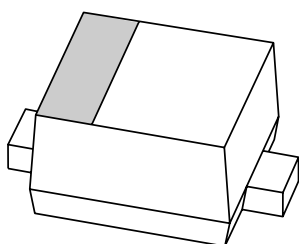


# DATA SHEET



## **PMEG2010AEB**

20 V, 1 A ultra low  $V_F$  MEGA  
Schottky barrier rectifier in  
SOD523 package

Product specification

2003 Dec 03

## 20 V, 1 A ultra low $V_F$ MEGA Schottky barrier rectifier in SOD523 package

PMEG2010AEB

### FEATURES

- Forward current: 1.0 A
- Reverse voltage: 20 V
- Ultra low forward voltage
- Ultra small SMD package.

### APPLICATIONS

- Low voltage rectification
- High efficiency DC/DC conversion
- Voltage clamping
- Inverse-polarity protection
- Low power consumption applications.

### DESCRIPTION

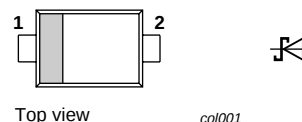
Planar Maximum Efficiency General Application (MEGA) Schottky barrier rectifier with an integrated guard ring for stress protection, encapsulated in a SOD523 (SC-79) ultra small plastic SMD package.

### QUICK REFERENCE DATA

| SYMBOL | PARAMETER       | MAX. | UNIT |
|--------|-----------------|------|------|
| $I_F$  | forward current | 1    | A    |
| $V_R$  | reverse voltage | 20   | V    |

### PINNING

| PIN | DESCRIPTION |
|-----|-------------|
| 1   | cathode     |
| 2   | anode       |



**Marking code:** L6.

The marking bar indicates the cathode.

Fig.1 Simplified outline (SOD523; SC-79) and symbol.

### ORDERING INFORMATION

| TYPE NUMBER | PACKAGE |                                          |         |
|-------------|---------|------------------------------------------|---------|
|             | NAME    | DESCRIPTION                              | VERSION |
| PMEG2010AEB | –       | plastic surface mounted package; 2 leads | SOD523  |

### RELATED PRODUCTS

| TYPE       | DESCRIPTION                                        | FEATURE                                          |
|------------|----------------------------------------------------|--------------------------------------------------|
| PMEG2005EB | 0.5 A; 20 V very low $V_F$ MEGA Schottky rectifier | Lower $I_R$ in same package                      |
| PMEG2010EA | 1 A; 20 V very low $V_F$ MEGA Schottky rectifier   | Lower forward current, lower $I_R$ SOD323 (SC76) |

## 20 V, 1 A ultra low $V_F$ MEGA Schottky barrier rectifier in SOD523 package

PMEG2010AEB

### LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 60134).

| SYMBOL    | PARAMETER                           | CONDITIONS                                 | MIN. | MAX. | UNIT |
|-----------|-------------------------------------|--------------------------------------------|------|------|------|
| $V_R$     | continuous reverse voltage          |                                            | –    | 20   | V    |
| $I_F$     | continuous forward current          | $T_s \leq 55\text{ °C}$                    | –    | 1.0  | A    |
| $I_{FRM}$ | repetitive peak forward current     | $t_p \leq 1\text{ ms}$ ; $\delta \leq 0.5$ | –    | 3.5  | A    |
| $I_{FSM}$ | non-repetitive peak forward current | $t = 8\text{ ms}$ square wave              | –    | 6    | A    |
| $T_{stg}$ | storage temperature                 |                                            | –65  | +150 | °C   |
| $T_j$     | junction temperature                | note 1                                     | –    | 150  | °C   |
| $T_{amb}$ | operating ambient temperature       | note 1                                     | –65  | +150 | °C   |

### Note

- For Schottky barrier rectifiers, 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.

### THERMAL CHARACTERISTICS

| SYMBOL        | PARAMETER                                           | CONDITIONS                 | VALUE | UNIT |
|---------------|-----------------------------------------------------|----------------------------|-------|------|
| $R_{th(j-a)}$ | thermal resistance from junction to ambient         | in free air; notes 1 and 2 | 400   | K/W  |
| $R_{th(j-s)}$ | thermal resistance from junction to soldering point | notes 2 and 3              | 75    | K/W  |

### Notes

- Refer to SOD523 (SC-79) standard mounting conditions.
- For Schottky barrier rectifiers, 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.
- Solder point of cathode tab.

