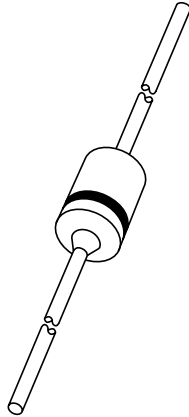


# DATA SHEET



## **BZD142**

ZenBlock™; zener with integrated blocking diode

Preliminary specification

2000 Dec 19

# ZenBlock™; zener with integrated blocking diode

BZD142

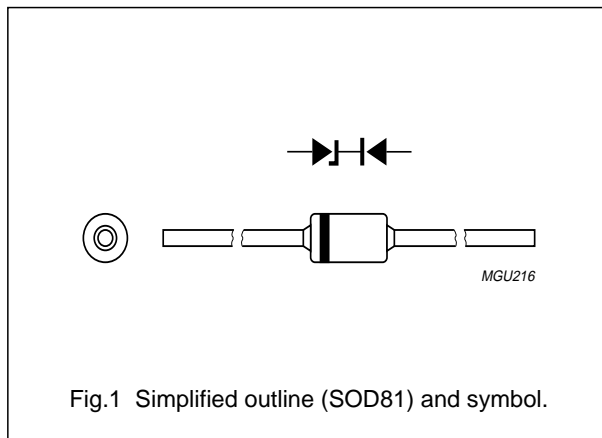
## FEATURES

- Zener and blocking function in one package
- Glass passivated
- Low leakage current
- Excellent stability
- Available in ammo-pack.

## DESCRIPTION

Cavity free cylindrical glass package through Implotec™(1) technology. This package is hermetically sealed and fatigue free as coefficients of expansion of all used parts are matched.

(1) Implotec is a trademark of Philips.



## LIMITING VALUES

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
T <sub>stg</sub>	storage temperature		-65	+150	°C
T <sub>j</sub>	junction temperature		-65	+150	°C
<b>Zener</b>					
P <sub>tot</sub>	total power dissipation	T <sub>tp</sub> = 25 °C; lead length 10 mm; see Fig.5	-	2.1	W
<b>Blocking diode</b>					
V <sub>R</sub>	continuous reverse voltage		-	600	V
E <sub>RSM</sub>	non-repetitive peak reverse avalanche energy	L = 120 mH; T <sub>j</sub> = T <sub>j(max)</sub> prior to surge; inductive load switched off	-	10	mJ

## ZenBlock™; zener with integrated blocking diode

BZD142

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

TYPE NUMBER SUFFIX <sup>(1)</sup>	WORKING VOLTAGE			TEMPERATURE COEFFICIENT		TEST CURRENT	CLAMPING VOLTAGE		REVERSE CURRENT at STAND-OFF VOLTAGE	
	$V_Z$ (V) at $I_Z$ (see Fig.4)			$S_Z$ (%/K) at $I_{test}$		$I_{test}$ (mA)	$V_{(CL)R}$ (V)	at $I_{RSM}$ (A) (note 2)	IR ( $\mu$ A)	at $V_R$ (V)
	MIN.	NOM.	MAX.	MIN.	MAX.		MAX.		MAX.	
68	61	68	75	0.07	0.12	10	94.4	106	5	56
75	68	75	82	0.07	0.12	10	103.5	0.97	5	62
82	74	82	90	0.07	0.12	10	114	0.88	5	68
91	82	91	100	0.07	0.12	5	126	0.79	5	75
100	90	100	110	0.07	0.12	5	139	0.72	5	82
110	99	110	121	0.07	0.12	5	152	0.66	5	91
120	108	120	132	0.07	0.12	5	167	0.60	5	100
130	117	130	143	0.07	0.12	5	185	0.54	5	110
150	135	150	165	0.07	0.12	5	204	0.49	5	120
160	149	160	171	0.07	0.12	5	224	0.45	5	130

**Notes**

- To complete the type number the suffix is added to the basic type number, e.g. BZD142-68.
- Non-repetitive peak reverse current in accordance with "IEC 60060-1, Section 8" (10/1000  $\mu$ s pulse); see Fig.5.

