

# PMEG3005EB; PMEG3005EL

0.5 A very low  $V_F$  MEGA Schottky barrier rectifiers

Rev. 01 — 29 November 2006

Product data sheet

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## 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 ultra small Surface-Mounted Device (SMD) plastic packages.

Table 1. Product overview

Type number	Package		Configuration
	Nexperia	JEITA	
PMEG3005EB	SOD523	SC-79	single
PMEG3005EL	SOD882	-	single

### 1.2 Features

- Forward current:  $I_F \leq 0.5$  A
- Reverse voltage:  $V_R \leq 30$  V
- Very low forward voltage
- Ultra small SMD plastic packages

### 1.3 Applications

- Low voltage rectification
- High efficiency DC-to-DC conversion
- Switch mode power supply
- Reverse 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	-	-	0.5	A
$V_R$	reverse voltage		-	-	30	V
$V_F$	forward voltage	$I_F = 500$ mA	[1] -	430	500	mV

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

## 2. Pinning information

Table 3. Pinning

Pin	Description		Simplified outline	Symbol
<b>SOD523</b>				
1	cathode	[1]		 <i>sym001</i>
2	anode			
<b>SOD882</b>				
1	cathode	[1]	 Transparent top view	 <i>sym001</i>
2	anode			

[1] The marking bar indicates the cathode.

## 3. Ordering information

Table 4. Ordering information

Type number	Package		
	Name	Description	Version
PMEG3005EB	SC-79	plastic surface-mounted package; 2 leads	SOD523
PMEG3005EL	-	leadless ultra small plastic package; 2 terminals; body 1.0 × 0.6 × 0.5 mm	SOD882

## 4. Marking

Table 5. Marking codes

Type number	Marking code
PMEG3005EB	KB
PMEG3005EL	AM

## 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	$T_{sp} \leq 55\text{ °C}$	-	0.5	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	square wave; $t_p = 8\text{ ms}$	-	3	A
$P_{tot}$	total power dissipation	$T_{amb} \leq 25\text{ °C}$	[1]		
	PMEG3005EB		-	310	mW
	PMEG3005EL		-	250	mW
$T_j$	junction temperature		-	150	°C
$T_{amb}$	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.

## 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	[1][2]			
	PMEG3005EB		-	-	400	K/W
	PMEG3005EL		-	-	500	K/W
$R_{th(j-sp)}$	thermal resistance from junction to solder point		[3]			
	PMEG3005EB		-	-	75	K/W

[1] For Schottky barrier diodes thermal runaway has to be considered, as in some applications the reverse power losses  $P_R$  are a significant part of the total power losses.

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

[3] Soldering point of cathode tab.

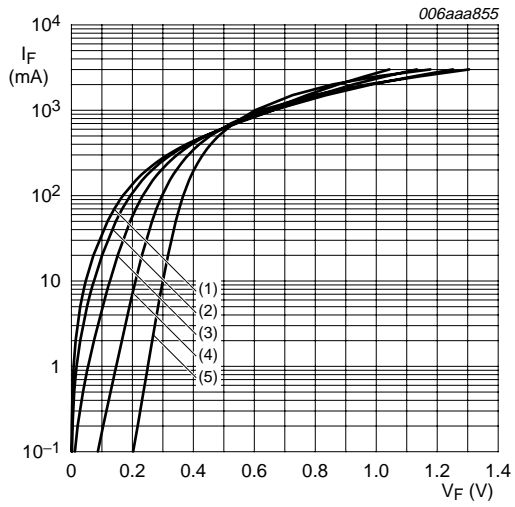
## 7. Characteristics

**Table 8. Characteristics**

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

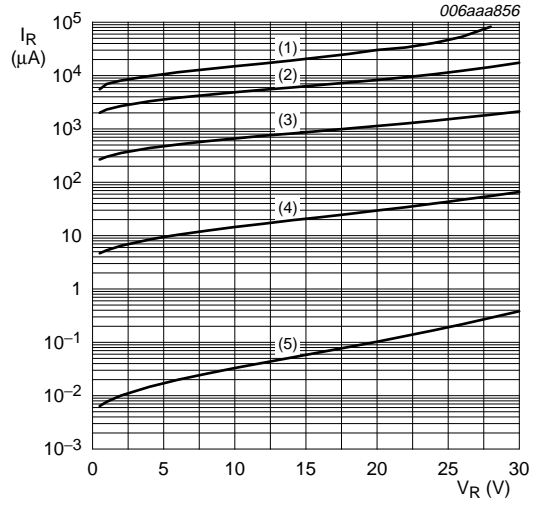
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$V_F$	forward voltage		[1]			
		$I_F = 0.1\text{ mA}$	-	90	180	mV
		$I_F = 1\text{ mA}$	-	150	200	mV
		$I_F = 10\text{ mA}$	-	210	270	mV
		$I_F = 100\text{ mA}$	-	295	360	mV
$I_R$	reverse current	$V_R = 10\text{ V}$	-	15	200	$\mu\text{A}$
		$V_R = 30\text{ V}$	-	70	500	$\mu\text{A}$
$C_d$	diode capacitance	$V_R = 1\text{ V}; f = 1\text{ MHz}$	-	24	30	pF

