAGE OUTLINE

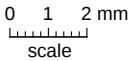
Hermetically sealed glass package;
ImplotecTM(1) technology; axial leaded; 2 leads

SOD81



DIMENSIONS (mm are the original dimensions)

UNIT	b max.	D max.	G max.	G ₁ max.	L min.
mm	0.81	2.15	3.8	5	28



Notes

- 1. Implotec is a trademark of Philips.
- 2. The marking band indicates the cathode.

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOD81						97-06-20

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DATA SHEET STATUS

LEVEL	DATA SHEET STATUS ⁽¹⁾	PRODUCT STATUS ⁽²⁾⁽³⁾	DEFINITION
I	Objective data	Development	This data sheet contains data from the objective specification for product development. Philips Semiconductors reserves the right to change the specification in any manner without notice.
II	Preliminary data	Qualification	This data sheet contains data from the preliminary specification. Supplementary data will be published at a later date. Philips Semiconductors reserves the right to change the specification without notice, in order to improve the design and supply the best possible product.
III	Product data	Production	This data sheet contains data from the product specification. Philips Semiconductors reserves the right to make changes at any time in order to improve the design, manufacturing and supply. Relevant changes will be communicated via a Customer Product/Process Change Notification (CPCN).

Notes

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2. The product status of the device(s) described in this data sheet may have changed since this data sheet was published. The latest information is available on the Internet at URL <http://www.semiconductors.philips.com>.
3. For data sheets describing multiple type numbers, the highest-level product status determines the data sheet status.

DEFINITIONS

Short-form specification — The data in a short-form specification is extracted from a full data sheet with the same type number and title. For detailed information see the relevant data sheet or data handbook.

Limiting values definition — Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 60134). 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.

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