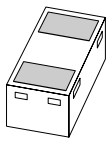


PMEG3002AEL

30 V, 0.2 A very low V_F MEGA Schottky barrier rectifier in leadless ultra small SOD882 package

Rev. 01 — 24 February 2004 Product data sheet

1. Product profile

1.1 General description

Planar Maximum Efficiency General Application (MEGA) Schottky barrier diode with an integrated guard ring for stress protection encapsulated in a SOD882 leadless ultra small plastic package.

1.2 Features

- Forward current: 0.2 A
- Reverse voltage: 30 V
- Very low forward voltage
- Leadless ultra small plastic package
- Power dissipation comparable to SOT23.

1.3 Applications

- Ultra high-speed switching
- Voltage clamping
- Protection circuits
- Low voltage rectification
- High efficiency DC-to-DC conversion
- Low power consumption applications.

1.4 Quick reference data

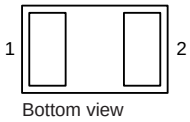
Table 1: Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
I_F	forward current		-	-	0.2	A
V_R	reverse voltage		-	-	30	V

PHILIPS

2. Pinning information

Table 2: Discrete pinning

Pin	Description	Simplified outline	Symbol
1	cathode [1]	 Bottom view	 sym001
2	anode	 Top view	

001aaa332

[1] The marking bar indicates the cathode.

3. Ordering information

Table 3: Ordering information

Type number	Package		
	Name	Description	Version
PMEG3002AEL	-	leadless ultra small plastic package; 2 terminals; body 1.0 × 0.6 × 0.5 mm	SOD882

4. Marking

Table 4: Marking

Type number	Marking code
PMEG3002AEL	F3

5. Limiting values

Table 5: Limiting values

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

Symbol	Parameter	Conditions		Min	Max	Unit
V_R	continuous reverse voltage			-	30	V
I_F	continuous forward current			-	0.2	A
I_{FRM}	repetitive peak forward current	$t_p \leq 1$ ms; $\delta \leq 0.25$		-	1	A
I_{FSM}	non-repetitive peak forward current	$t_p = 8$ ms square wave		-	3	A
T_j	junction temperature		[1]	-	150	°C
T_{amb}	operating ambient temperature		[1]	–65	+150	°C
T_{stg}	storage temperature			–65	+150	°C

[1] 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 determining the reverse power losses P_R and $I_{F(AV)}$ rating will be available on request.

6. Thermal characteristics

Table 6: Thermal characteristics

Symbol	Parameter	Conditions		Typ	Unit
$R_{th(j-a)}$	thermal resistance from junction to ambient	in free air	[1] [2]	500	K/W

[1] Refer to SOD882 standard mounting conditions (footprint), FR4 with 60 µm copper strip line.

[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 determining the reverse power losses P_R and $I_{F(AV)}$ rating will be available on request.

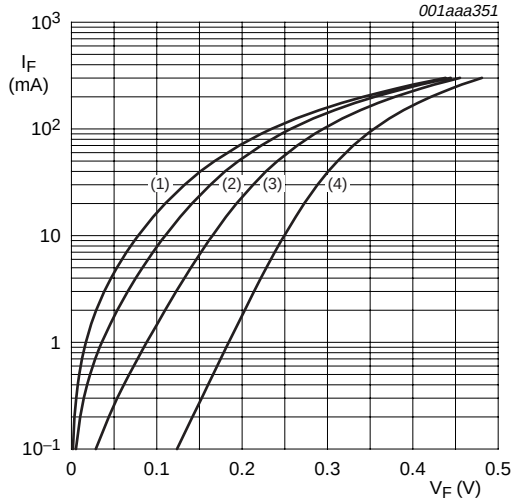
7. Characteristics

Table 7: Characteristics

T_{amb} = 25 °C unless otherwise specified

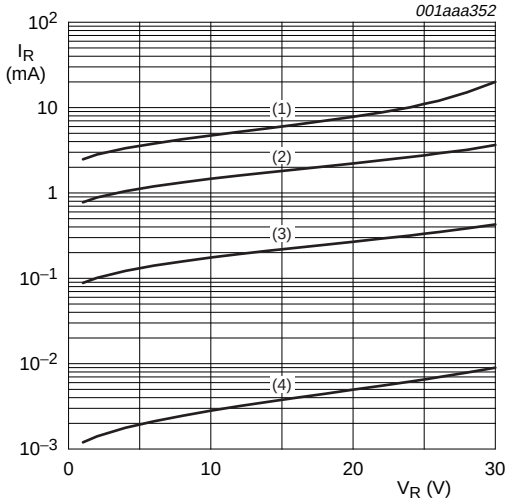
Symbol	Parameter	Conditions		Min	Typ	Max	Unit
V_F	continuous forward voltage	see Figure 1;					
		I_F = 0.1 mA		-	125	190	mV
		I_F = 1 mA		-	185	250	mV
		I_F = 10 mA		-	250	300	mV
		I_F = 100 mA		-	350	400	mV
		I_F = 200 mA		-	420	480	mV
I_R	continuous reverse current	see Figure 2;	[1]				
		V_R = 10 V		-	2.5	10	µA
		V_R = 30 V		-	10	50	µA
C_d	diode capacitance	V_R = 1 V; f = 1 MHz; see Figure 3		-	17	25	pF

[1] Pulse test: $t_p \leq 300$ µs; $\delta \leq 0.02$.