## 20 V, 1 A ultra low $V_F$ MEGA Schottky barrier rectifier in SOD523 package

PMEG2010AEB

### CHARACTERISTICS

$T_{amb} = 25\text{ }^{\circ}\text{C}$  unless otherwise specified.

| SYMBOL | PARAMETER                  | CONDITIONS                              | TYP. | MAX. | UNIT |
|--------|----------------------------|-----------------------------------------|------|------|------|
| $V_F$  | forward voltage            | $I_F = 0.1\text{ mA}$                   | 30   | 60   | mV   |
|        |                            | $I_F = 1\text{ mA}$                     | 80   | 110  | mV   |
|        |                            | $I_F = 10\text{ mA}$                    | 140  | 190  | mV   |
|        |                            | $I_F = 100\text{ mA}$                   | 230  | 290  | mV   |
|        |                            | $I_F = 1000\text{ mA}$                  | 510  | 620  | mV   |
| $I_R$  | continuous reverse current | $V_R = 10\text{ V}$ ; note 1            | 0.17 | 0.6  | mA   |
|        |                            | $V_R = 20\text{ V}$ ; note 1            | 0.32 | 1.5  | mA   |
| $C_d$  | diode capacitance          | $V_R = 1\text{ V}$ ; $f = 1\text{ MHz}$ | 19   | 25   | pF   |

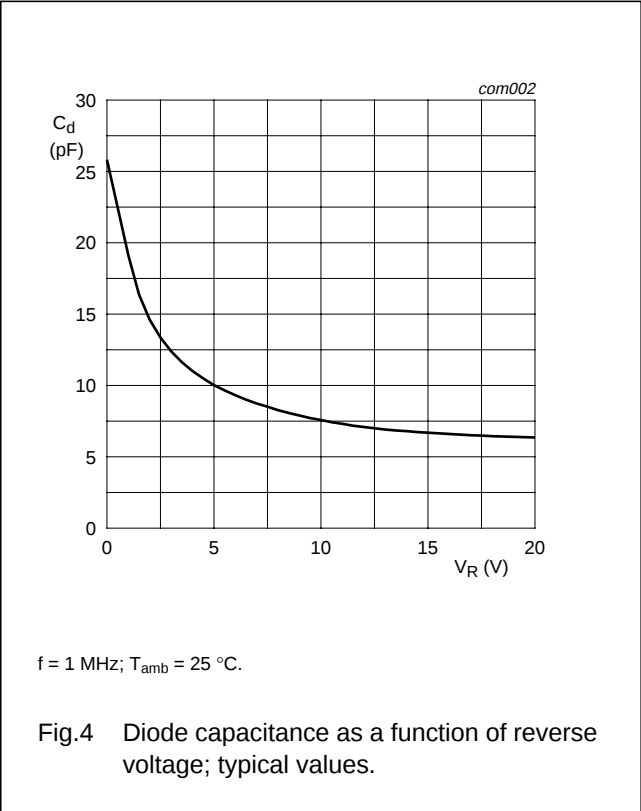
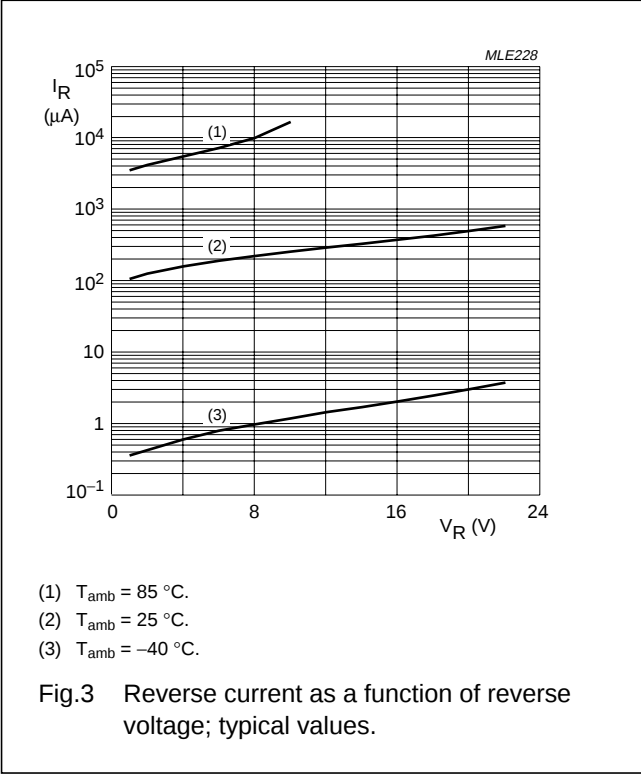
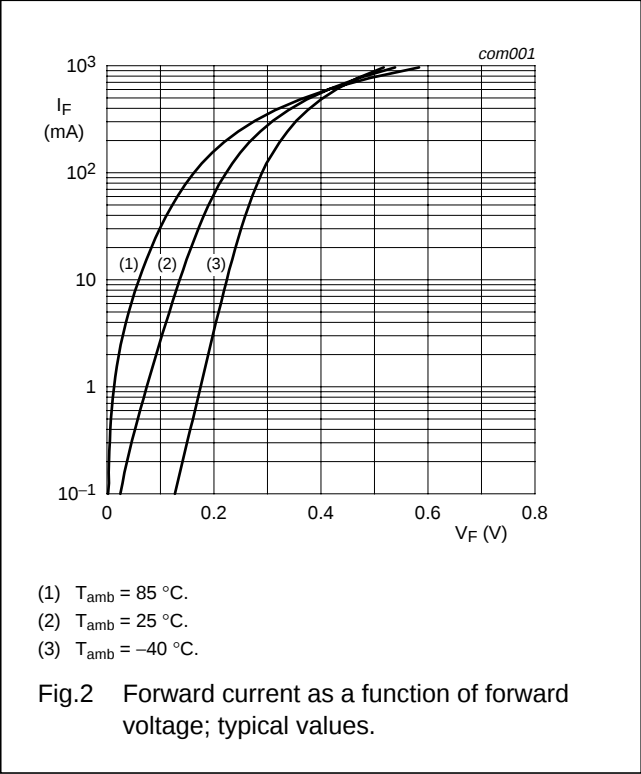
### Note

