

PMEG2015EH; PMEG2015EJ

20 V, 1.5 A very low V_F MEGA Schottky barrier rectifiers

Rev. 03 — 15 January 2010

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 SMD plastic packages.

Table 1. Product overview

Type number	Package		Configuration
	Nexperia	JEITA	
PMEG2015EH	SOD123F	-	single diode
PMEG2015EJ	SOD323F	SC-90	single diode

1.2 Features

- Forward current: ≤ 1.5 A
- Reverse voltage: ≤ 20 V
- Very 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 and medium power general applications

1.4 Quick reference data


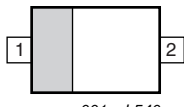
Table 2. Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
I_F	forward current	$T_{sp} \leq 55$ °C	-	-	1.5	A
V_R	reverse voltage		-	-	20	V
V_F	forward voltage	$I_F = 1.5$ A	[1] -	560	660	mV

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

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
PMEG2015EH	-	plastic surface mounted package; 2 leads	SOD123F
PMEG2015EJ	SC-90	plastic surface mounted package; 2 leads	SOD323F

4. Marking

Table 5. Marking codes

Type number	Marking code
PMEG2015EH	AD
PMEG2015EJ	EL

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		-	20	V
I_F	forward current	$T_{sp} \leq 55\text{ °C}$	-	1.5	A
I_{FRM}	repetitive peak forward current	$t_p \leq 1\text{ ms}$; $\delta \leq 0.25$	-	5.5	A
I_{FSM}	non-repetitive peak forward current	square wave; $t_p = 8\text{ ms}$	[1] -	9	A
P_{tot}	total power dissipation	$T_{amb} \leq 25\text{ °C}$	[1] -	375	mW
			[2] -	830	mW
	PMEG2015EJ	[1] -	360	mW	
		[2] -	830	mW	
T_j	junction temperature		-	150	°C
T_{amb}	ambient temperature		-65	+150	°C

Table 6. Limiting values ...continued

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

Symbol	Parameter	Conditions	Min	Max	Unit
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 cm².

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						
			PMEG2015EH	[1][2]	-	-	330	K/W
				[2][3]	-	-	150	K/W
			PMEG2015EJ	[1][2]	-	-	350	K/W
			[2][3]	-	-	150	K/W	
$R_{th(j-sp)}$	thermal resistance from junction to solder point							
		PMEG2015EH	-	-	60	K/W		
		PMEG2015EJ	-	-	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.

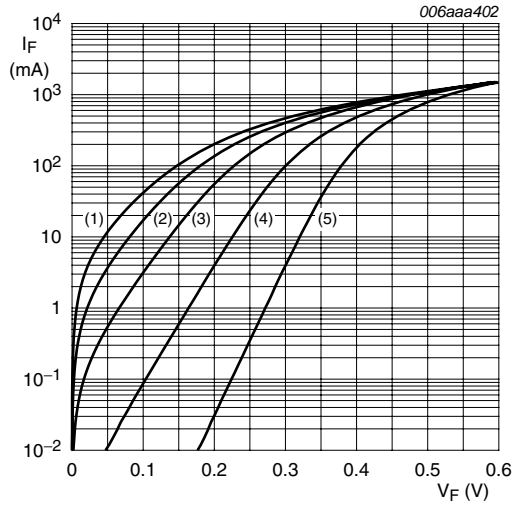
[3] Device mounted on an FR4 PCB, single-sided copper, tin-plated, mounting pad for cathode 1 cm².

7. Characteristics

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

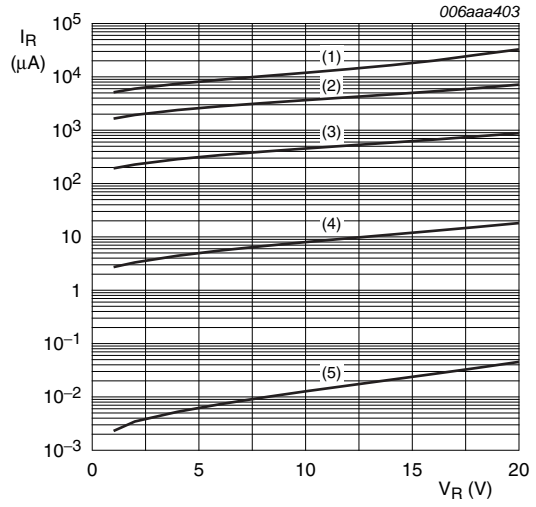
Symbol	Parameter	Conditions	Min	Typ	Max	Unit	
V_F	forward voltage	$I_F = 10$ mA	[1]	-	240	270	mV
		$I_F = 100$ mA	[1]	-	300	350	mV
		$I_F = 500$ mA	[1]	-	400	460	mV
		$I_F = 1$ A	[1]	-	480	550	mV
		$I_F = 1.5$ A	[1]	-	560	660	mV
I_R	reverse current	$V_R = 5$ V	-	5	10	μA	
		$V_R = 8$ V	-	7	20	μA	
		$V_R = 10$ V	-	8	30	μA	
		$V_R = 15$ V	-	10	50	μA	
		$V_R = 20$ V	-	15	70	μA	
C_d	diode capacitance	$V_R = 1$ V; $f = 1$ MHz	-	40	50	pF	

