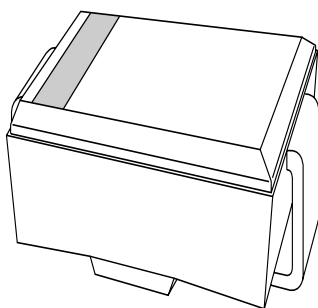


# DATA SHEET



## **BYG90-40 series** Schottky barrier rectifier diodes

Product specification

1996 May 06

## Schottky barrier rectifier diodes

## BYG90-40 series

### FEATURES

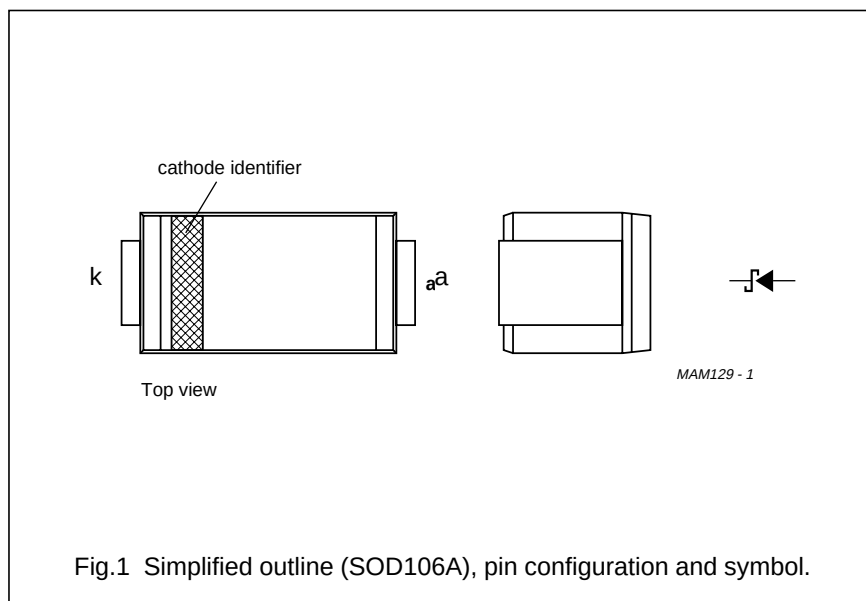
- Low switching losses
- Capability of absorbing very high surge current
- Fast recovery time
- Guard ring protected
- Plastic SMD package.

### APPLICATIONS

- Low power switched-mode power supplies
- Rectifying
- Polarity protection.

### DESCRIPTION

The BYG 90-40 series consists of Schottky barrier rectifier diodes, fabricated in planar technology, and encapsulated in rectangular SOD106A plastic SMD packages.



## Schottky barrier rectifier diodes

## BYG90-40 series

**LIMITING VALUES**

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

| SYMBOL           | PARAMETER                           | CONDITIONS                                                                                                                 | MIN. | MAX. | UNIT |
|------------------|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------|------|------|------|
| <b>Per diode</b> |                                     |                                                                                                                            |      |      |      |
| $V_R$            | continuous reverse voltage          |                                                                                                                            |      |      |      |
|                  | BYG90-20                            |                                                                                                                            | –    | 20   | V    |
|                  | BYG90-30                            |                                                                                                                            | –    | 30   | V    |
|                  | BYG90-40                            |                                                                                                                            | –    | 40   | V    |
| $V_{RRM}$        | repetitive peak reverse voltage     |                                                                                                                            |      |      |      |
|                  | BYG90-20                            |                                                                                                                            | –    | 20   | V    |
|                  | BYG90-30                            |                                                                                                                            | –    | 30   | V    |
|                  | BYG90-40                            |                                                                                                                            | –    | 40   | V    |
| $V_{RWM}$        | crest working reverse voltage       |                                                                                                                            |      |      |      |
|                  | BYG90-20                            |                                                                                                                            | –    | 20   | V    |
|                  | BYG90-30                            |                                                                                                                            | –    | 30   | V    |
|                  | BYG90-40                            |                                                                                                                            | –    | 40   | V    |
| $I_{F(AV)}$      | average forward current             | $T_{amb} = 65\text{ °C}$ ; see Fig.2;<br>$R_{th\ j-a} = 80\text{ K/W}$ ; note 1;<br>$V_{R(equiv)} = 0.2\text{ V}$ ; note 2 | –    | 1    | A    |
| $I_{FSM}$        | non-repetitive peak forward current | $t = 8.3\text{ }\mu\text{s}$ half sine wave;<br>JEDEC method                                                               | –    | 30   | A    |
| $I_{RSM}$        | non-repetitive peak reverse current | $t_p = 100\text{ }\mu\text{s}$                                                                                             | –    | 0.5  | A    |
| $T_{stg}$        | storage temperature                 |                                                                                                                            | –65  | +125 | °C   |
| $T_j$            | junction temperature                |                                                                                                                            | –    | 125  | °C   |

