

# PMEG3015EH; PMEG3015EJ

30 V, 1.5 A ultra low  $V_F$  MEGA Schottky barrier rectifiers

Rev. 02 — 8 April 2005

Product data sheet

## 1. Product profile

### 1.1 General description

Planar Maximum Efficiency General Application (MEGA) Schottky barrier rectifiers with an integrated guard ring for stress protection, encapsulated in small and flat lead SMD plastic packages.

Table 1: Product overview

Type number	Package		Configuration
	Philips	JEITA	
PMEG3015EH	SOD123F	-	single diode
PMEG3015EJ	SOD323F	SC-90	single diode

### 1.2 Features

- Forward current:  $\leq 1.5$  A
- Reverse voltage:  $\leq 30$  V
- Ultra low forward voltage
- Small and flat lead SMD plastic packages

### 1.3 Applications

- Low voltage rectification
- High efficiency DC-to-DC conversion
- Switch mode power supply
- Inverse polarity protection
- Low power consumption applications

### 1.4 Quick reference data

Table 2: Quick reference data


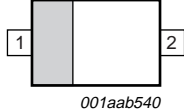
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$I_F$	forward current	$T_{sp} \leq 55$ °C	-	-	1.5	A
$V_R$	reverse voltage		-	-	30	V
$V_F$	forward voltage	$I_F = 1.5$ A	[1] -	440	550	mV

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

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## 2. Pinning information

Table 3: Pinning

Pin	Description	Simplified outline	Symbol
1	cathode	[1]	 sym001
2	anode	 001aab540	

[1] The marking bar indicates the cathode.

## 3. Ordering information

Table 4: Ordering information

Type number	Package		
	Name	Description	Version
PMEG3015EH	-	plastic surface mounted package; 2 leads	SOD123F
PMEG3015EJ	SC-90	plastic surface mounted package; 2 leads	SOD323F

## 4. Marking

Table 5: Marking codes

Type number	Marking code
PMEG3015EH	AE
PMEG3015EJ	EK

## 5. Limiting values

Table 6: 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	$T_{sp} \leq 55\text{ }^\circ\text{C}$	-	1.5	A	
$I_{FRM}$	repetitive peak forward current	$t_p \leq 1\text{ ms}; \delta \leq 0.25$	-	4.5	A	
$I_{FSM}$	non-repetitive peak forward current	square wave; $t_p = 8\text{ ms}$	-	9	A	
$P_{tot}$	total power dissipation	$T_{amb} \leq 25\text{ }^\circ\text{C}$	[1]	-	375	mW
			[2]	-	830	mW
	PMEG3015EJ	[1]	-	360	mW	
		[2]	-	830	mW	
$T_j$	junction temperature		-	150	$^\circ\text{C}$	

**Table 6:** Limiting values ...continued

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

Symbol	Parameter	Conditions	Min	Max	Unit
$T_{amb}$	ambient temperature		-65	+150	°C
$T_{stg}$	storage temperature		-65	+150	°C

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

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

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## 6. Thermal characteristics

**Table 7:** Thermal characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit		
$R_{th(j-a)}$	thermal resistance from junction to ambient	in free air						
			PMEG3015EH	[1] [2]	-	-	330	K/W
				[2] [3]	-	-	150	K/W
			PMEG3015EJ	[1] [2]	-	-	350	K/W
			[2] [3]	-	-	150	K/W	
$R_{th(j-sp)}$	thermal resistance from junction to solder point							
		PMEG3015EH		-	-	60	K/W	
		PMEG3015EJ		-	-	55	K/W	

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

[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 are available on request.

