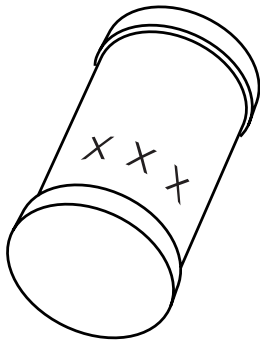


# DATA SHEET



**BZD142W**

ZenBlock™; zener with integrated blocking diode

Product specification  
Supersedes data of 2000 May 01

2001 Oct 10

# ZenBlock™; zener with integrated blocking diode

## BZD142W

### FEATURES

- Zener and 600 V/100 ns blocking function in one package<sup>(1)</sup>
- Protects MOSFETS or power IC controllers such as TINYSwitch™<sup>(2)</sup>, TOPSwitch™<sup>(2)</sup> and STARplug™<sup>(3)</sup>
- Glass passivated
- Excellent clamping capability and stability
- Supplied in 8 mm embossed tape.

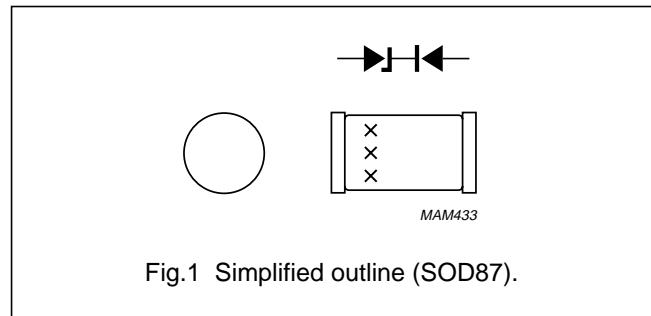


Fig.1 Simplified outline (SOD87).

- (1) Types BZD142W-68,-100 and -160 have a 600 V blocking diode with a minimum  $t_{rr}$  of 1000 ns.
- (2) TINYSwitch and TOPSwitch are trademarks of Power Integrations.
- (3) STARplug is a trademark of Koninklijke Philips Electronics N.V.

### DESCRIPTION

Cavity free cylindrical glass package through Implotec™<sup>(4)</sup> technology. This package is hermetically sealed and fatigue free as coefficients of expansion of all used parts are matched.

- (4) Implotec is a trademark of Koninklijke Philips Electronics N.V.

### LIMITING VALUES

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$T_{stg}$	storage temperature		-65	+150	°C
$T_j$	junction temperature		-65	+150	°C
<b>Limiting values zener</b>					
$P_{tot}$	total power dissipation	$T_{tp} = 105\text{ °C}$ ; see Fig.2	–	1.5	W
$P_{RSM}$	non-repetitive peak reverse power dissipation	10/1000 $\mu$ s exponential pulse; $T_j = 25\text{ °C}$ prior to surge; see Fig.5	–	100	W
<b>Limiting values blocking diode</b>					
$V_R$	continuous reverse voltage		–	600	V
$E_{RSM}$	non-repetitive peak reverse avalanche energy	$L = 120\text{ mH}$ ; $T_j = T_{j\text{ max}}$ prior to surge; inductive load switched off	–	7.5	mJ

# ZenBlock™; zener with integrated blocking diode

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## 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 $I_{test}$			$S_Z$ (%/K) at $I_{test}$		$I_{test}$ (mA)	$V_{(CL)R}$ (V)	at $I_{RSM}$ (A) <sup>(2)</sup>	$I_R$ (μA)	at $V_R$ (V)
	MIN.	NOM.	MAX.	MIN.	MAX.		MAX.		MAX.	
68	61	68	75	0.07	0.12	10	106	0.94	5	56
100	90	100	110	0.07	0.12	5	139	0.72	5	82
160	149	160	171	0.07	0.12	5	224	0.45	5	130
180	162	180	198	0.07	0.12	5	250	0.40	5	150
200	180	200	220	0.07	0.12	5	277	0.36	5	160

### Notes

- To complete the type number the suffix is added to the basic type number, e.g. BZD142W-68.
- Non-repetitive peak reverse current in accordance with "IEC 60060-1, Section 8" (10/1000 μs pulse); see Fig.5.