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



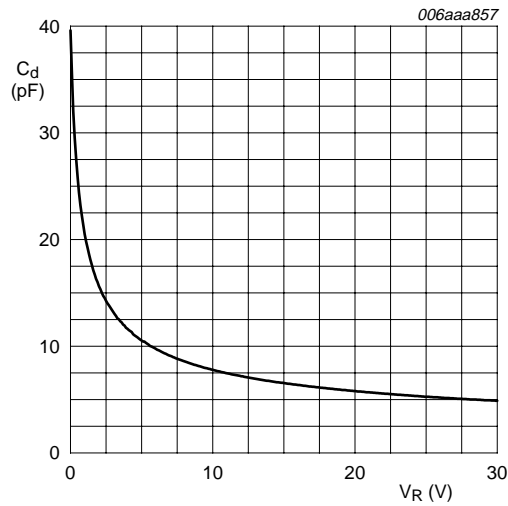
- (1)  $T_{amb} = 150\text{ °C}$
- (2)  $T_{amb} = 125\text{ °C}$
- (3)  $T_{amb} = 85\text{ °C}$
- (4)  $T_{amb} = 25\text{ °C}$
- (5)  $T_{amb} = -40\text{ °C}$

**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)  $T_{amb} = -40\text{ °C}$

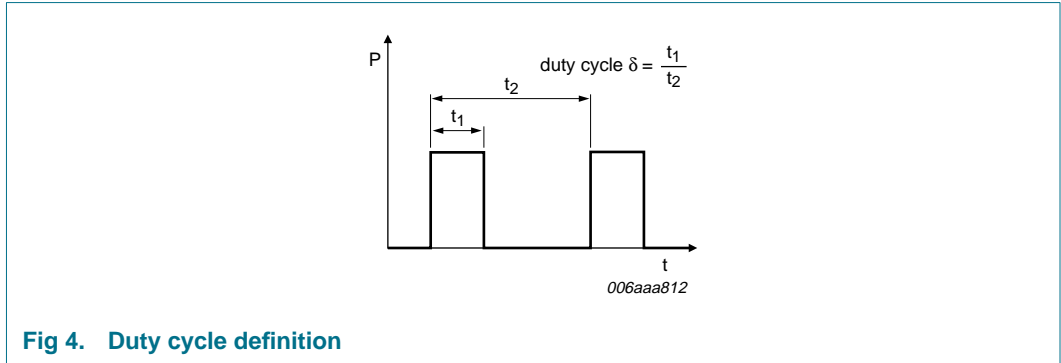
**Fig 2. Reverse current as a function of reverse voltage; typical values**



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

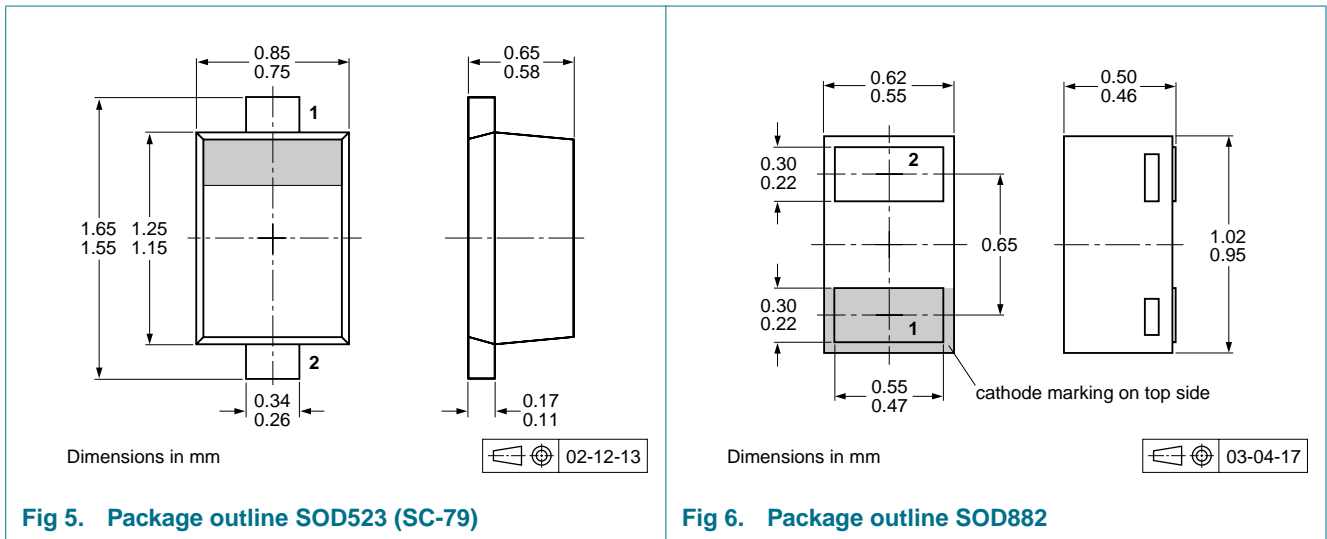
**Fig 3. Diode capacitance as a function of reverse voltage; typical values**

