

# Silicon Diode

## **BYX106G**

4.5kV/575mA

# DATASHEET

OEM – Philips

Source: Philips Databook 1999

## 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 SF<sub>6</sub> gas.

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

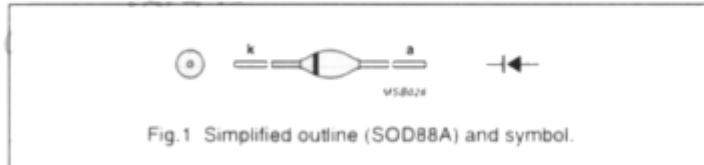


Fig.1 Simplified outline (SOD88A) and symbol.

### 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; $T_{case} = 25\text{ °C}$	-	650	mA
	BYX105G		-	650	mA
	BYX106G		-	575	mA
	BYX107G		-	480	mA
	BYX108G		-	340	mA
$I_{F(AV)}$	average forward current	averaged over any 20 ms period; $T_{case} = 70\text{ °C}$	-	460	mA
	BYX105G		-	460	mA
	BYX106G		-	400	mA
	BYX107G		-	340	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		-	20	A
	BYX106G		-	15	A
	BYX107G		-	14	A
	BYX108G		-	14	A

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SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$P_{RSM}$	non-repetitive peak reverse power dissipation	$t = 10 \mu s$ ; triangular pulse; $T_j = T_{jmax}$ 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	$V_R = V_{RWmax}$	–	–	15	$\mu A$	
		$V_R = V_{RWmax}$ ; $T_j = 165 \text{ °C}$	–	–	50	$\mu A$	
$t_{rr}$	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	350	ns
					BYX107G	175	ns
	BYX108G	50	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".