**Notes**

1. Refer to SOD106A standard mounting conditions.
2. For Schottky barrier diodes thermal run-away has to be considered, as in some applications, the reverse power losses  $P_R$  are a significant part of the total power losses. Nomograms for determination of the reverse power losses  $P_R$  and  $I_{F(AV)}$  rating will be available on request.

## Schottky barrier rectifier diodes

## BYG90-40 series

**ELECTRICAL CHARACTERISTICS**

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

| SYMBOL           | PARAMETER         | CONDITIONS                                                  | MIN. | TYP. | MAX. | UNIT |
|------------------|-------------------|-------------------------------------------------------------|------|------|------|------|
| <b>Per diode</b> |                   |                                                             |      |      |      |      |
| $V_F$            | forward voltage   | see Fig.2; note 1                                           |      |      |      |      |
|                  |                   | $I_F = 1\text{ A}$                                          | –    | –    | 550  | mV   |
|                  |                   | $I_F = 3\text{ A}$                                          | –    | –    | 850  | mV   |
|                  |                   | $I_F = 1\text{ A}; T_j = 100\text{ °C}$                     | –    | –    | 450  | mV   |
| $I_R$            | reverse current   | $V_R = V_{RRMmax}$ ; note 1; see Fig.3                      | –    | –    | 1    | mA   |
|                  |                   | $V_R = V_{RRMmax}; T_j = 100\text{ °C}$ ; note 1; see Fig.3 | –    | –    | 10   | mA   |
| $C_d$            | diode capacitance | $V_R = 4\text{ V}; f = 1\text{ MHz}$ ; see Fig.4            | –    | –    | 75   | pF   |

**Note**

1. Pulsed test:  $t_p = 300\text{ }\mu\text{s}$ ;  $\delta = 0.02$ .

**THERMAL CHARACTERISTICS**

| SYMBOL        | PARAMETER                                   | CONDITIONS | VALUE | UNIT |
|---------------|---------------------------------------------|------------|-------|------|
| $R_{th\ j-a}$ | thermal resistance from junction to ambient | note 1     | 80    | K/W  |

