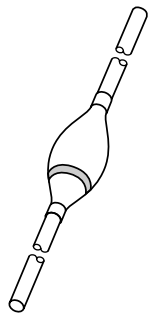


DATA SHEET



**BYX101G; BYX102G; BYX103G;
BYX104G**

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

BYX101G; BYX102G; BYX103G; BYX104G

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.

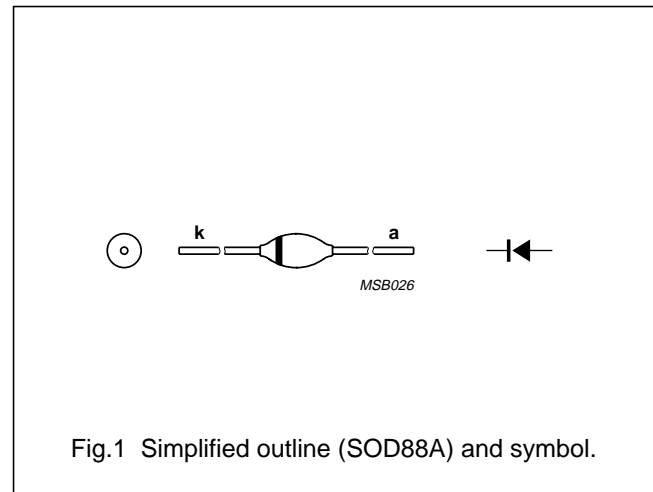


Fig.1 Simplified outline (SOD88A) and symbol.

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 |
|-------------|--------------|
| BYX101G | black |
| BYX102G | red |
| BYX103G | green |
| BYX104G | 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 | | – | 10 | kV |
| V_{RW} | working reverse voltage | | – | 9 | kV |
| $I_{F(AV)}$ | average forward current | averaged over any 20 ms period; $T_{oil} = 25\text{ °C}$ | – | 400 | mA |
| | BYX101G | | – | 360 | mA |
| | BYX102G | | – | 310 | mA |
| | BYX103G | | – | 225 | mA |
| | BYX104G | | – | 225 | mA |
| | average forward current | averaged over any 20 ms period; $T_{oil} = 70\text{ °C}$ | – | 285 | mA |
| | BYX101G | | – | 255 | mA |
| | BYX102G | | – | 220 | mA |
| I_{FSM} | non-repetitive peak forward current | $t = 10\text{ ms}$; half sinewave; $T_j = 45\text{ °C}$ prior to surge | – | 20 | A |
| | BYX101G | | – | 15 | A |
| | BYX102G | | – | 14 | A |
| | BYX103G | | – | 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; $T_j = T_{j\max}$ prior to surge | – | 4 | 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 | MAX. | UNIT | | | |
|----------|-----------------------|---|------|---------|------|------|---|
| V_F | forward voltage | $I_F = 1 \text{ A}$; $T_j = 165 \text{ °C}$ | | | | | |
| | BYX101G | | | | 17.5 | V | |
| | BYX102G | | | | 19.5 | V | |
| | BYX103G | | | | 22.5 | V | |
| | BYX104G | 31 | V | | | | |
| | forward voltage | $I_F = 1 \text{ A}$ | | | | | |
| | BYX101G | | | | | 20.5 | V |
| | BYX102G | | | | | 23.9 | V |
| BYX103G | 29.7 | | | | | V | |
| BYX104G | 52 | V | | | | | |
| I_R | reverse current | $V_R = V_{RW\max}$ | 15 | μA | | | |
| | | $V_R = V_{RW\max}$; $T_j = 165 \text{ °C}$ | 50 | μA | | | |
| t_{rr} | reverse recovery time | when switched from $I_F = 50 \text{ mA}$ to $I_R = 100 \text{ mA}$; measured at $I_R = 25 \text{ mA}$ | | | | | |
| | BYX101G | | | | 600 | ns | |
| | BYX102G | | | | 350 | ns | |
| | BYX103G | | | | 175 | ns | |
| | BYX104G | | | | 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 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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NOTES

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