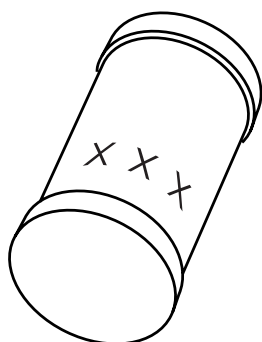


DATA SHEET



BZD142W

ZenBlock™; zener with integrated blocking diode

Product specification
Supersedes data of 2000 May 01

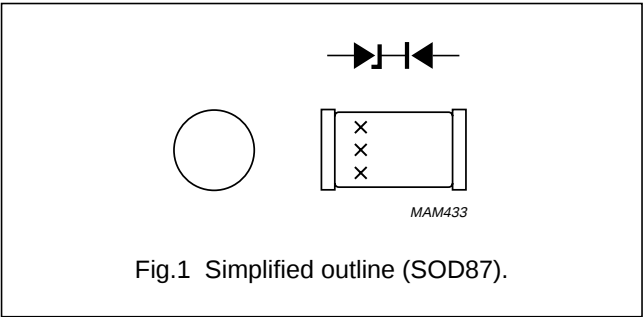
2001 Oct 10

ZenBlock™; zener with integrated blocking diode

BZD142W

FEATURES

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



- (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™⁽⁴⁾ 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
Limiting values zener					
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 μs exponential pulse; $T_j = 25\text{ °C}$ prior to surge; see Fig.5	—	100	W
Limiting values blocking diode					
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

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ELECTRICAL CHARACTERISTICS ZENER/TVS

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

TYPE NUMBER SUFFIX ⁽¹⁾	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) ⁽²⁾	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
$V_{(\text{BR})R}$	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
$R_{\text{th } j\text{-tp}}$	thermal resistance from junction to tie-point		30	K/W
$R_{\text{th } j\text{-a}}$	thermal resistance from junction to ambient	note 1	150	K/W