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



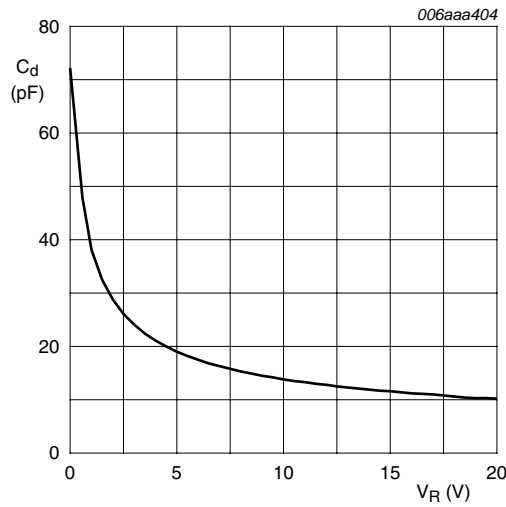
- (1) $T_{amb} = 150\text{ }^{\circ}\text{C}$
- (2) $T_{amb} = 125\text{ }^{\circ}\text{C}$
- (3) $T_{amb} = 85\text{ }^{\circ}\text{C}$
- (4) $T_{amb} = 25\text{ }^{\circ}\text{C}$
- (5) $T_{amb} = -40\text{ }^{\circ}\text{C}$

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



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

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



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

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

8. Package outline

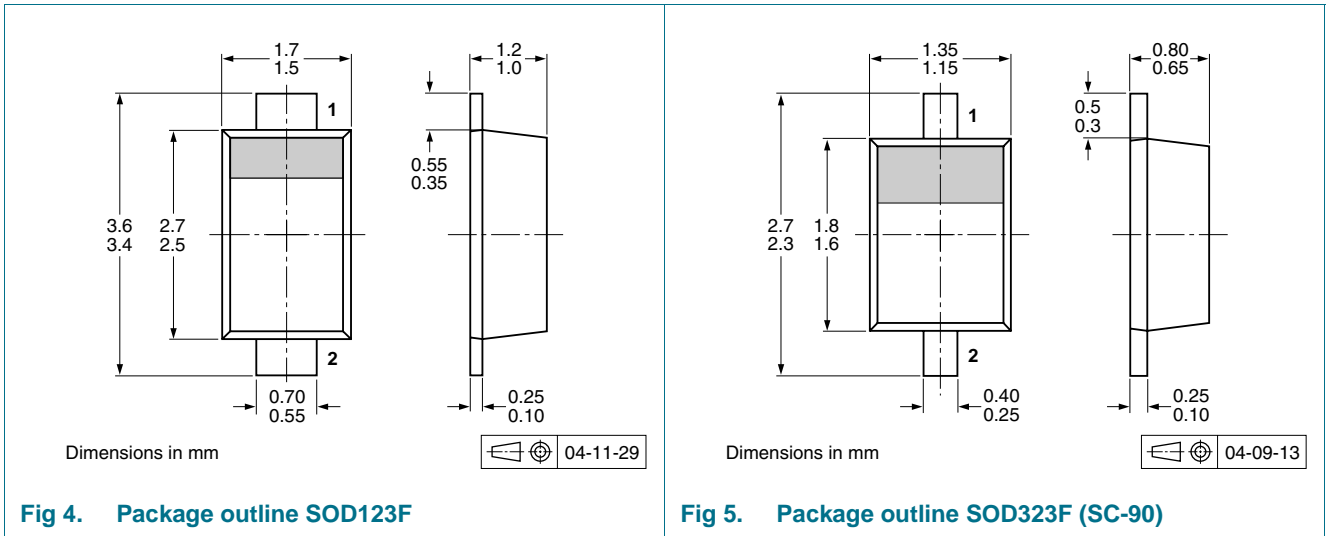


Fig 4. Package outline SOD123F

Fig 5. Package outline SOD323F (SC-90)

9. Packing information

Table 9. Packing methods

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

Type number	Package	Description	Packing quantity	
			3000	10000
PMEG2015EH	SOD123F	4 mm pitch, 8 mm tape and reel	-115	-135
PMEG2015EJ	SOD323F			

[1] For further information and the availability of packing methods, see [Section 13](#).

