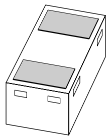


PMEG2005EL

20 V, 0.5 A very low V_F MEGA Schottky barrier rectifier in leadless ultra small SOD882 package

Rev. 01 — 11 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: 0.5 A
- Reverse voltage: 20 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.

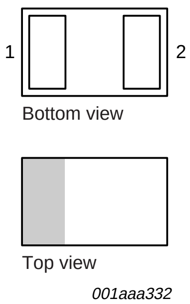
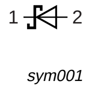
1.4 Quick reference data

Table 1: Quick reference data

Symbol	Parameter	Value	Unit
I_F	forward current	0.5	A
V_R	reverse voltage	20	V

2. Pinning information

Table 2: Discrete pinning

Pin	Description	Simplified outline	Symbol
1	cathode [1]		
2	anode		

[1] The marking bar indicates the cathode.

3. Ordering information

Table 3: Ordering information

Type number	Package		
	Name	Description	Version
PMEG2005EL	-	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
PMEG2005EL	F5

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			-	20	V
I_F	continuous forward current			-	0.5	A
I_{FRM}	repetitive peak forward current	$t_p \leq 1$ ms; $\delta \leq 0.25$		-	2.5	A
I_{FSM}	non-repetitive peak forward current	t = 8 ms square wave		-	3.0	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 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.

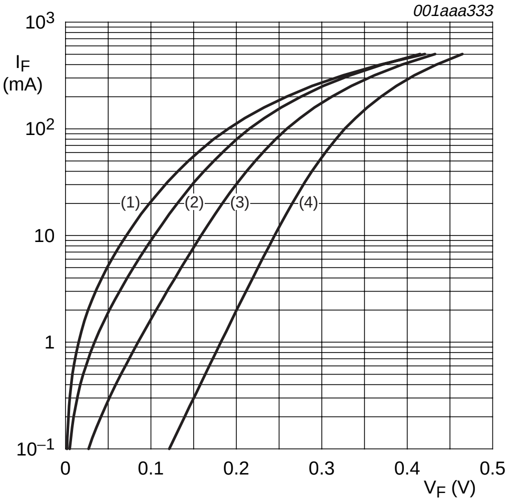
7. Characteristics

Table 7: Characteristics

T_{amb} = 25 °C unless otherwise specified.

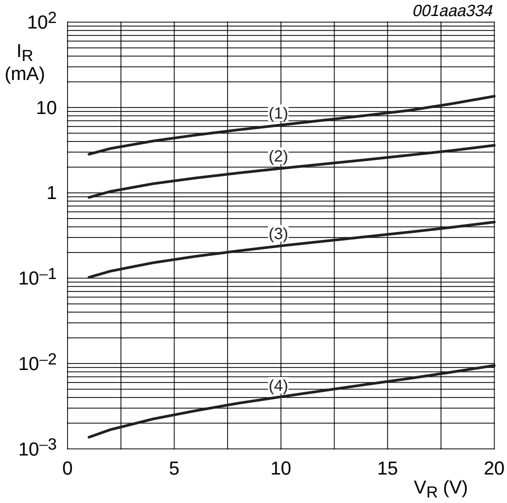
Symbol	Parameter	Conditions		Typ	Max	Unit
V_F	continuous forward voltage	see Figure 1				
		I_F = 0.1 mA		125	180	mV
		I_F = 1 mA		185	240	mV
		I_F = 10 mA		250	290	mV
		I_F = 100 mA		325	380	mV
		I_F = 500 mA		450	500	mV
I_R	continuous reverse current	V_R = 10 V; see Figure 2	[1]	4	30	µA
C_d	diode capacitance	V_R = 1 V; f = 1 MHz; see Figure 3		24	30	pF

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



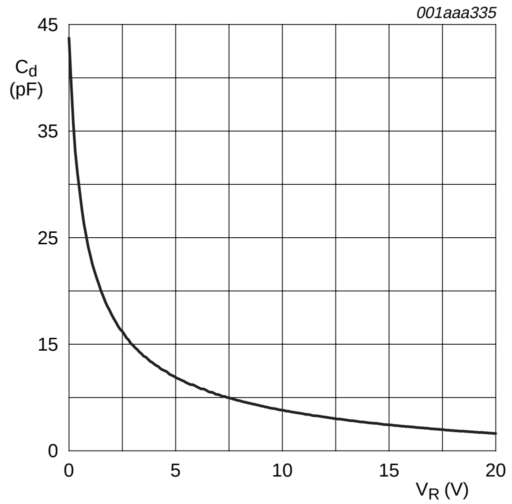
(1) T_j = 150 °C.
(2) T_j = 125 °C.
(3) T_j = 85 °C.
(4) T_j = 25 °C.

