

# PMEG2010AEJ

20 V, 1 A very low  $V_F$  MEGA Schottky barrier rectifier in SOD323F package

Rev. 03 — 15 January 2010

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 a SOD323F (SC-90) very small and flat lead Surface Mounted Device (SMD) plastic package.

### 1.2 Features

- Forward current:  $\leq 1$  A
- Reverse voltage:  $\leq 20$  V
- Very low forward voltage
- Very small and flat lead SMD plastic package

### 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

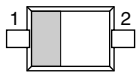

Table 1. Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$I_F$	forward current	$T_{sp} \leq 55$ °C	-	-	1	A
$V_R$	reverse voltage		-	-	20	V
$V_F$	forward voltage	$I_F = 1000$ mA	[1] -	480	550	mV

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

## 2. Pinning information

Table 2. Pinning

Pin	Description	Simplified outline	Symbol
1	cathode	[1]	  <i>sym001</i>
2	anode		

[1] The marking bar indicates the cathode.

## 3. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
PMEG2010AEJ	SC-90	plastic surface mounted package; 2 leads	SOD323F

## 4. Marking

Table 4. Marking codes

Type number	Marking code
PMEG2010AEJ	EM

## 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		-	20	V	
$I_F$	forward current	$T_{sp} \leq 55\text{ °C}$	-	1	A	
$I_{FRM}$	repetitive peak forward current	$t_p \leq 1\text{ ms}$ ; $\delta \leq 0.25$	-	5.5	A	
$I_{FSM}$	non-repetitive peak forward current	square wave; $t_p = 8\text{ ms}$	-	10	A	
$P_{tot}$	total power dissipation	$T_{amb} \leq 25\text{ °C}$	[1]	-	360	mW
			[2]	-	830	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.

[2] Device mounted on an FR4 PCB, single-sided copper, tin-plated, 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]	-	-	350	K/W
			[1][3]	-	-	150	K/W
$R_{th(j-sp)}$	thermal resistance from junction to solder point		[4]	-	-	55	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. Nomograms for determining the reverse power losses  $P_R$  and  $I_{F(AV)}$  rating are available on request.

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

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

[4] Solder point of cathode tab.

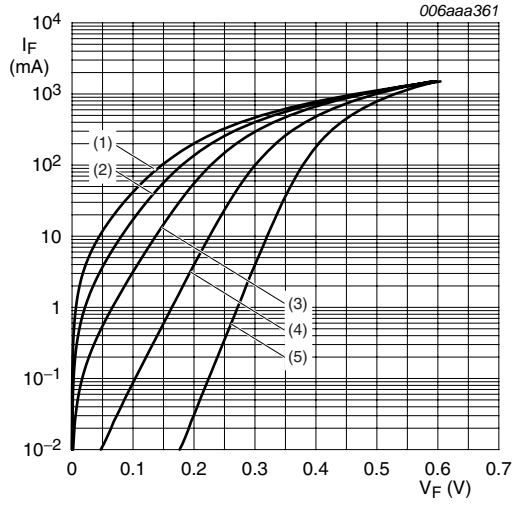
## 7. Characteristics

**Table 7. Characteristics**

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

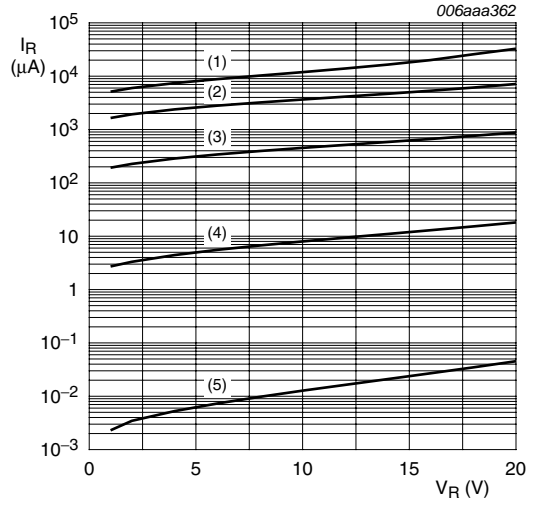
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$V_F$	forward voltage		[1]			
		$I_F = 10\text{ mA}$	-	240	270	mV
		$I_F = 100\text{ mA}$	-	300	350	mV
		$I_F = 500\text{ mA}$	-	400	460	mV
		$I_F = 1000\text{ mA}$	-	480	550	mV
$I_R$	reverse current	$V_R = 5\text{ V}$	-	5	10	$\mu\text{A}$
		$V_R = 8\text{ V}$	-	7	20	$\mu\text{A}$
		$V_R = 10\text{ V}$	-	8	30	$\mu\text{A}$
		$V_R = 15\text{ V}$	-	10	50	$\mu\text{A}$
		$V_R = 20\text{ V}$	-	15	70	$\mu\text{A}$
$C_d$	diode capacitance	$V_R = 1\text{ V}; f = 1\text{ MHz}$	-	40	50	pF

