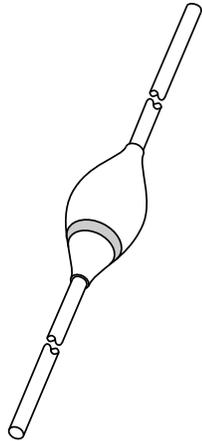


# DATA SHEET



## **BYX120G**

**High-voltage soft-recovery  
controlled avalanche rectifier**

Product specification  
Supersedes data of April 1992  
File under Discrete Semiconductors, SC01

1996 May 24

# High-voltage soft-recovery controlled avalanche rectifier

## BYX120G

### FEATURES

- Glass passivated
- High maximum operating temperature
- Low leakage current
- Excellent stability
- Guaranteed avalanche energy absorption capability.

### APPLICATIONS

- Car ignition systems
- Automotive applications with extreme temperature requirements.

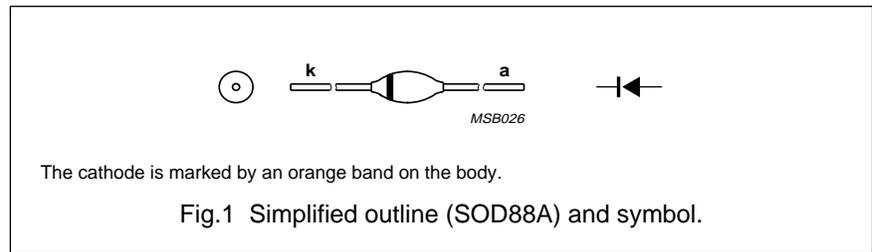
### DESCRIPTION

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".



### LIMITING VALUES

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

| SYMBOL      | PARAMETER                                     | CONDITIONS   | MIN. | MAX. | UNIT         |
|-------------|---|--|------|------|--------------|
| $V_{RRM}$   | repetitive peak reverse voltage               |  | –    | 3    | kV           |
| $V_{RWM}$   | crest working reverse voltage                 |  | –    | 3    | kV           |
| $I_{F(AV)}$ | average forward current                       |  | –    | 100  | mA           |
| $I_{FRM}$   | repetitive peak forward current               |  | –    | 5    | A            |
| $I_{FSM}$   | non-repetitive peak forward current           | $t = 10$ ms half sinewave; $T_j = T_{j\max}$ prior to surge; $V_R = V_{RWM\max}$ | –    | 15   | A            |
| $P_{RSM}$   | non-repetitive peak reverse power dissipation | $t = 10$ $\mu$ s; triangular pulse; $T_j = T_{j\max}$ prior to surge             | –    | 3    | kW           |
| $T_{stg}$   | storage temperature                           |  | –65  | +200 | $^{\circ}$ C |
| $T_j$       | junction temperature                          | continuous   | –65  | +180 | $^{\circ}$ C |
|             |   | maximum 30 mins  | –65  | +200 | $^{\circ}$ C |

# High-voltage soft-recovery controlled avalanche rectifier

BYX120G

## ELECTRICAL CHARACTERISTICS

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

| SYMBOL      | PARAMETER                           | CONDITIONS                                 | MIN. | TYP. | MAX. | UNIT          |
|-------------|-------------------------------------|--|------|------|------|---------------|
| $V_F$       | forward voltage                     | $I_F = 250\text{ mA}$                      | –    | –    | 5    | V             |
| $V_{(BR)R}$ | reverse avalanche breakdown voltage | $I_R = 0.1\text{ mA}$                      | 3.5  | –    | –    | kV            |
| $I_R$       | reverse current                     | $V_R = V_{RWMmax}$ ; $T_j = 180\text{ °C}$ | –    | –    | 75   | $\mu\text{A}$ |

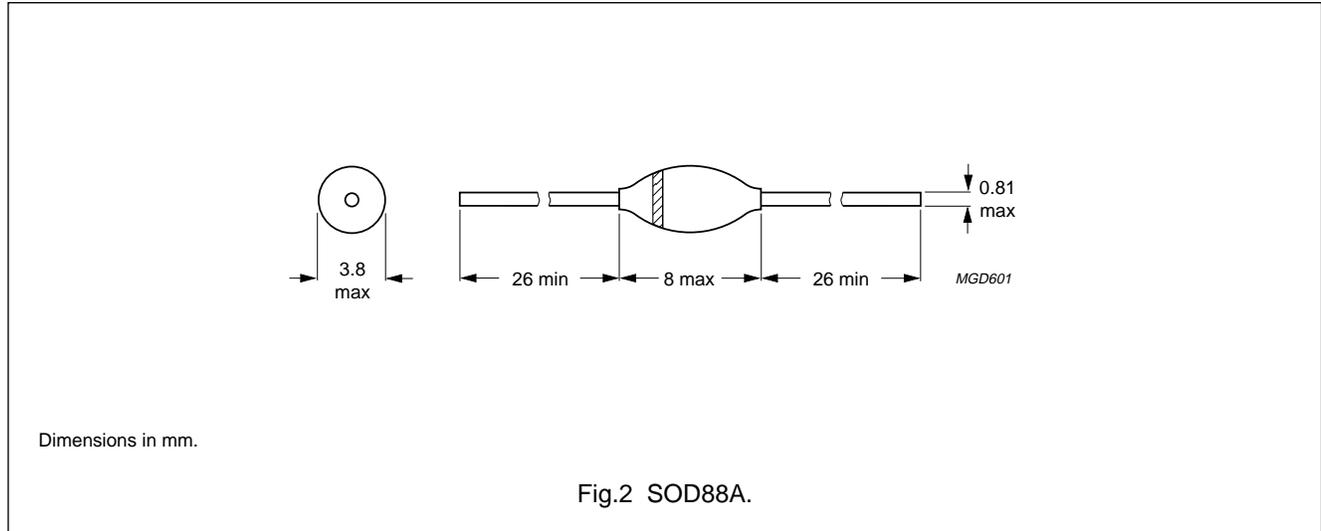
## THERMAL CHARACTERISTICS

| SYMBOL        | PARAMETER                                   | CONDITIONS            | VALUE | UNIT |
|---------------|---|-----------------------|-------|------|
| $R_{th\ j-a}$ | thermal resistance from junction to ambient | $T_{amb} = T_{leads}$ | 55    | K/W  |

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controlled avalanche rectifier

BYX120G

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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