

# PMEG4002EL

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

Rev. 01 — 17 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: 40 V
- 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
- Blocking diodes
- Low power consumption applications.

### 1.4 Quick reference data

Table 1: Quick reference data

Symbol	Parameter	Value	Unit
$I_F$	forward current	0.2	A
$V_R$	reverse voltage	40	V

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## 2. Pinning information

**Table 2: Discrete pinning**

Pin	Description	Simplified outline	Symbol
1	cathode	<p>Bottom view</p> <p>Top view</p> <p>001aaa332</p>	<p>sym001</p>
2	anode		

[1] The marking bar indicates the cathode.

## 3. Ordering information

**Table 3: Ordering information**

Type number	Package		
	Name	Description	Version
PMEG4002EL	-	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
PMEG4002EL	F4

## 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		-	40	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	Value	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  $\mu$ m 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.

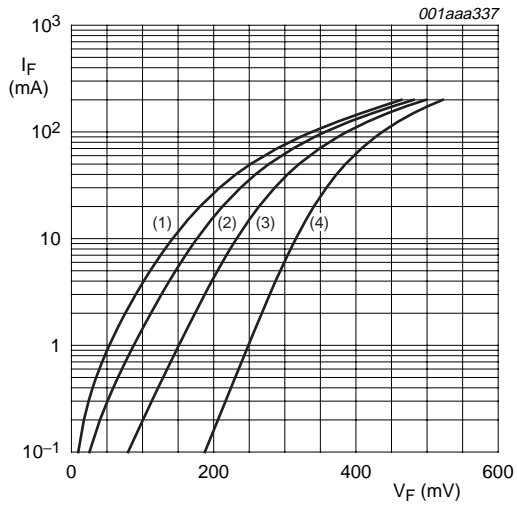
## 7. Characteristics

**Table 7: Characteristics**

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

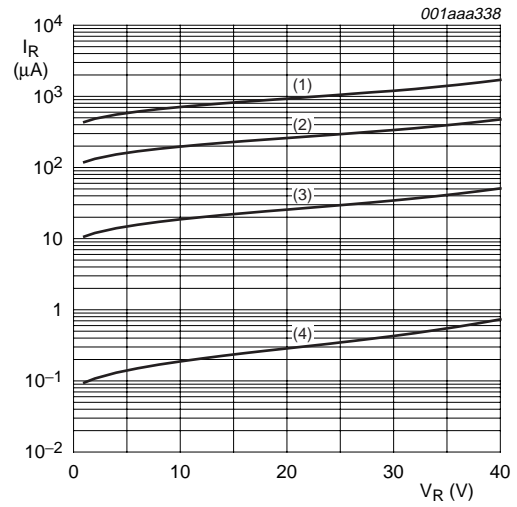
Symbol	Parameter	Conditions	Typ	Max	Unit
$V_F$	continuous forward voltage	see <a href="#">Figure 1</a>			
		$I_F = 0.1\text{ mA}$	190	220	mV
		$I_F = 1\text{ mA}$	250	290	mV
		$I_F = 10\text{ mA}$	320	360	mV
		$I_F = 100\text{ mA}$	440	500	mV
		$I_F = 200\text{ mA}$	520	600	mV
$I_R$	continuous reverse current	see <a href="#">Figure 2</a>	[1]		
		$V_R = 25\text{ V}$	0.3	0.5	$\mu\text{A}$
		$V_R = 40\text{ V}$	0.7	10	$\mu\text{A}$
$C_d$	diode capacitance	$V_R = 1\text{ V}$ ; $f = 1\text{ MHz}$ ; see <a href="#">Figure 3</a>	14	20	pF

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



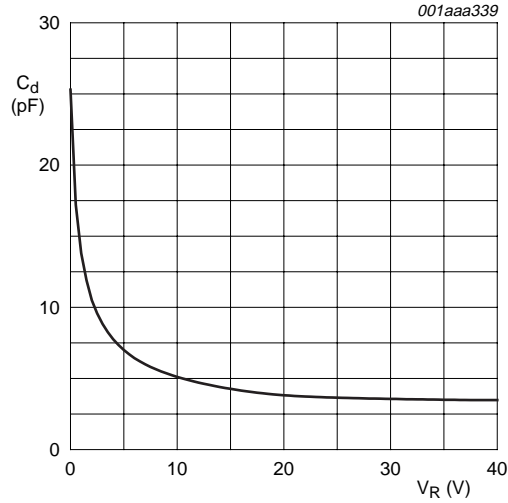
- (1)  $T_j = 150\text{ }^\circ\text{C}$ .
- (2)  $T_j = 125\text{ }^\circ\text{C}$ .
- (3)  $T_j = 85\text{ }^\circ\text{C}$ .
- (4)  $T_j = 25\text{ }^\circ\text{C}$ .