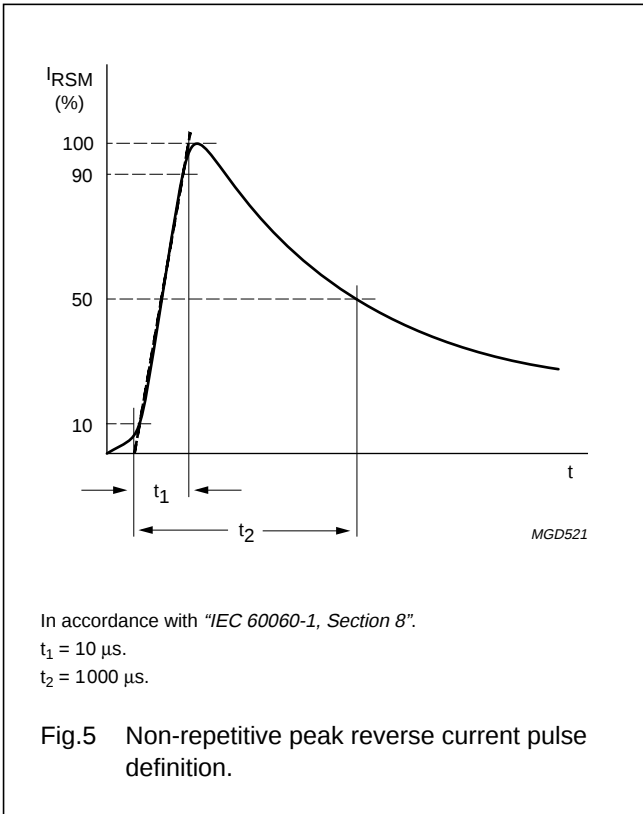
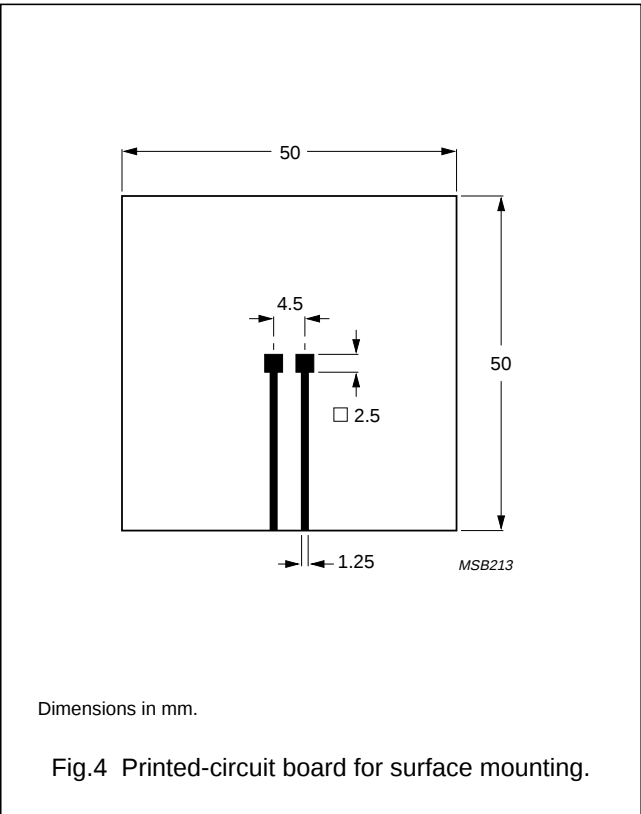
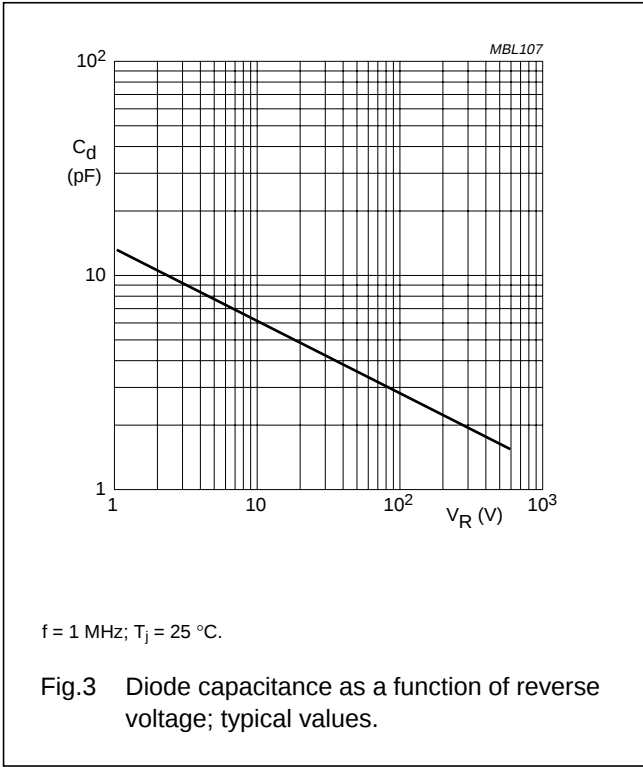
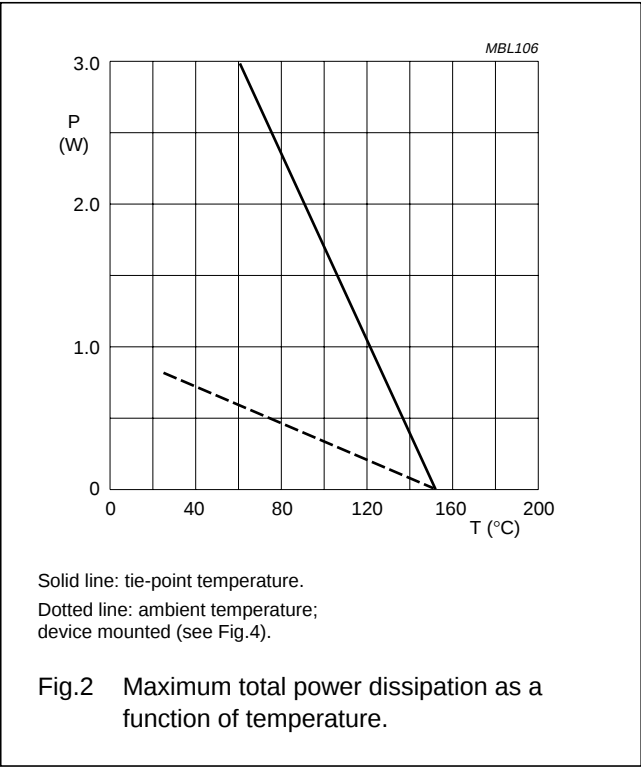
Note