10. Soldering

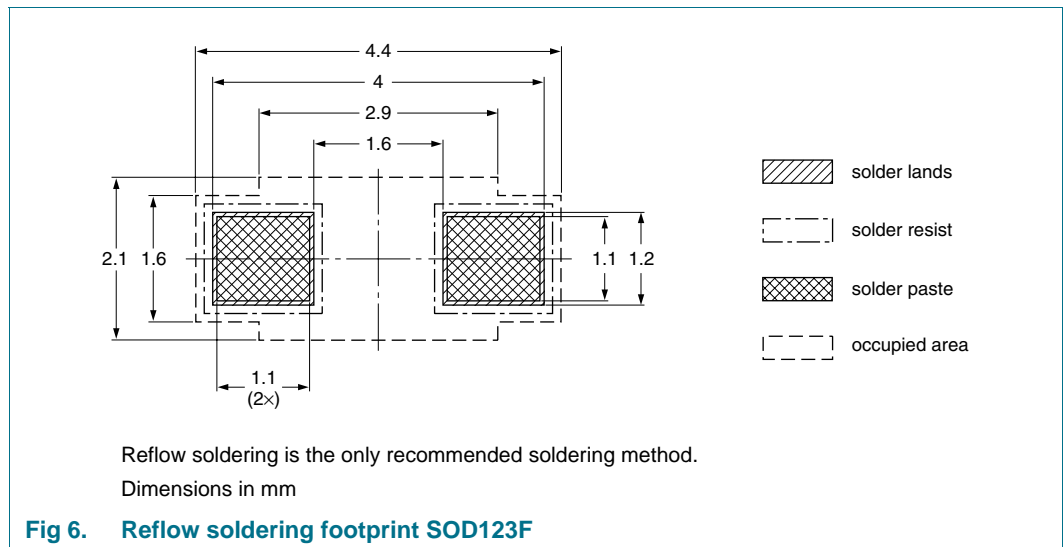
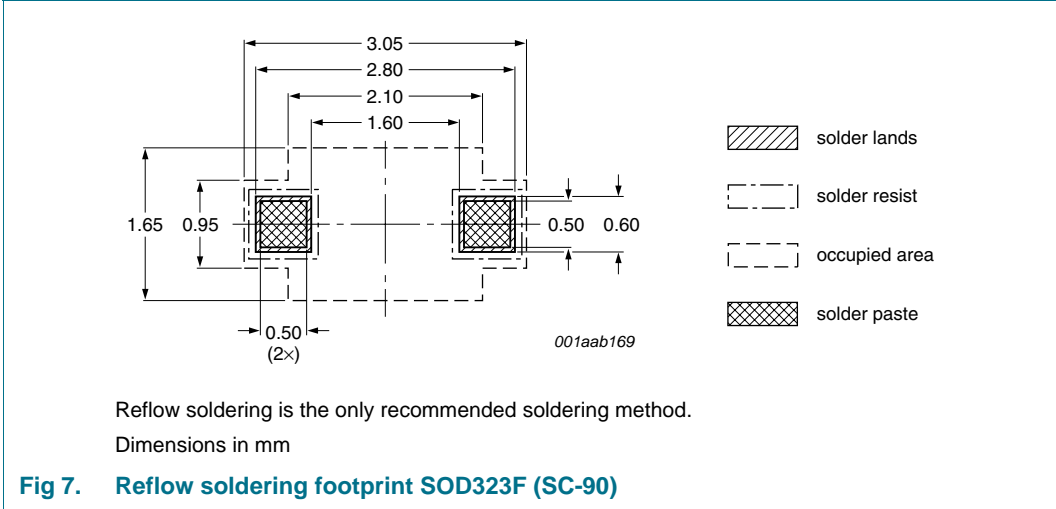


Fig 6. Reflow soldering footprint SOD123F



11. Revision history

Table 10. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
PMEG2015EH_EJ_3	20100115	Product data sheet	-	PMEG2015EH_EJ_2
Modifications:	<ul style="list-style-type: none">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.			
PMEG2015EH_EJ_2	20050407	Product data sheet	-	PMEG2015EJ_1
PMEG2015EJ_1	20050302	Product data sheet	-	-

12. Legal information

12.1 Data sheet status

Document status ^{[1][2]}	Product status ^[3]	Definition
Objective [short] data sheet	Development	This document contains data from the objective specification for product development.
Preliminary [short] data sheet	Qualification	This document contains data from the preliminary specification.
Product [short] data sheet	Production	This document contains the product specification.

[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".

[3] The product status of device(s) described in this document may have changed since this document was published and may differ in case of multiple devices. The latest product status information is available on the internet at URL <http://www.nexperia.com>.

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