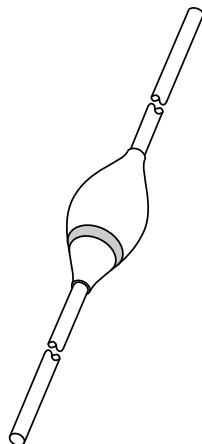


# DATA SHEET



## **BYX105G to BYX108G** High-voltage soft-recovery controlled avalanche rectifiers

Preliminary specification  
File under Discrete Semiconductors, SC01

1996 May 24

# High-voltage soft-recovery controlled avalanche rectifiers

## BYX105G to 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.

### 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.

See also the chapter on custom made high-voltage rectifiers in the "General Part of Handbook SC01".

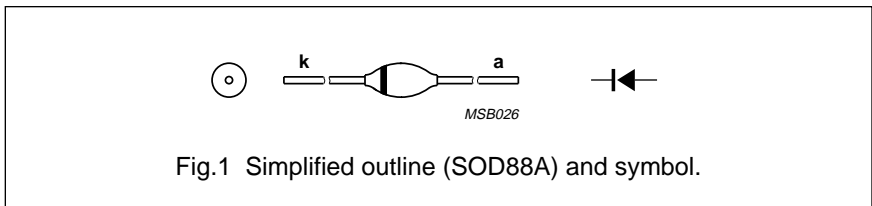


Fig.1 Simplified outline (SOD88A) and symbol.

### APPLICATIONS

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

### 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		–	340	mA
$I_{F(AV)}$	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		–	240	mA
$I_{FSM}$	non-repetitive peak forward current	$t = 10\text{ ms}$ ; half sinewave; $T_j = 45\text{ °C}$ prior to surge	–	20	A
	BYX105G		–	15	A
	BYX106G		–	14	A
	BYX107G		–	14	A
	BYX108G		–	14	A

# High-voltage soft-recovery controlled avalanche rectifiers

## BYX105G to BYX108G

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$P_{RSM}$	non-repetitive peak reverse power dissipation	$t = 10 \mu s$ ; triangular pulse; $T_j = T_{j\max}$ prior to surge	–	2	kW
$T_{stg}$	storage temperature		–65	+175	°C
$T_j$	junction temperature		–65	+175	°C

### ELECTRICAL CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$V_F$	forward voltage	$I_F = 1 \text{ A}$ ; $T_j = 165 \text{ °C}$	–	–	9.3	V
	BYX105G					
	BYX106G					
	BYX107G					
$V_F$	forward voltage	$I_F = 1 \text{ A}$	–	–	10.9	V
	BYX105G					
	BYX106G					
	BYX107G					
$I_R$	reverse current	$V_R = V_{RW\max}$	–	–	15	$\mu\text{A}$
		$V_R = V_{RW\max}$ ; $T_j = 165 \text{ °C}$	–	–	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					
$t_{rr}$	reverse recovery time		–	–	175	ns

### THERMAL CHARACTERISTICS

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

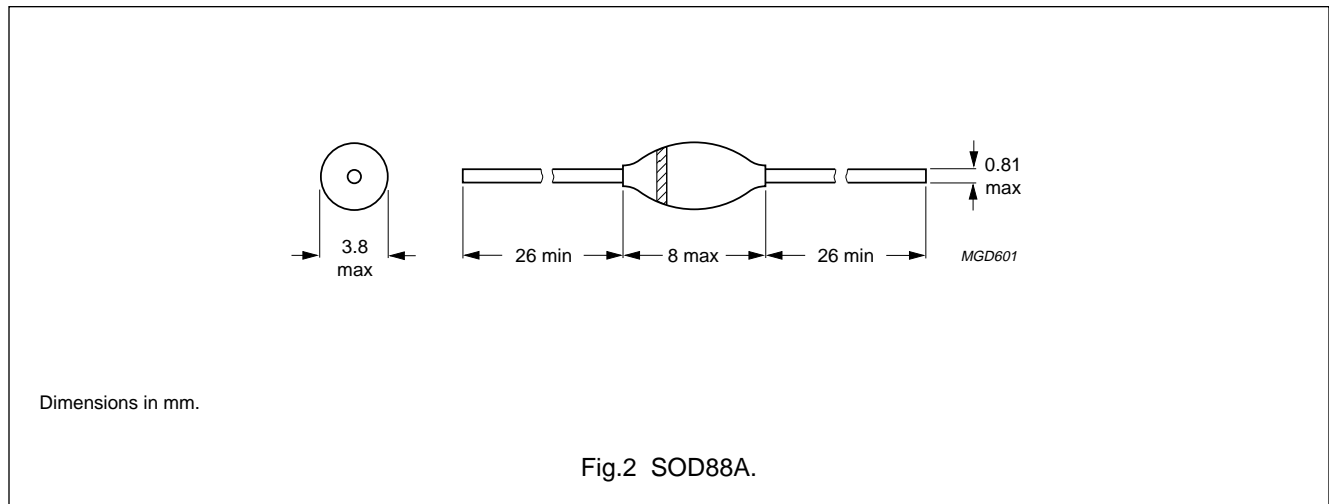
#### Note

- For more information please refer to the “General Part of Handbook SC01”.

High-voltage soft-recovery  
controlled avalanche rectifiers

BYX105G to BYX108G

PACKAGE OUTLINE



DEFINITIONS

<b>Data Sheet Status</b>	
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.
<b>Limiting values</b>	
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.	
<b>Application information</b>	
Where application information is given, it is advisory and does not form part of the specification.	

LIFE SUPPORT APPLICATIONS

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