**8. Test information**



**Fig 4. Duty cycle definition**

**9. Package outline**



**Fig 5. Package outline SOD523 (SC-79)**

**Fig 6. Package outline SOD882**

**10. Packing information**

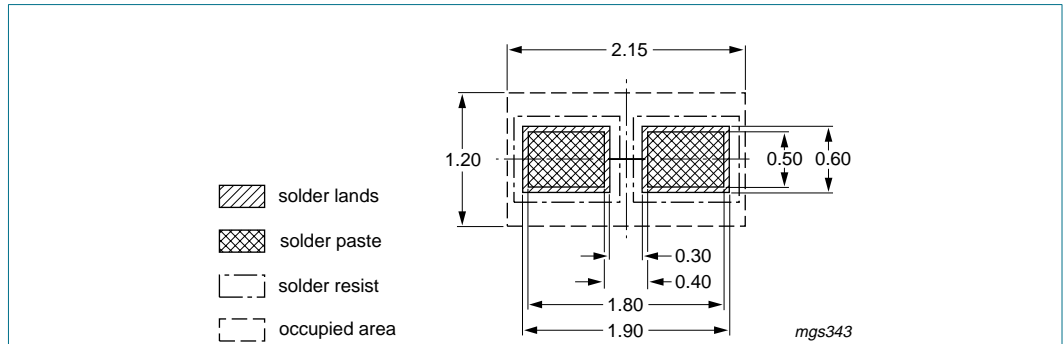
**Table 9. Packing methods**

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

Type number	Package	Description	Packing quantity		
			3000	8000	10000
PMEG3005EB	SOD523	2 mm pitch, 8 mm tape and reel	-	-315	-
		4 mm pitch, 8 mm tape and reel	-115	-	-135
PMEG3005EL	SOD882	2 mm pitch, 8 mm tape and reel	-	-	-315

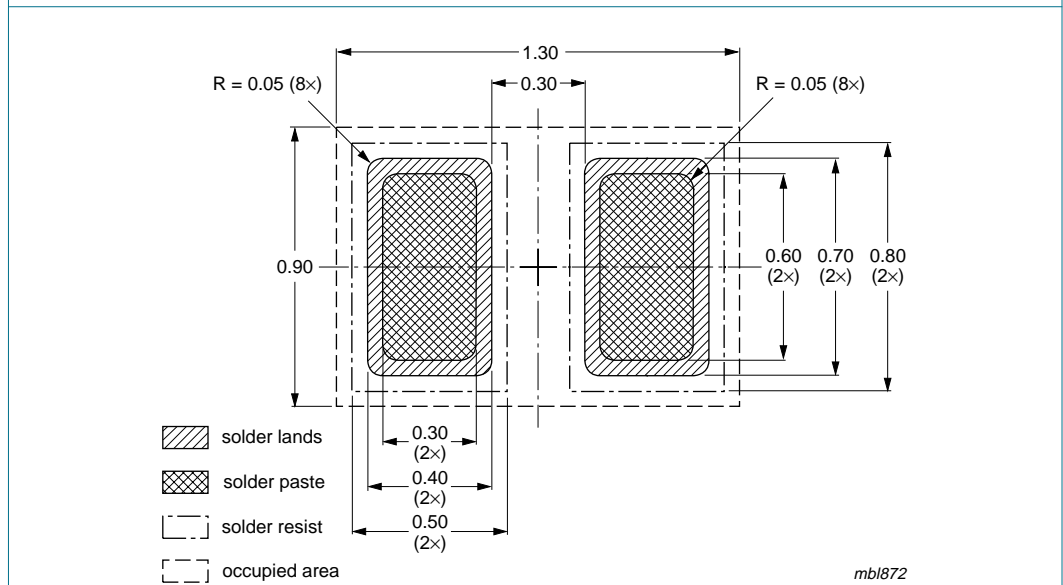
[1] For further information and the availability of packing methods, see [Section 14](#).

**11. Soldering**



Reflow soldering is the only recommended soldering method.  
 Dimensions in mm

**Fig 7. Reflow soldering footprint SOD523 (SC-79)**



Reflow soldering is the only recommended soldering method.  
 Dimensions in mm

**Fig 8. Reflow soldering footprint SOD882**

## 12. Revision history

**Table 10. Revision history**

Document ID	Release date	Data sheet status	Change notice	Supersedes
PMEG3005EB_PMEG3005EL_1	20061129	Product data sheet	-	-



## 13. Legal information

### 13.1 Data sheet status

Document status <sup>[1][2]</sup>	Product status <sup>[3]</sup>	Definition
Objective [short] data sheet	Development	This document contains data from the objective specification for product development.
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[1] Please consult the most recently issued document before initiating or completing a design.

[2] The term 'short data sheet' is explained in section "Definitions".

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