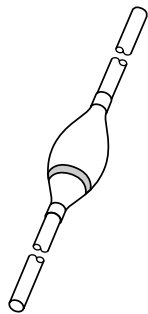


# DATA SHEET



**BYX105G; BYX106G; BYX107G;  
BYX108G**

High-voltage soft-recovery  
controlled avalanche rectifiers

Product specification  
Supersedes data of 1996 Oct 03

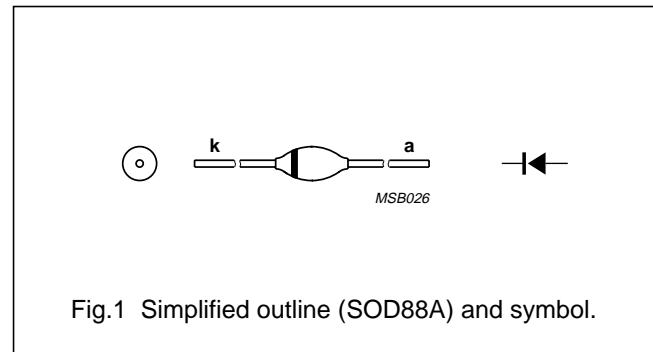
2000 Jan 13

# High-voltage soft-recovery controlled avalanche rectifiers

# BYX105G; BYX106G; BYX107G; BYX108G

## FEATURES

- Glass passivated
- High maximum operating temperature
- Low leakage current
- Excellent stability
- Guaranteed avalanche energy absorption capability
- Recovery times ranging from 600 to 50 ns
- Soft-recovery switching characteristics
- Compact construction.



## APPLICATIONS

- High-voltage power supply units in, for example, X-ray or radar systems.

## DESCRIPTION

Rugged glass package, using a high temperature alloyed construction.

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

The package is designed to be used in an insulating medium such as resin, oil or SF6 gas.

## MARKING

TYPE NUMBER	CATHODE BAND
BYX105G	black
BYX106G	red
BYX107G	green
BYX108G	violet

## LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$V_{RRM}$	repetitive peak reverse voltage		–	5	kV
$V_{RW}$	working reverse voltage		–	4.5	kV
$I_{F(AV)}$	average forward current	averaged over any 20 ms period; $T_{oil} = 25\text{ °C}$	–	650	mA
	BYX105G		–	575	mA
	BYX106G		–	480	mA
	BYX107G		–	340	mA
	BYX108G		–	–	–
	average forward current	averaged over any 20 ms period; $T_{oil} = 70\text{ °C}$	–	460	mA
	BYX105G		–	400	mA
	BYX106G		–	340	mA
BYX107G		–	240	mA	
BYX108G		–	–	–	

## High-voltage soft-recovery controlled avalanche rectifiers

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SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$I_{FSM}$	non-repetitive peak forward current	$t = 10 \text{ ms}$ ; half sinewave; $T_j = 45 \text{ }^\circ\text{C}$ prior to surge	–	20	A
	BYX105G			15	A
	BYX106G			14	A
	BYX107G			14	A
$P_{RSM}$	non-repetitive peak reverse power dissipation	$t = 10 \text{ } \mu\text{s}$ ; triangular pulse; $T_j = T_{j \text{ max}}$ prior to surge	–	2	kW
$T_{stg}$	storage temperature		–65	+175	$^\circ\text{C}$
$T_j$	junction temperature		–65	+175	$^\circ\text{C}$

### ELECTRICAL CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MAX.	UNIT
$V_F$	forward voltage	$I_F = 1 \text{ A}$ ; $T_j = 165 \text{ }^\circ\text{C}$	9.3	V
	BYX105G			
	BYX106G			
	BYX107G			
	BYX108G	$I_F = 1 \text{ A}$	16.5	V
	forward voltage			
	BYX105G			
	BYX106G			
BYX107G				
BYX108G				
$I_R$	reverse current	$V_R = V_{RW\text{max}}$	15	$\mu\text{A}$
		$V_R = V_{RW\text{max}}$ ; $T_j = 165 \text{ }^\circ\text{C}$	50	$\mu\text{A}$
$t_{rr}$	reverse recovery time	when switched from $I_F = 50 \text{ mA}$ to $I_R = 100 \text{ mA}$ ; measured at $I_R = 25 \text{ mA}$	600	ns
	BYX105G			
	BYX106G			
	BYX107G			
	BYX108G			
		350	ns	
		175	ns	
		50	ns	

### THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th \text{ j-oil}}$	thermal resistance from junction to oil	note 1	20	K/W

#### Note

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

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PACKAGE OUTLINE

Hermetically sealed glass package; axial leaded; 2 leads

SOD88A

**DIMENSIONS (mm are the original dimensions)**

UNIT	b max.	D max.	G max.	L min.
mm	0.81	3.8	8	30.5

**Note**  
1. The marking band indicates the cathode.

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOD88A						97-06-20

DEFINITIONS

Data sheet status	
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.
Limiting values	
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.	
Application information	
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.

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High-voltage soft-recovery  
controlled avalanche rectifiers

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BYX105G; BYX106G;  
BYX107G; BYX108G

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**NOTES**

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**NOTES**

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**NOTES**

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