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$V_{(BR)R}$	reverse avalanche breakdown voltage	$I_R = 0.1\text{ mA}$	700	–	–	V
$I_R$	reverse current	$V_R = 600\text{ V}$	–	–	5	$\mu$ A
		$V_R = 600\text{ V}; T_j = 150\text{ °C}$	–	–	100	$\mu$ A
$C_d$	diode capacitance	$f = 1\text{ MHz}; V_R = 0\text{ V};$ see Fig.4	–	15	–	pF

**THERMAL CHARACTERISTICS**

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

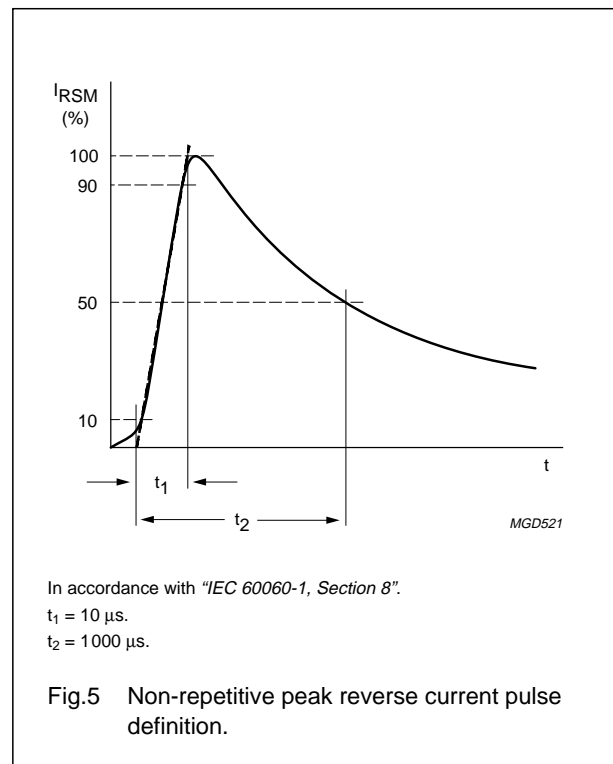
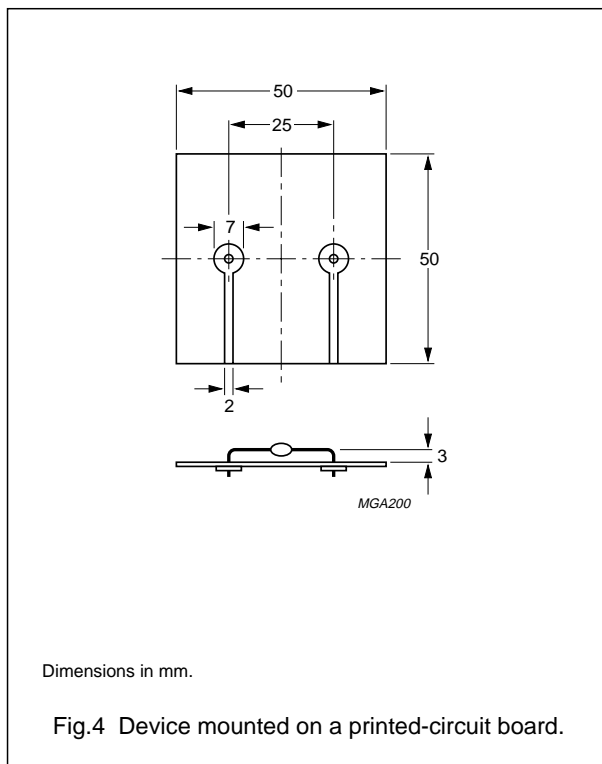
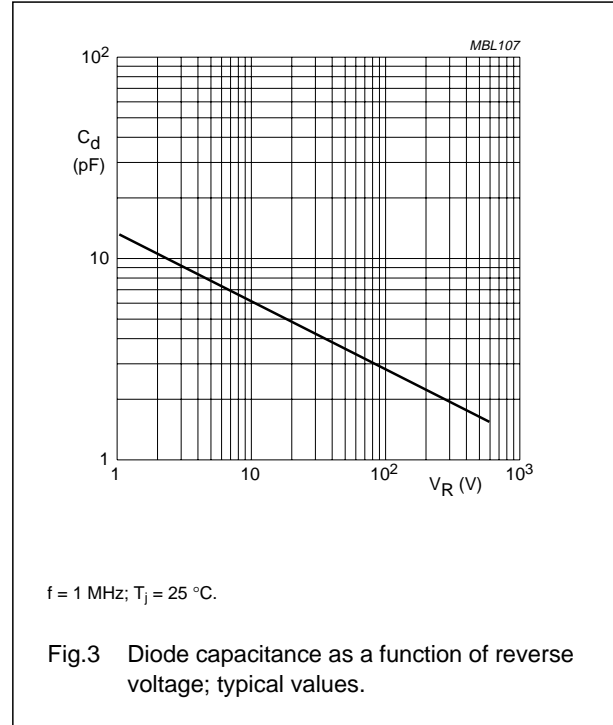
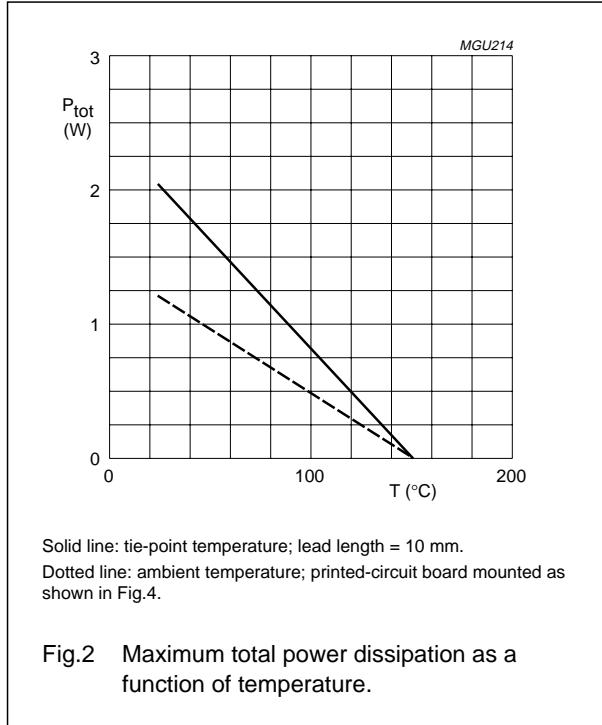
**Note**