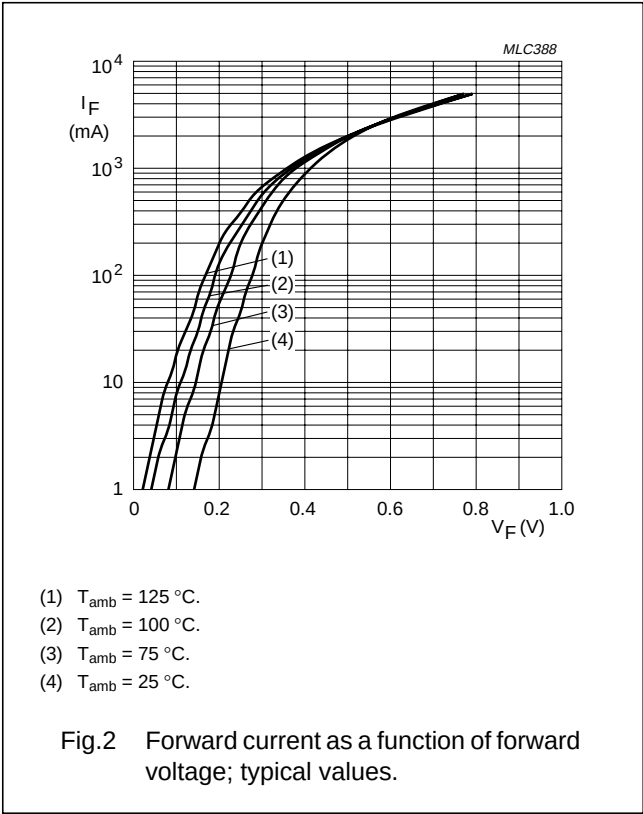
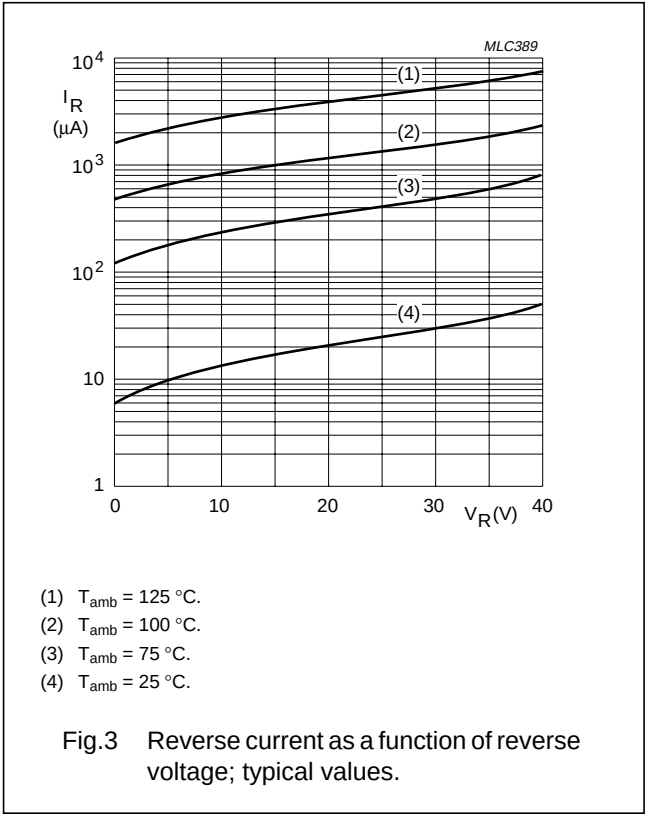
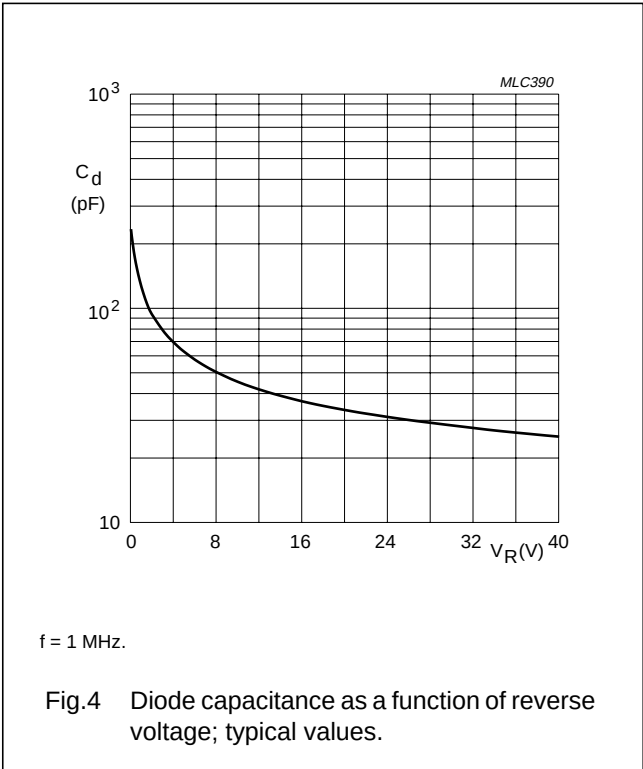
**Note**