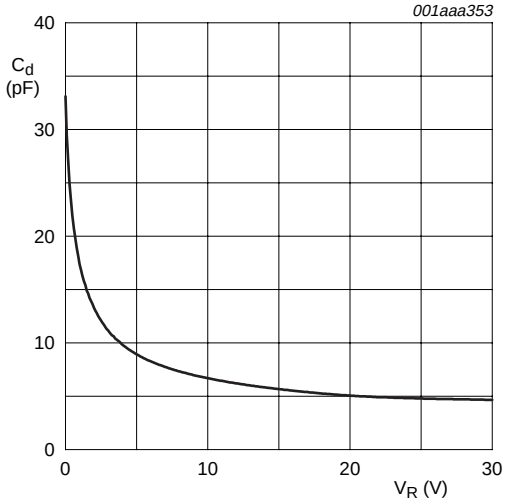
(1) T_j = 150 °C.
(2) T_j = 125 °C.
(3) T_j = 85 °C.
(4) T_j = 25 °C.

Fig 1. Forward current as a function of forward voltage; typical values.



(1) T_j = 150 °C.
(2) T_j = 125 °C.
(3) T_j = 85 °C.
(4) T_j = 25 °C.

Fig 2. Reverse current as a function of reverse voltage; typical values.

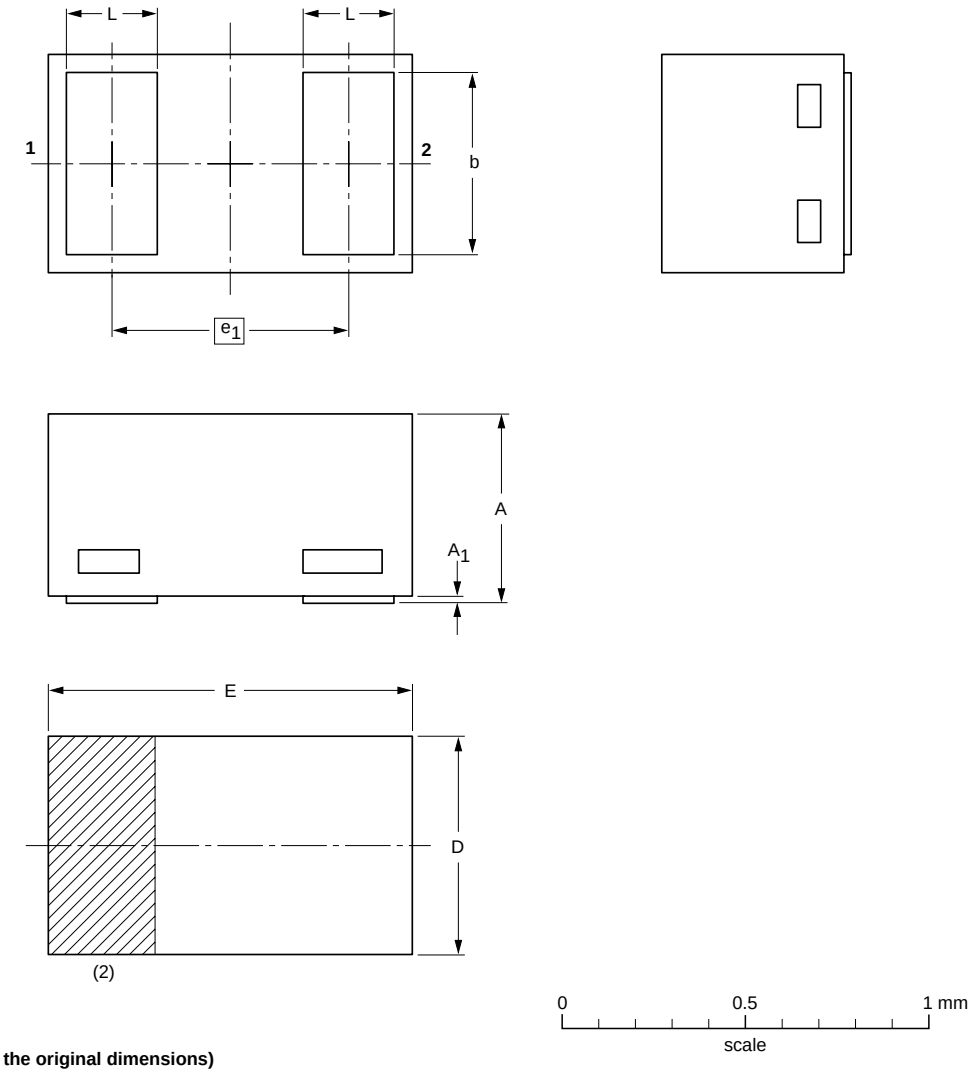


T_{amb} = 25 °C; f = 1 MHz.

Fig 3. Diode capacitance as a function of reverse voltage; typical values.

8. Package outline

Leadless ultra small plastic package; 2 terminals; body 1.0 x 0.6 x 0.5 mm **SOD882**



DIMENSIONS (mm are the original dimensions)

UNIT	A(1)	A_1 max.	b	D	E	e_1	L
mm	0.50 0.46	0.03	0.55 0.47	0.62 0.55	1.02 0.95	0.65	0.30 0.22

Notes

1. Including plating thickness
2. The marking bar indicates the cathode

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA			
SOD882						~~03-04-16~~ 03-04-17

Fig 4. Package outline.

9. Revision history

Table 8: Revision history

Document ID	Release date	Data sheet status	Change notice	Order number	Supersedes
PMEG3002AEL_1	20040224	Product data	-	9397 750 12466	-

10. Data sheet status

Level	Data sheet status [1]	Product status [2] [3]	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).

[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.

11. 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.

12. Disclaimers

Life support — 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 license 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.

13. Contact information

For additional information, please visit: **http://www.semiconductors.philips.com**

For sales office addresses, send an email to: **sales.addresses@www.semiconductors.philips.com**

14. Contents

Date of release: 24 February 2004
Document order number: 9397 750 12466

Published in The Netherlands