## ELECTRICAL CHARACTERISTICS BLOCKING DIODE

$T_j = 25\text{ °C}$  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	μA
		$V_R = 600\text{ V}; T_j = 150\text{ °C}$	–	–	100	μA
$C_d$	diode capacitance	$f = 1\text{ MHz}; V_R = 0\text{ V};$ see Fig.3	–	15	–	pF

## THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j-tp}$	thermal resistance from junction to tie-point		30	K/W
$R_{th\ j-a}$	thermal resistance from junction to ambient	note 1	150	K/W

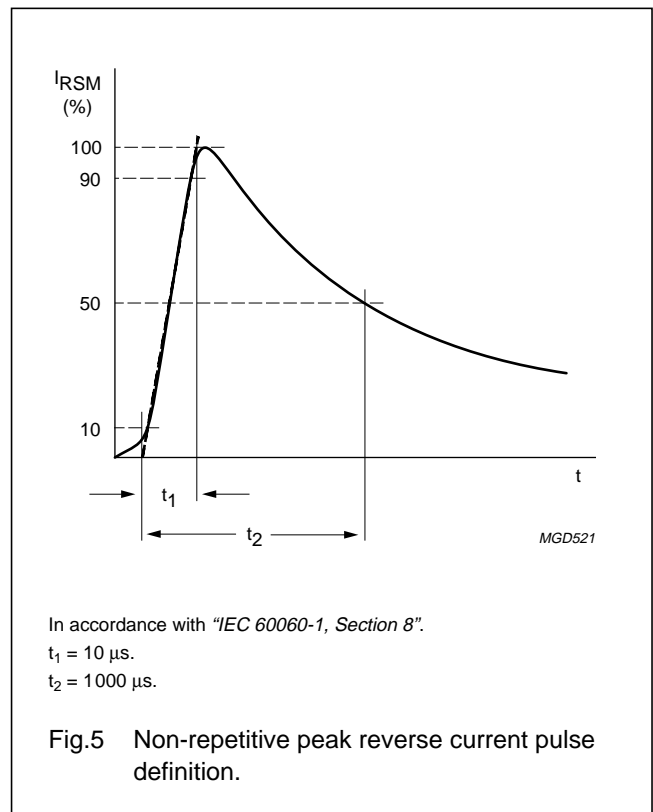
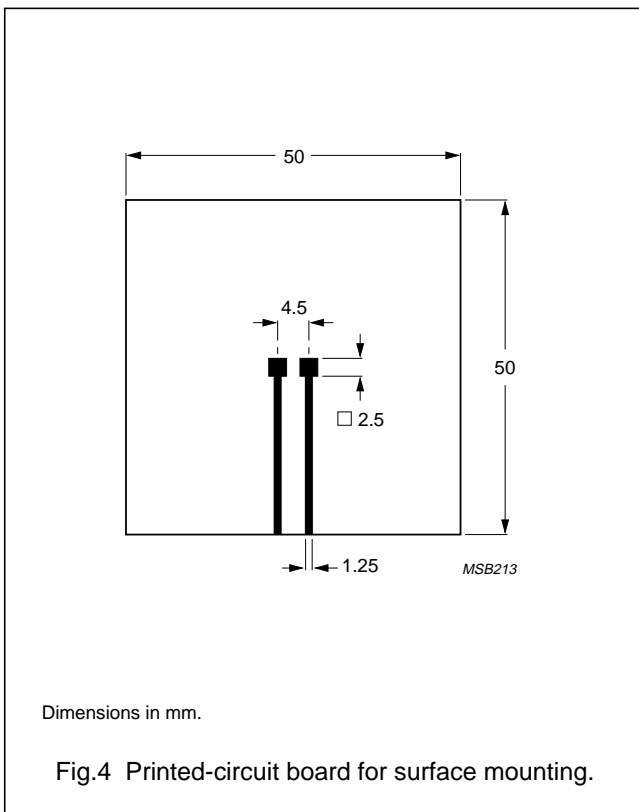
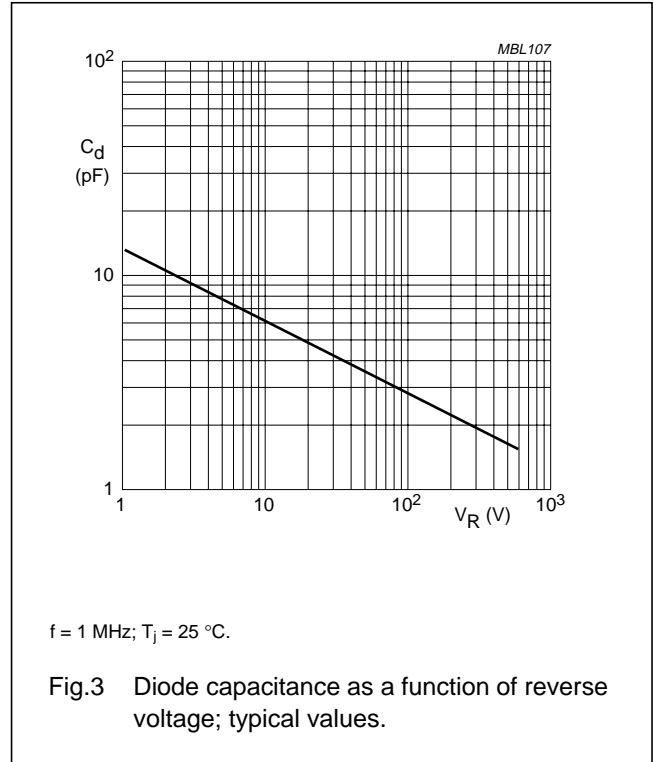
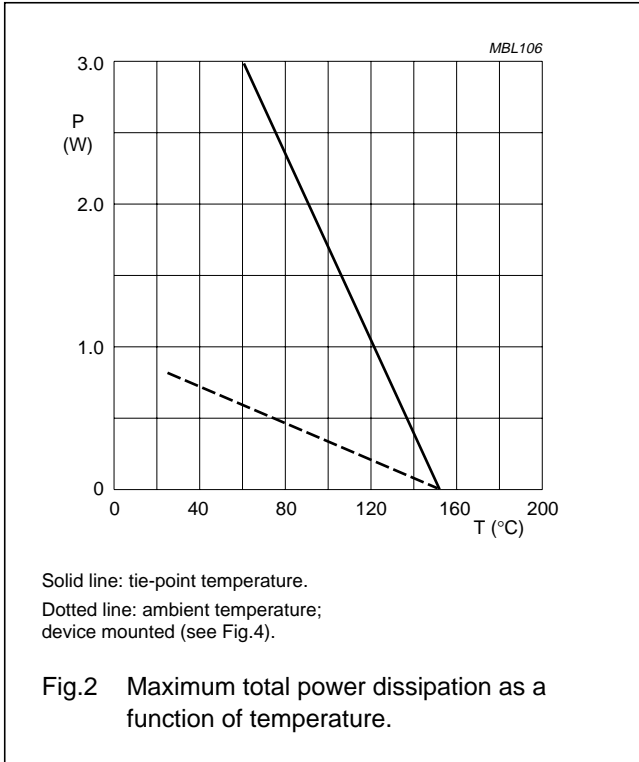
### Note

