

# 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

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## 2. Pinning information

**Table 2: Discrete pinning**

Pin	Description	Simplified outline	Symbol
1	cathode		 sym001
2	anode		

[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	$t_p \leq 1 \text{ ms}$ ; $\delta \leq 0.25$	-	1	A
$I_{FSM}$	non-repetitive peak forward current	$t_p = 8 \text{ ms square wave}$	-	3	A
$T_j$	junction temperature		[1]	150	°C
$T_{amb}$	operating ambient temperature		[1]	+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  $\mu$ 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.

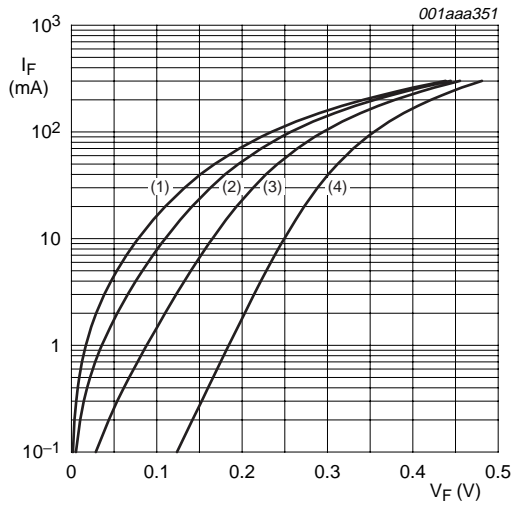
## 7. Characteristics

**Table 7: Characteristics**

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

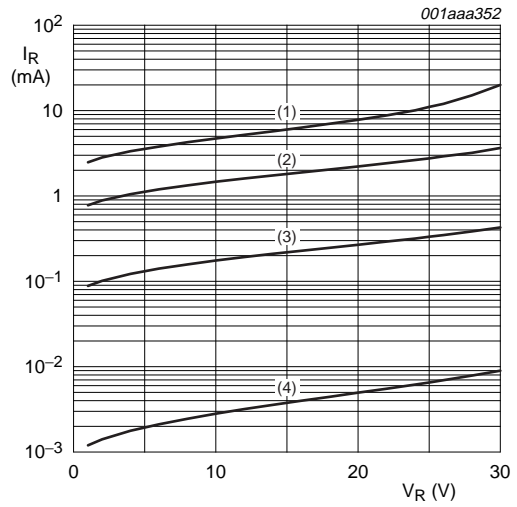
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$V_F$	continuous forward voltage	see <a href="#">Figure 1</a> ;				
		$I_F = 0.1\text{ mA}$	-	125	190	mV
		$I_F = 1\text{ mA}$	-	185	250	mV
		$I_F = 10\text{ mA}$	-	250	300	mV
		$I_F = 100\text{ mA}$	-	350	400	mV
$I_R$	continuous reverse current	see <a href="#">Figure 2</a> ; [1]				
		$V_R = 10\text{ V}$	-	2.5	10	$\mu$ A
		$V_R = 30\text{ V}$	-	10	50	$\mu$ A
$C_d$	diode capacitance	$V_R = 1\text{ V}$ ; $f = 1\text{ MHz}$ ; see <a href="#">Figure 3</a>	-	17	25	pF

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



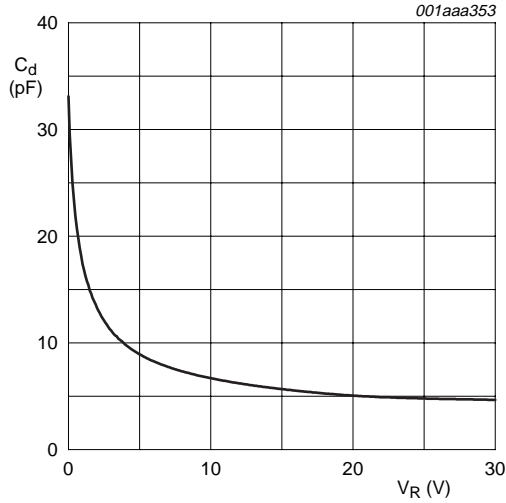
- (1)  $T_j = 150\text{ }^\circ\text{C}$ .
- (2)  $T_j = 125\text{ }^\circ\text{C}$ .
- (3)  $T_j = 85\text{ }^\circ\text{C}$ .
- (4)  $T_j = 25\text{ }^\circ\text{C}$ .