- 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



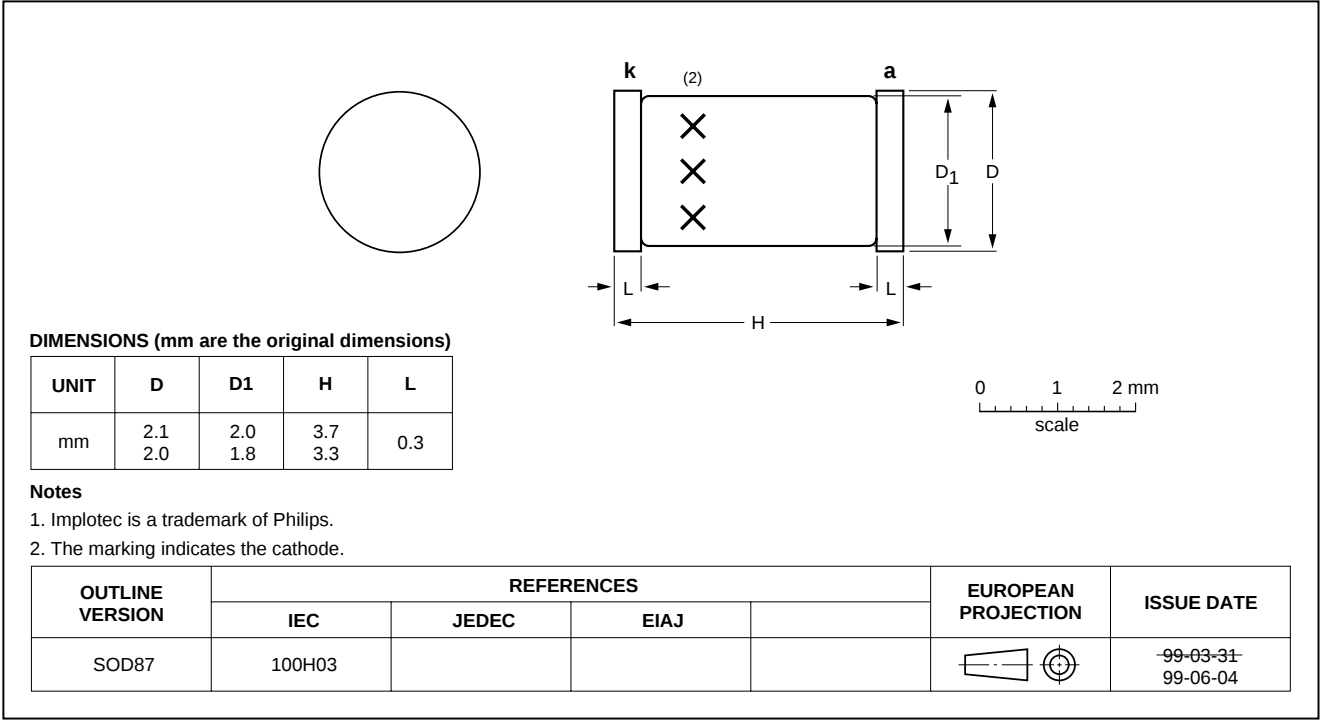
ZenBlock™; zener with
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PACKAGE OUTLINE

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

SOD87



ZenBlock™; zener with integrated blocking diode

BZD142W

DATA SHEET STATUS

DATA SHEET STATUS ⁽¹⁾	PRODUCT STATUS ⁽²⁾	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.
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. Changes will be communicated according to the Customer Product/Process Change Notification (CPCN) procedure SNW-SQ-650A.

Notes

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

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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NOTES

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