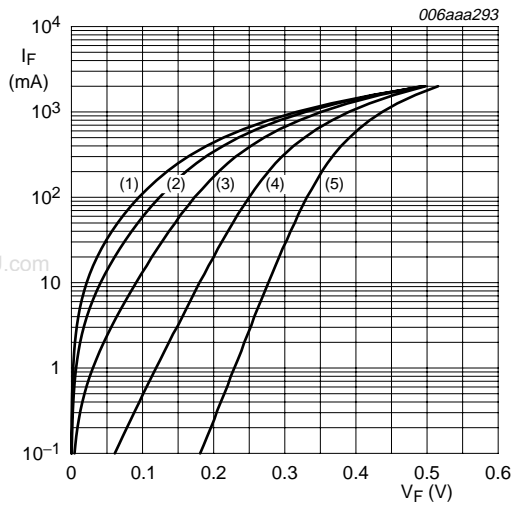
[3] Device mounted on an FR4 PCB, single-sided copper, tin-plated, mounting pad for cathode 1 cm<sup>2</sup>.

## 7. Characteristics

**Table 8:** Characteristics $T_{amb} = 25\text{ °C}$  unless otherwise specified.

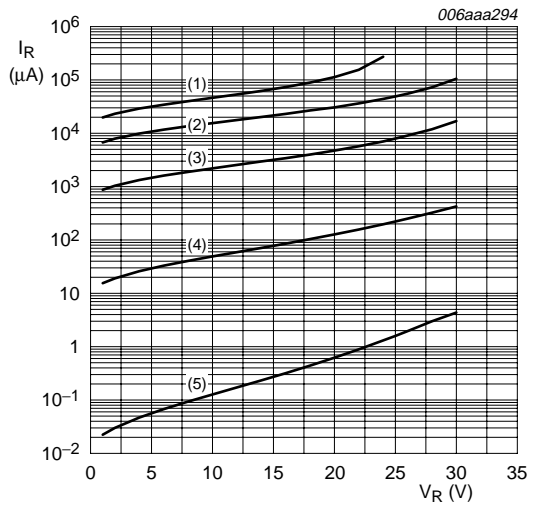
Symbol	Parameter	Conditions	Min	Typ	Max	Unit	
$V_F$	forward voltage	$I_F = 1\text{ mA}$	[1]	-	125	160	mV
		$I_F = 10\text{ mA}$	[1]	-	185	220	mV
		$I_F = 100\text{ mA}$	[1]	-	255	290	mV
		$I_F = 500\text{ mA}$	[1]	-	330	380	mV
		$I_F = 1\text{ A}$	[1]	-	400	480	mV
		$I_F = 1.5\text{ A}$	[1]	-	440	550	mV
$I_R$	reverse current	$V_R = 10\text{ V}$		-	60	150	μA
		$V_R = 30\text{ V}$		-	400	1000	μA
$C_d$	diode capacitance	$V_R = 1\text{ V}; f = 1\text{ MHz}$		-	60	72	pF

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



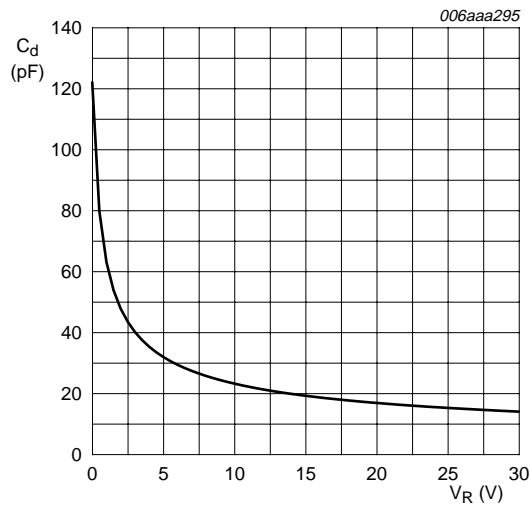
- (1)  $T_{amb} = 150\text{ °C}$
- (2)  $T_{amb} = 125\text{ °C}$
- (3)  $T_{amb} = 85\text{ °C}$
- (4)  $T_{amb} = 25\text{ °C}$
- (5)  $T_{amb} = -40\text{ °C}$