**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.**



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

**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

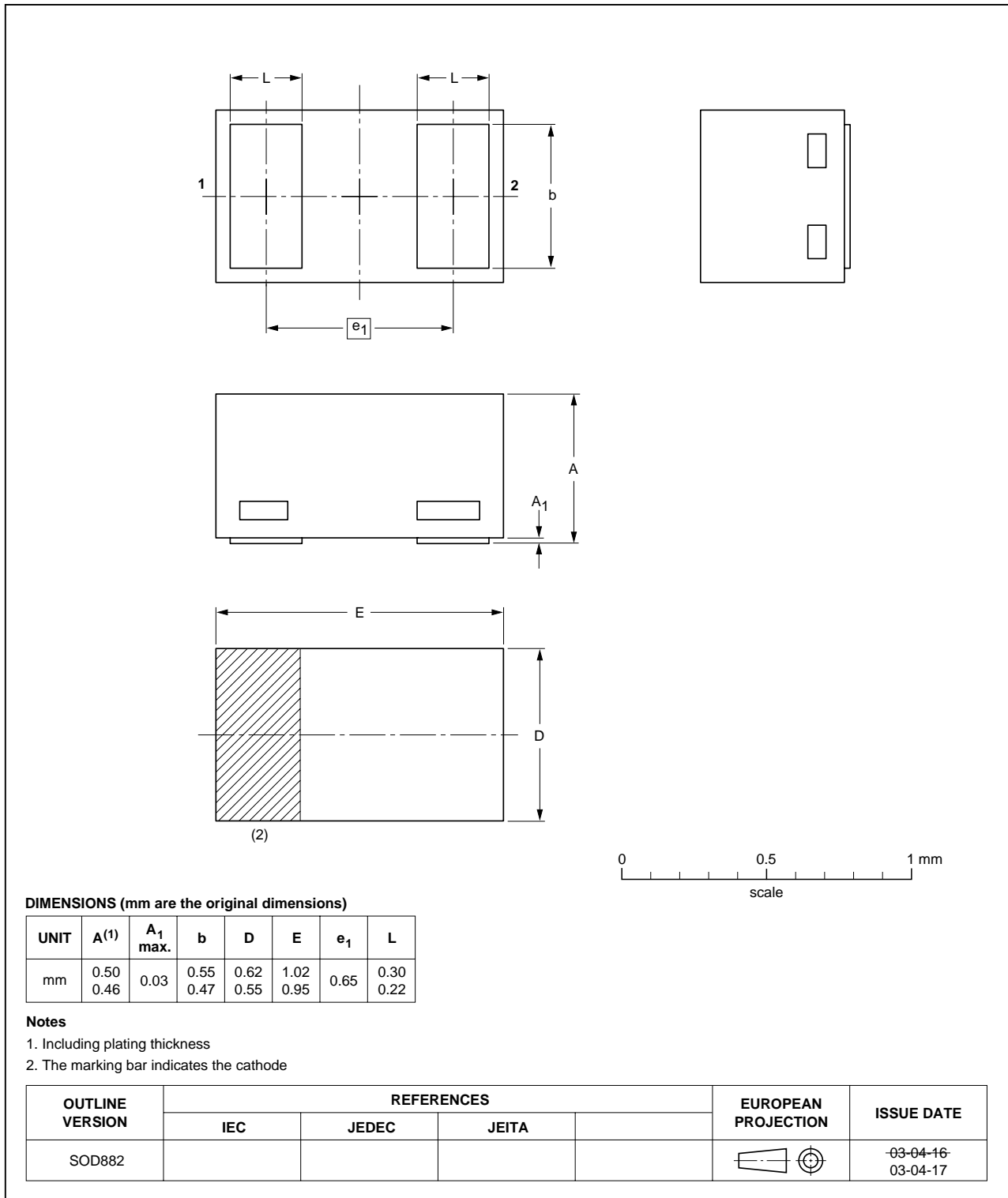


Fig 4. Package outline.

## 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 <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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