- Device mounted on an epoxy-glass printed-circuit board, 1.5 mm thick; thickness of Cu-layer  $\geq 40\text{ μm}$ , see Fig.4. For more information please refer to the "General Part of associated Handbook".

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### GRAPHICAL DATA



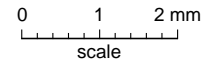
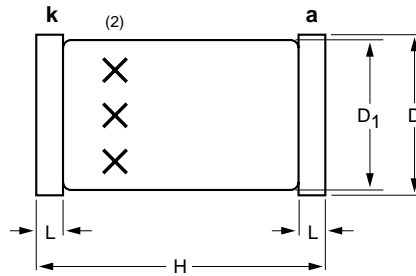
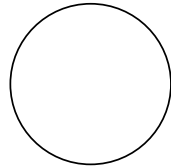
ZenBlock™; zener with integrated blocking diode

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PACKAGE OUTLINE

Hermetically sealed glass surface mounted package;  
Implotec™(1) technology; 2 connectors

SOD87



DIMENSIONS (mm are the original dimensions)

UNIT	D	D1	H	L
mm	2.1	2.0	3.7	0.3
	2.0	1.8	3.3	

Notes

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

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOD87	100H03					-99-03-31 99-06-04

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## DATA SHEET STATUS

DATA SHEET STATUS <sup>(1)</sup>	PRODUCT STATUS <sup>(2)</sup>	DEFINITIONS
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.
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.
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**NOTES**

# ***Philips Semiconductors – a worldwide company***

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