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



- (1)  $T_j = 150\text{ }^\circ\text{C}$ .
- (2)  $T_j = 125\text{ }^\circ\text{C}$ .
- (3)  $T_j = 85\text{ }^\circ\text{C}$ .
- (4)  $T_j = 25\text{ }^\circ\text{C}$ .

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



$f = 1\text{ MHz}$ ;  $T_{amb} = 25\text{ }^\circ\text{C}$ .

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

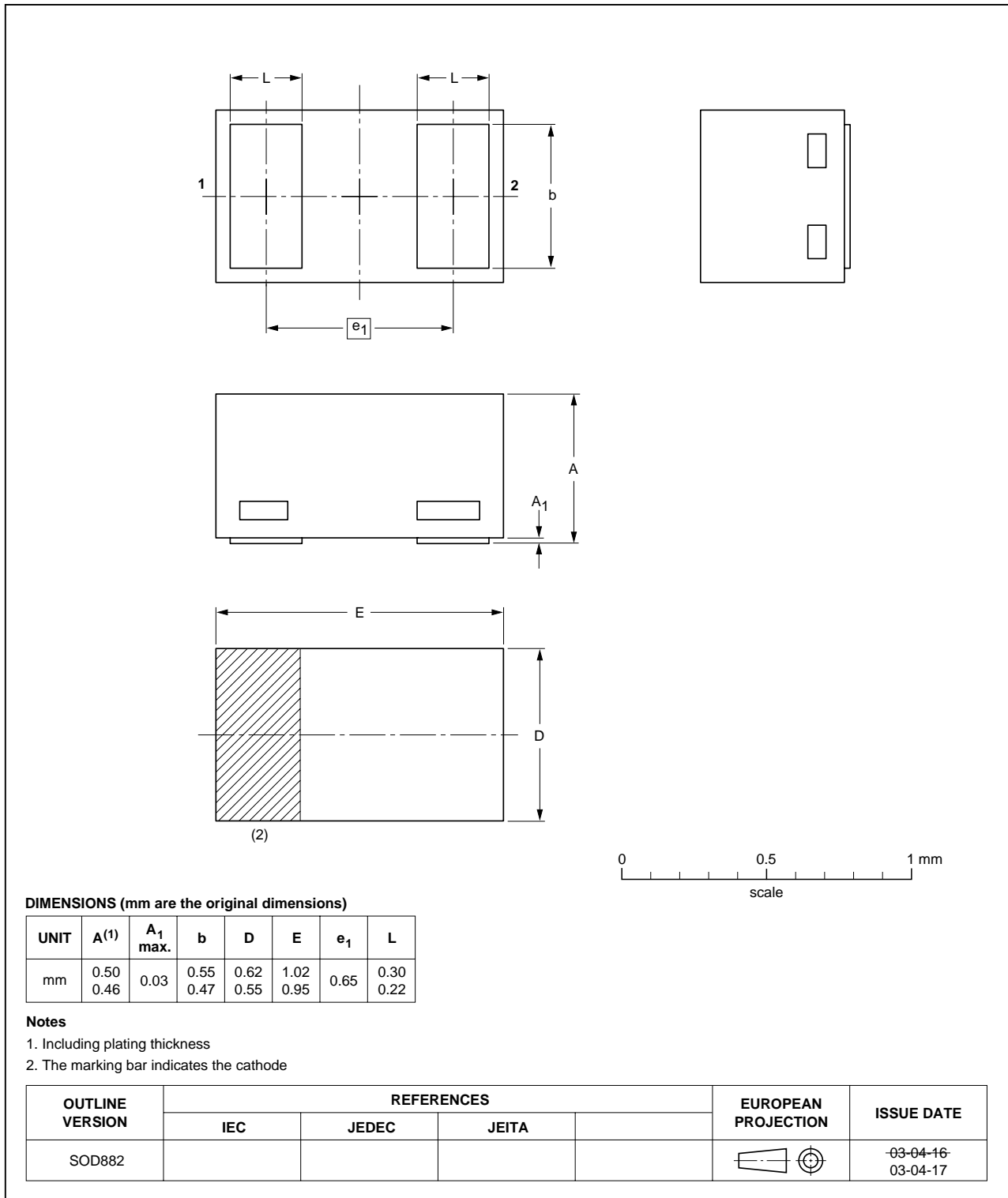


Fig 4. Package outline.

## 9. Revision history

Table 8: Revision history

Document ID	Release date	Data sheet status	Change notice	Order number	Supersedes
PMEG4002EL_1	20040217	Product data	-	9397 750 12467	-

## 10. Data sheet status

Level	Data sheet status <sup>[1]</sup>	Product status <sup>[2]</sup> <sup>[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.
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[3] For data sheets describing multiple type numbers, the highest-level product status determines the data sheet status.

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Date of release: 17 February 2004  
Document order number: 9397 750 12467

Published in The Netherlands