1. Refer to SOD106A standard mounting conditions.

Schottky barrier rectifier diodes

BYG90-40 series

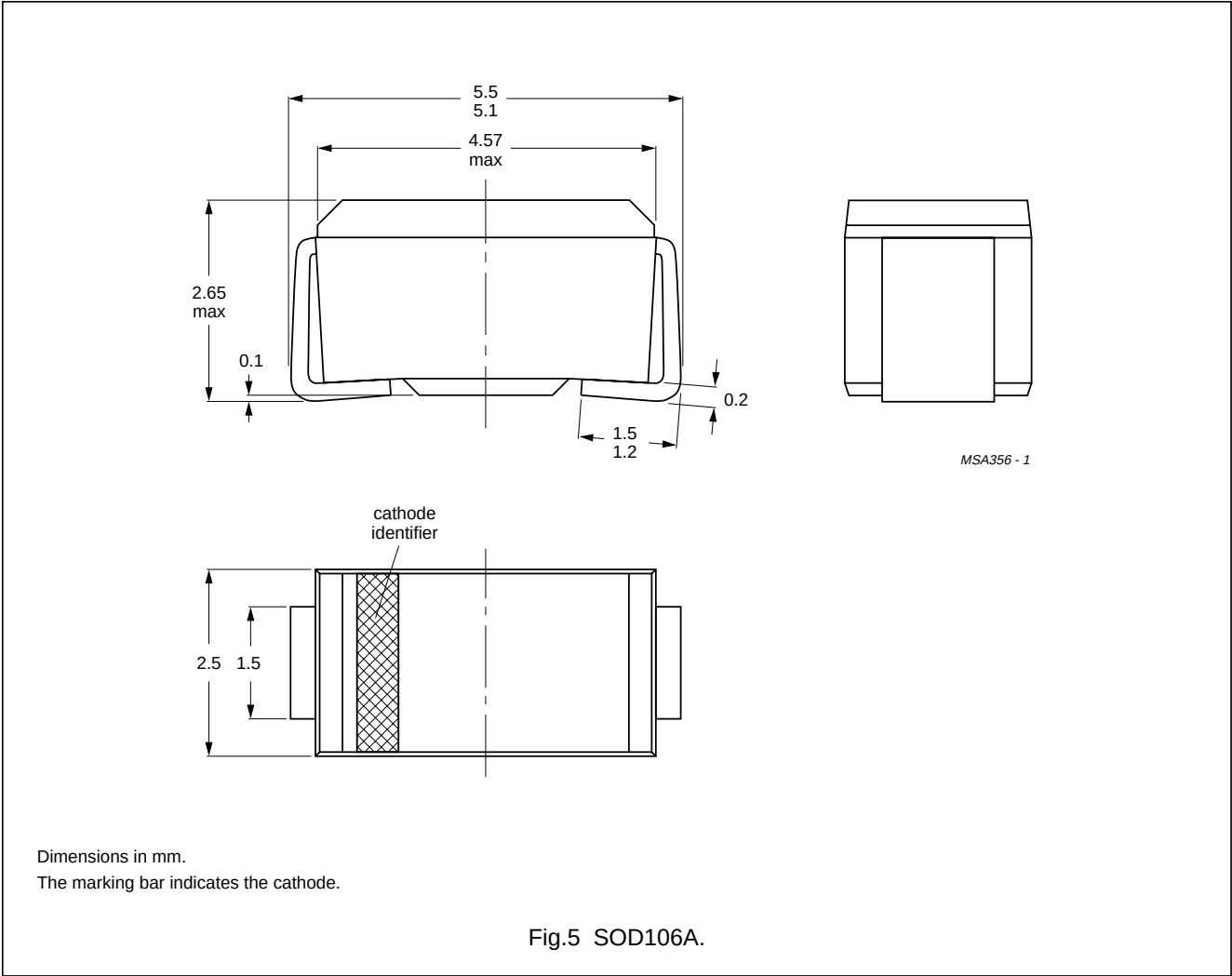
GRAPHICAL DATA



Schottky barrier rectifier diodes

BYG90-40 series

PACKAGE OUTLINE



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## Schottky barrier rectifier diodes

## BYG90-40 series

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### 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

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