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.

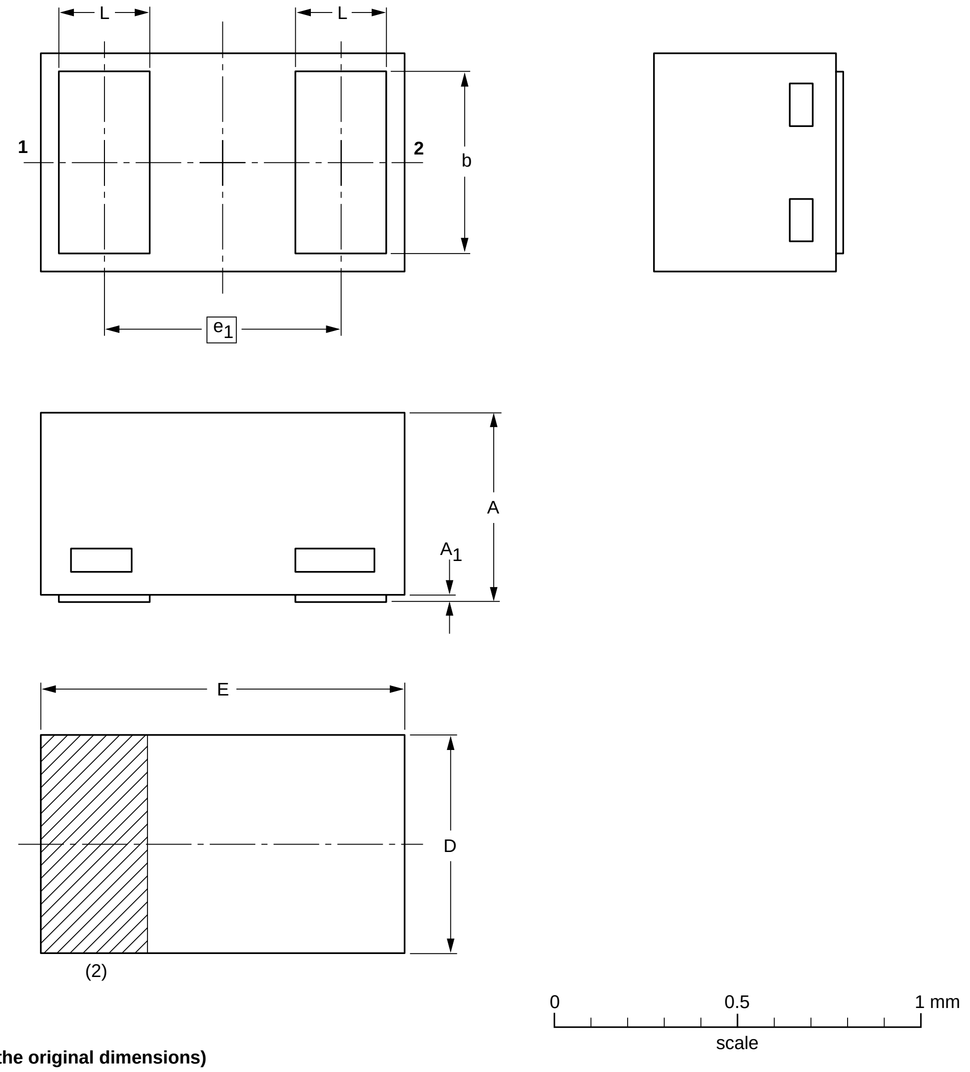


f = 1 MHz; T_{amb} = 25 °C.

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**



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
PMEG2005EL_1	20040211	Product specification	-	9397 750 12464	-

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.

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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.

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14. Contents

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