

# PMEG3015EV

30 V, 1.5 A ultra low  $V_F$  MEGA Schottky barrier rectifier in SOT666 package

Rev. 01 — 4 April 2005

Product data sheet

## 1. Product profile

### 1.1 General description

Planar Maximum Efficiency General Application (MEGA) Schottky barrier rectifier with an integrated guard ring for stress protection, encapsulated in an ultra small SMD SOT666 plastic package.

### 1.2 Features

- Forward current: 1.5 A
- Reverse voltage: 30 V
- Ultra low forward voltage
- Ultra small SMD packages

### 1.3 Applications

- Low voltage rectification
- High efficiency DC-to-DC conversion
- Voltage clamping
- Inverse polarity protection
- 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	$T_{sp} \leq 55\text{ °C}$	-	-	1.5	A
$V_R$	reverse voltage		-	-	30	V
$V_F$	forward voltage	$I_F = 1.5\text{ A}$	[1] -	480	550	mV

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

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## 2. Pinning information

Table 2: Pinning

Pin	Description	Simplified outline	Symbol
1	cathode		 <i>sym038</i>
2	cathode		
3	anode		
4	anode		
5	cathode		
6	cathode		

## 3. Ordering information

Table 3: Ordering information

Type number	Package		
	Name	Description	Version
PMEG3015EV	-	plastic surface mounted package; 6 leads	SOT666

## 4. Marking

Table 4: Marking codes

Type number	Marking code
PMEG3015EV	1A

## 5. Limiting values

**Table 5: Limiting values**

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

Symbol	Parameter	Conditions	Min	Max	Unit
$V_R$	reverse voltage		-	30	V
$I_F$	forward current	$T_{sp} \leq 55\text{ °C}$	-	1.5	A
$I_{FRM}$	repetitive peak forward current	$t_p \leq 1\text{ ms}; \delta \leq 0.25$	[1] -	4.5	A
$I_{FSM}$	non-repetitive peak forward current	$t_p = 8\text{ ms};$ square wave	[1] -	9.5	A
$P_{tot}$	total power dissipation	$T_{amb} \leq 25\text{ °C}$	[2] -	0.31	W
			[3] -	0.58	W
$T_j$	junction temperature		-	150	°C
$T_{amb}$	ambient temperature		-65	+150	°C
$T_{stg}$	storage temperature		-65	+150	°C

[1] For SOT666 only valid, if pins 3 and 4 are connected in parallel.

[2] Device mounted on an FR4 Printed-Circuit Board (PCB), single-sided copper, tin-plated and standard footprint.

[3] Device mounted on an FR4 PCB, single-sided copper, tin-plated and mounting pad for cathode 1 cm<sup>2</sup>.

## 6. Thermal characteristics

**Table 6: Thermal characteristics**

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$R_{th(j-a)}$	thermal resistance from junction to ambient	in free air	[1] [2]			
			[3] -	-	405	K/W
			[4] -	-	215	K/W
$R_{th(j-sp)}$	thermal resistance from junction to solder point		-	-	80	K/W

[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.

[2] Reflow soldering is the only recommended soldering method.

[3] Device mounted on an FR4 PCB, single-sided copper, tin-plated and standard footprint.

[4] Device mounted on an FR4 PCB, single-sided copper, tin-plated and mounting pad for cathode 1 cm<sup>2</sup>.