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

20 V, 1 A ultra low  $V_F$  MEGA Schottky  
barrier rectifier in SOD523 package

PMEG2010AEB

GRAPHICAL DATA



20 V, 1 A ultra low  $V_F$  MEGA Schottky  
barrier rectifier in SOD523 package

PMEG2010AEB

PACKAGE OUTLINE

Plastic surface mounted package; 2 leads

SOD523V

0 0.5 1 mm  
scale

**DIMENSIONS (mm are the original dimensions)**

| UNIT | A            | b <sub>p</sub> | c            | D            | E            | H <sub>E</sub> | v   |
|------|--------------|----------------|--------------|--------------|--------------|----------------|-----|
| mm   | 0.65<br>0.58 | 0.34<br>0.26   | 0.17<br>0.11 | 1.25<br>1.15 | 0.85<br>0.75 | 1.65<br>1.55   | 0.1 |

**Note**  
1. The marking bar indicates the cathode.

| OUTLINE<br>VERSION | REFERENCES |       |       |  | EUROPEAN<br>PROJECTION | ISSUE DATE            |
|--------------------|------------|-------|-------|--|------------------------|-----------------------|
|                    | IEC        | JEDEC | JEITA |  |                        |                       |
| SOD523V            |            |       | SC-79 |  |                        | 00-12-07-<br>02-04-19 |

## 20 V, 1 A ultra low $V_F$ MEGA Schottky barrier rectifier in SOD523 package

PMEG2010AEB

### DATA SHEET STATUS

| LEVEL | DATA SHEET STATUS <sup>(1)</sup> | PRODUCT STATUS <sup>(2)(3)</sup> | DEFINITION                                                                                                                                                                                                                                                                                     |
|-------|----------------------------------|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| I     | Objective data                   | Development                      | This data sheet contains data from the objective specification for product development. Philips Semiconductors reserves the right to change the specification in any manner without notice.                                                                                                    |
| II    | Preliminary data                 | Qualification                    | This data sheet contains data from the preliminary specification. Supplementary data will be published at a later date. Philips Semiconductors reserves the right to change the specification without notice, in order to improve the design and supply the best possible product.             |
| III   | Product data                     | Production                       | This data sheet contains data from the product specification. Philips Semiconductors reserves the right to make changes at any time in order to improve the design, manufacturing and supply. Relevant changes will be communicated via a Customer Product/Process Change Notification (CPCN). |

### Notes

1. Please consult the most recently issued data sheet before initiating or completing a design.
2. The product status of the device(s) described in this data sheet may have changed since this data sheet was published. The latest information is available on the Internet at URL <http://www.semiconductors.philips.com>.
3. For data sheets describing multiple type numbers, the highest-level product status determines the data sheet status.

### DEFINITIONS

**Short-form specification** — The data in a short-form specification is extracted from a full data sheet with the same type number and title. For detailed information see the relevant data sheet or data handbook.

**Limiting values definition** — Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 60134). 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** — Applications that are described herein for any of these products are for illustrative purposes only. Philips Semiconductors make no representation or warranty that such applications will be suitable for the specified use without further testing or modification.

### DISCLAIMERS

**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 Semiconductors customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Philips Semiconductors for any damages resulting from such application.

**Right to make changes** — Philips Semiconductors reserves the right to make changes in the products - including circuits, standard cells, and/or software - described or contained herein in order to improve design and/or performance. When the product is in full production (status 'Production'), relevant changes will be communicated via a Customer Product/Process Change Notification (CPCN). Philips Semiconductors assumes no responsibility or liability for the use of any of these products, conveys no licence or title under any patent, copyright, or mask work right to these products, and makes no representations or warranties that these products are free from patent, copyright, or mask work right infringement, unless otherwise specified.

# ***Philips Semiconductors – a worldwide company***

## **Contact information**

For additional information please visit **<http://www.semiconductors.philips.com>**. Fax: **+31 40 27 24825**

For sales offices addresses send e-mail to: **[sales.addresses@www.semiconductors.philips.com](mailto:sales.addresses@www.semiconductors.philips.com)**.

© Koninklijke Philips Electronics N.V. 2003

SCA75

All rights are reserved. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner.

The information presented in this document does not form part of any quotation or contract, is believed to be accurate and reliable and may be changed without notice. No liability will be accepted by the publisher for any consequence of its use. Publication thereof does not convey nor imply any license under patent- or other industrial or intellectual property rights.

Printed in The Netherlands

R76/01/pp8

Date of release: 2003 Dec 03

Document order number: 9397 750 11911

*Let's make things better.*