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



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

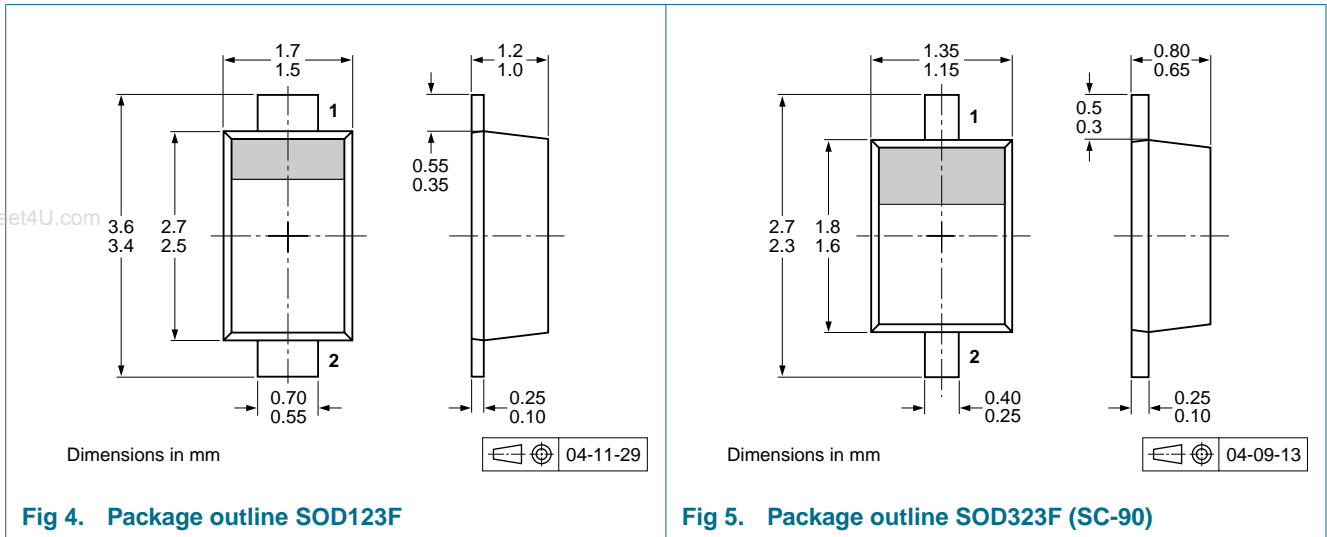
Fig 2. Reverse current as a function of reverse voltage; typical values



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

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

## 8. Package outline



## 9. Packing information

**Table 9: Packing methods**

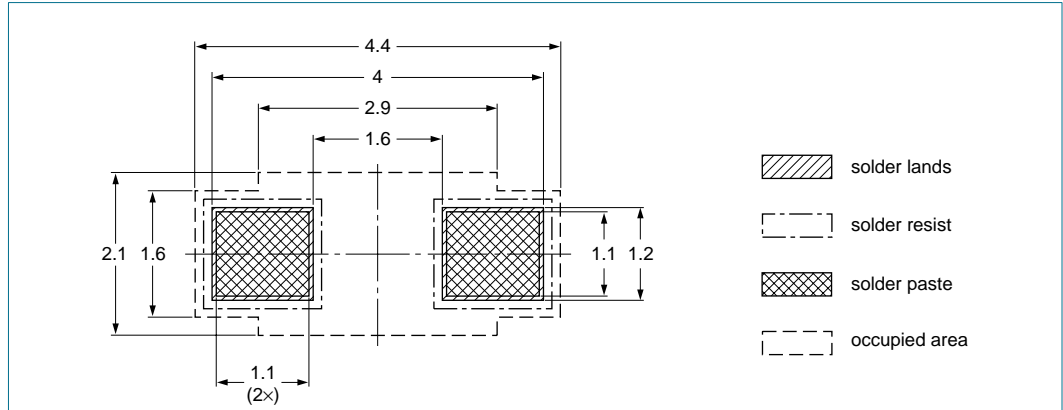
The indicated -xxx are the last three digits of the 12NC ordering code. [1]