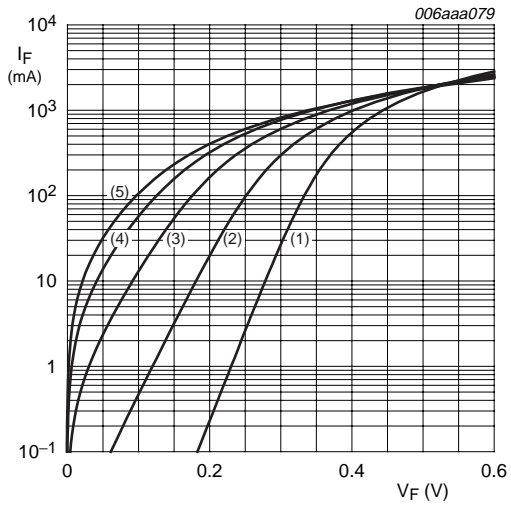
## 7. Characteristics

**Table 7: Characteristics**

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

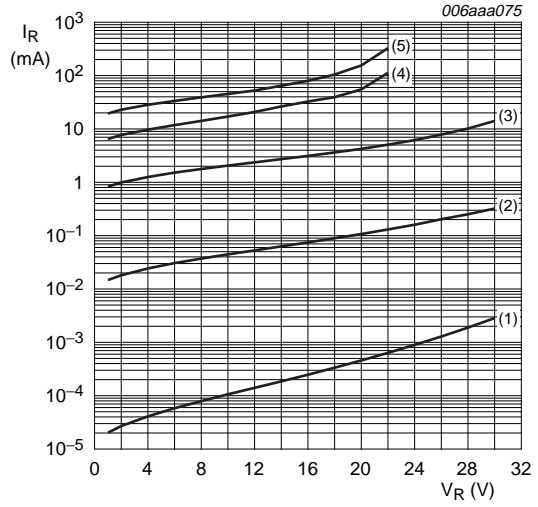
Symbol	Parameter	Conditions	Min	Typ	Max	Unit	
$V_F$	forward voltage	$I_F = 1\text{ mA}$	[1]	-	125	160	mV
		$I_F = 10\text{ mA}$	[1]	-	185	220	mV
		$I_F = 100\text{ mA}$	[1]	-	255	290	mV
		$I_F = 500\text{ mA}$	[1]	-	340	380	mV
		$I_F = 1\text{ A}$	[1]	-	410	480	mV
		$I_F = 1.5\text{ A}$	[1]	-	480	550	mV
$I_R$	reverse current	$V_R = 10\text{ V}$	-	60	150	$\mu\text{A}$	
		$V_R = 30\text{ V}$	-	400	1000	$\mu\text{A}$	
$C_d$	diode capacitance	$V_R = 1\text{ V}; f = 1\text{ MHz}$	-	60	72	pF	

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



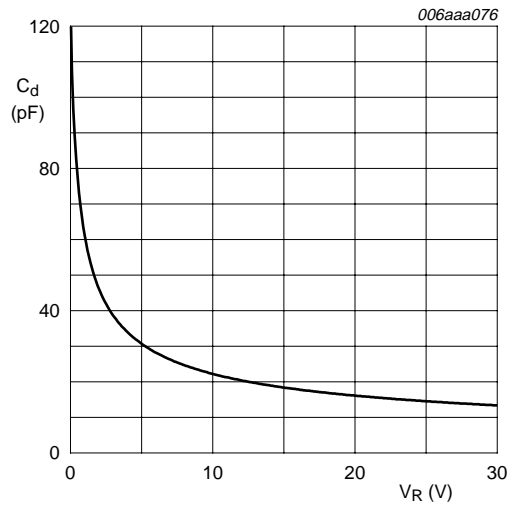
- (1)  $T_{\text{amb}} = -40^\circ\text{C}$
- (2)  $T_{\text{amb}} = 25^\circ\text{C}$
- (3)  $T_{\text{amb}} = 85^\circ\text{C}$
- (4)  $T_{\text{amb}} = 125^\circ\text{C}$
- (5)  $T_{\text{amb}} = 150^\circ\text{C}$

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



- (1)  $T_{\text{amb}} = -40^\circ\text{C}$
- (2)  $T_{\text{amb}} = 25^\circ\text{C}$
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- (4)  $T_{\text{amb}} = 125^\circ\text{C}$
- (5)  $T_{\text{amb}} = 150^\circ\text{C}$