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



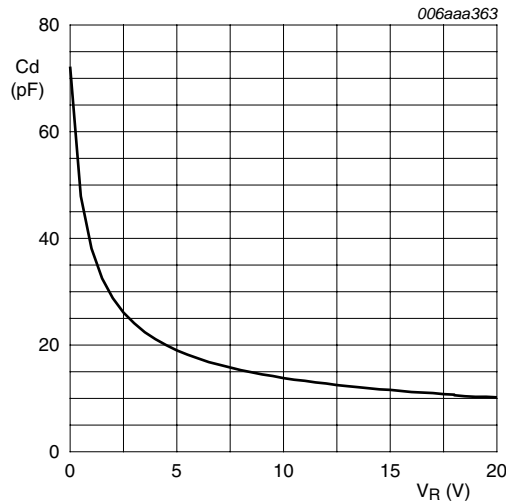
- (1)  $T_{amb} = 150\text{ °C}$
- (2)  $T_{amb} = 125\text{ °C}$
- (3)  $T_{amb} = 85\text{ °C}$
- (4)  $T_{amb} = 25\text{ °C}$
- (5)  $T_{amb} = -40\text{ °C}$

**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

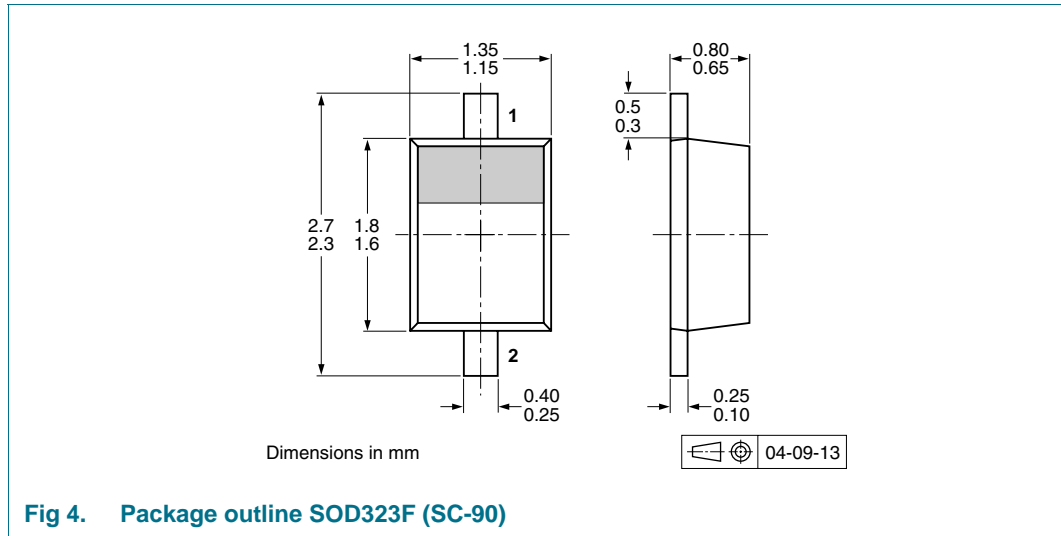


Fig 4. Package outline SOD323F (SC-90)