- 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.2. For more information please refer to the "General Part of associated Handbook".

ZenBlock™; zener with integrated blocking diode

BZD142

GRAPHICAL DATA



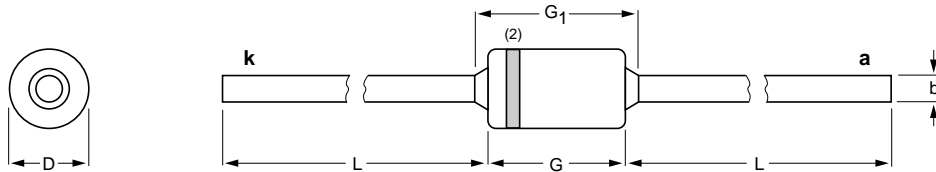
ZenBlock™; zener with integrated blocking diode

BZD142

PACKAGE OUTLINE

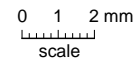
Hermetically sealed glass package;  
Implotec™(1) technology; axial leaded; 2 leads

SOD81



DIMENSIONS (mm are the original dimensions)

UNIT	b max.	D max.	G max.	G <sub>1</sub> 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

## ZenBlock™; zener with integrated blocking diode

BZD142

## DATA SHEET STATUS

DATA SHEET STATUS	PRODUCT STATUS	DEFINITIONS <sup>(1)</sup>
Objective specification	Development	This data sheet contains the design target or goal specifications for product development. Specification may change in any manner without notice.
Preliminary specification	Qualification	This data sheet contains preliminary data, and supplementary data will be published at a later date. Philips Semiconductors reserves the right to make changes at any time without notice in order to improve design and supply the best possible product.
Product specification	Production	This data sheet contains final specifications. Philips Semiconductors reserves the right to make changes at any time without notice in order to improve design and supply the best possible product.

## Note

1. Please consult the most recently issued data sheet before initiating or completing a design.

## 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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ZenBlock™; zener with integrated blocking diode

BZD142

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**NOTES**

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