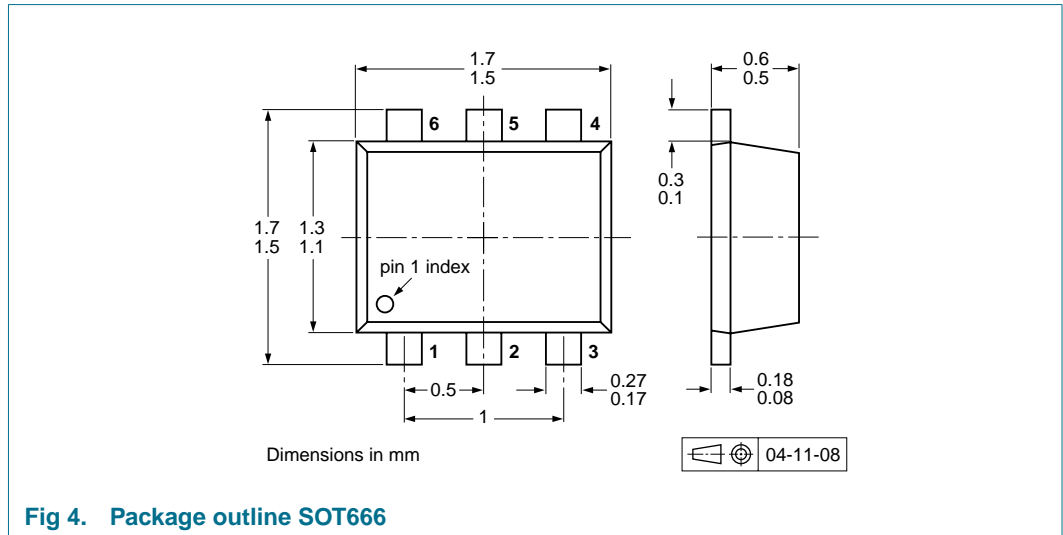
**Fig 2. Reverse current as a function of reverse voltage; typical values**



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

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

## 8. Package outline



## 9. Packing information

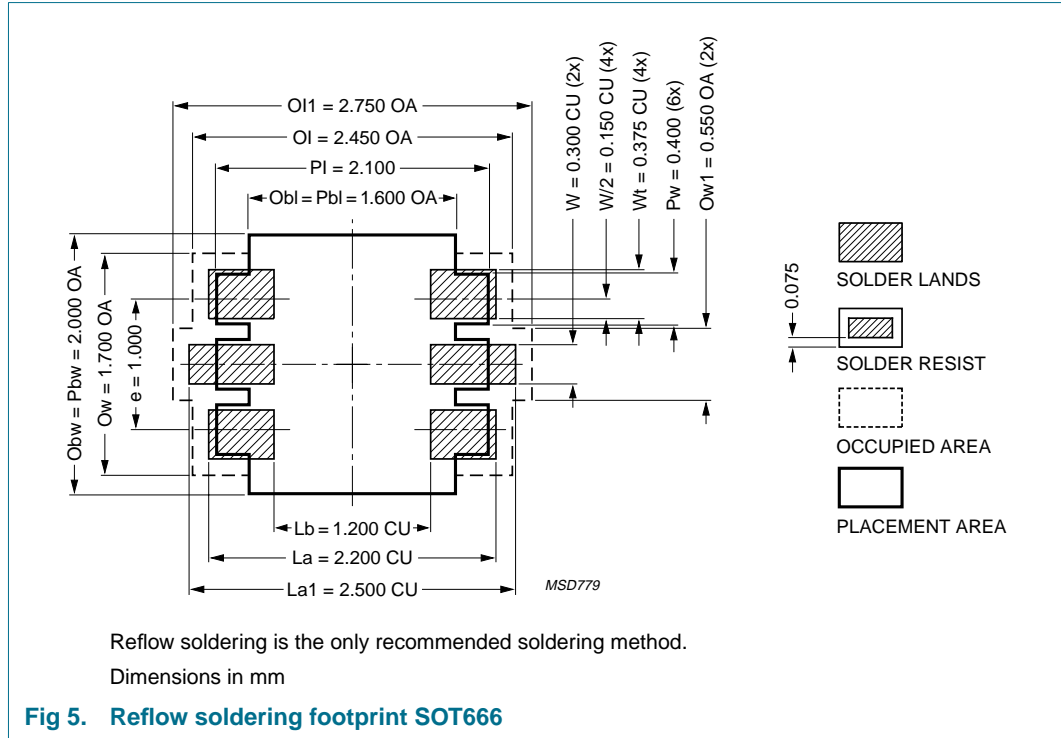
**Table 8: Packing methods**

The indicated -xxx are the last three digits of the 12NC ordering code. [1]

Type number	Package	Description	Packing quantity
			4000
PMEG3015EV	SOT666	4 mm pitch, 8 mm tape and reel	-115

[1] For further information and the availability of packing methods, see [Section 15](#).

10. Soldering



## 11. Revision history

**Table 9: Revision history**

Document ID	Release date	Data sheet status	Change notice	Doc. number	Supersedes
PMEG3015EV_1	20050404	Product data sheet	-	9397 750 14638	-



## 12. 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.
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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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