Type number	Package	Description	Packing quantity	
			3000	10000
PMEG3015EH	SOD123F	4 mm pitch, 8 mm tape and reel	-115	-135
PMEG3015EJ	SOD323F			

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

**10. Soldering**

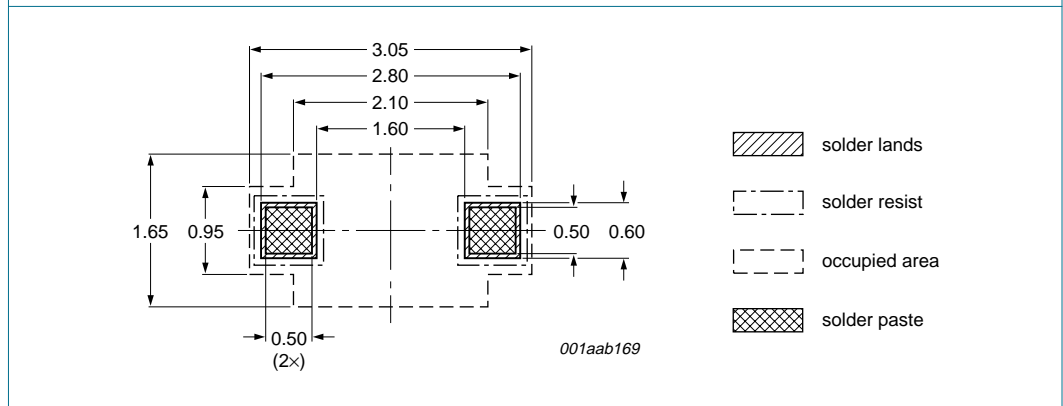
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Reflow soldering is the only recommended soldering method.

Dimensions in mm

**Fig 6. Reflow soldering footprint SOD123F**



Reflow soldering is the only recommended soldering method.

Dimensions in mm

**Fig 7. Reflow soldering footprint SOD323F (SC-90)**

## 11. Revision history

**Table 10: Revision history**

Document ID	Release date	Data sheet status	Change notice	Doc. number	Supersedes
PMEG3015EH_EJ_2	20050408	Product data sheet	-	9397 750 14917	PMEG3015EJ_1
Modifications:	• Type PMEG3015EH added				
PMEG3015EJ_1	20050303	Product data sheet	-	9397 750 14516	-

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## 12. 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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## 16. Contents

<b>1</b>	<b>Product profile</b> .....	<b>1</b>
1.1	General description .....	1
1.2	Features .....	1
1.3	Applications .....	1
1.4	Quick reference data .....	1
<b>2</b>	<b>Pinning information</b> .....	<b>2</b>
<b>3</b>	<b>Ordering information</b> .....	<b>2</b>
<b>4</b>	<b>Marking</b> .....	<b>2</b>
<b>5</b>	<b>Limiting values</b> .....	<b>2</b>
<b>6</b>	<b>Thermal characteristics</b> .....	<b>3</b>
<b>7</b>	<b>Characteristics</b> .....	<b>3</b>
<b>8</b>	<b>Package outline</b> .....	<b>5</b>
<b>9</b>	<b>Packing information</b> .....	<b>5</b>
<b>10</b>	<b>Soldering</b> .....	<b>6</b>
<b>11</b>	<b>Revision history</b> .....	<b>7</b>
<b>12</b>	<b>Data sheet status</b> .....	<b>8</b>
<b>13</b>	<b>Definitions</b> .....	<b>8</b>
<b>14</b>	<b>Disclaimers</b> .....	<b>8</b>
<b>15</b>	<b>Contact information</b> .....	<b>8</b>



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