## 9. Packing information

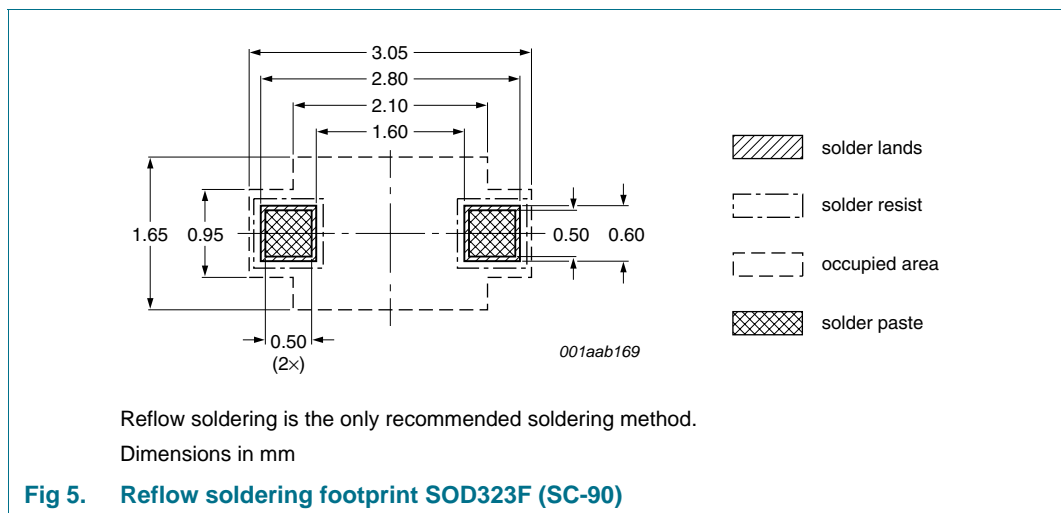
**Table 8. Packing methods**

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

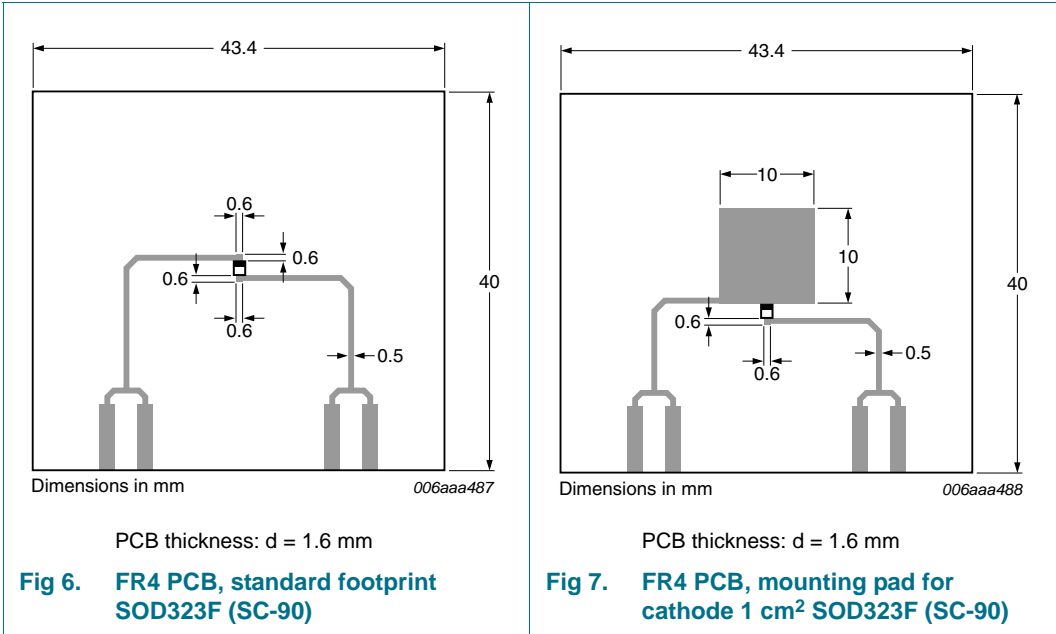
Type number	Package	Description	Packing quantity	
			3000	10000
PMEG2010AEJ	SOD323F	4 mm pitch, 8 mm tape and reel	-115	-135

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

## 10. Soldering



11. Mounting



## 12. Revision history

Table 9. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
PMEG2010AEJ_3	20100115	Product data sheet	-	PMEG2010AEJ_2
Modifications:	<ul style="list-style-type: none"><li>This data sheet was changed to reflect the new company name NXP Semiconductors, including new legal definitions and disclaimers. No changes were made to the technical content.</li></ul>			
PMEG2010AEJ_2	20051014	Product data sheet	-	PMEG2010AEJ_1
PMEG2010AEJ_1	20050302	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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Product [short] data sheet	Production	This document contains the product specification.

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

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