

PMEG1030EH; PMEG1030EJ

10 V, 3 A ultra low V_F MEGA Schottky barrier rectifiers

Rev. 04 — 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 SMD plastic packages.

Table 1. Product overview

Type number	Package		Configuration
	NXP	JEITA	
PMEG1030EH	SOD123F	-	single isolated diodes
PMEG1030EJ	SOD323F	SC-90	single isolated diodes

1.2 Features

- Forward current: 3 A
- Reverse voltage: 10 V
- Ultra low forward voltage
- Small and flat lead SMD package

1.3 Applications

- Low voltage rectification
- High efficiency DC-to-DC conversion
- Switched-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	$T_{sp} \leq 55\text{ °C}$	-	-	3	A
V_R	reverse voltage		-	-	10	V
V_F	forward voltage	$I_F = 3\text{ A}$	[1] -	390	530	mV

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

2. Pinning information

Table 3. Pinning

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

[1] The marking bar indicates the cathode.

3. Ordering information

Table 4. Ordering information

Type number	Package		
	Name	Description	Version
PMEG1030EH	-	plastic surface mounted package; 2 leads	SOD123F
PMEG1030EJ	SC-90	plastic surface mounted package; 2 leads	SOD323F

4. Marking

Table 5. Marking codes

Type number	Marking code
PMEG1030EH	AC
PMEG1030EJ	E7

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		-	10	V
I_F	forward current	$T_{sp} \leq 55\text{ °C}$	-	3	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	$t = 8\text{ ms}$; square wave	[1] -	9	A
P_{tot}	total power dissipation	$T_{amb} \leq 25\text{ °C}$	[1] -	375	mW
			[2] -	830	mW
			[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 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	[1][2] -	-	330	K/W
			[2][3] -	-	150	K/W
			[1][2] -	-	350	K/W
			[2][3] -	-	150	K/W
$R_{th(j-sp)}$	thermal resistance from junction to solder point					
		PMEG1030EH	-	-	60	K/W
		PMEG1030EJ	-	-	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 will be available on request.

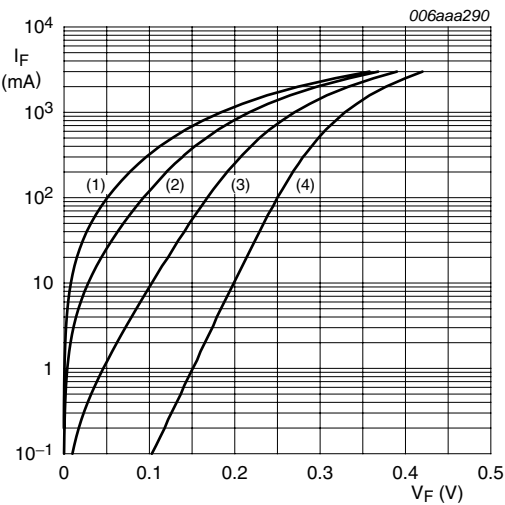
[3] Device mounted on an FR4 PCB, single-sided copper, tin-plated, mounting pad for cathode 1 cm².

7. Characteristics

Table 8. Characteristics
 $T_{amb} = 25\text{ }^{\circ}\text{C}$ unless otherwise specified.

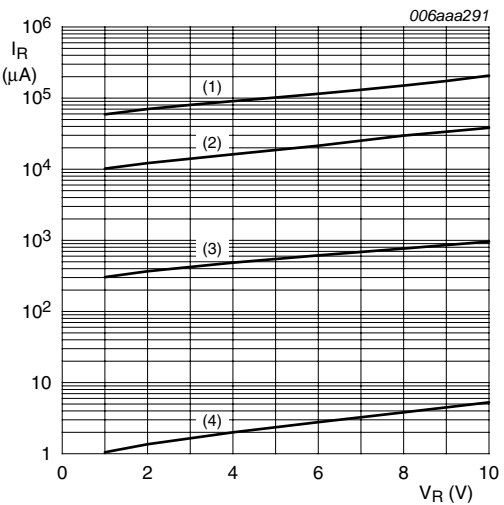
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_F	forward voltage		[1]			
		$I_F = 0.01\text{ A}$	-	100	130	mV
		$I_F = 0.1\text{ A}$	-	170	200	mV
		$I_F = 1\text{ A}$	-	280	350	mV
		$I_F = 3\text{ A}$	-	390	530	mV
I_R	reverse current	$V_R = 5\text{ V}$	-	0.55	2	mA
		$V_R = 8\text{ V}$	-	0.8	2.5	mA
		$V_R = 10\text{ V}$	-	1	3	mA
C_d	diode capacitance	$V_R = 1\text{ V}; f = 1\text{ MHz}$	-	70	85	pF

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



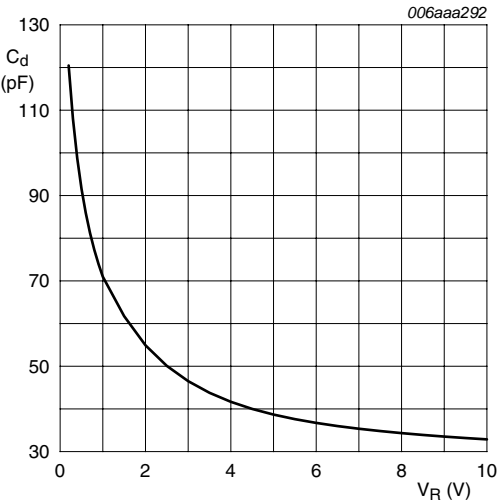
- (1) $T_{amb} = 125\text{ }^{\circ}\text{C}$
- (2) $T_{amb} = 85\text{ }^{\circ}\text{C}$
- (3) $T_{amb} = 25\text{ }^{\circ}\text{C}$
- (4) $T_{amb} = -40\text{ }^{\circ}\text{C}$

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



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

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

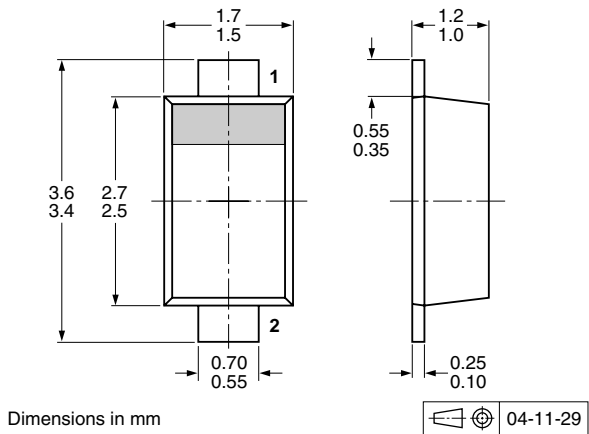


Fig 4. Package outline SOD123F

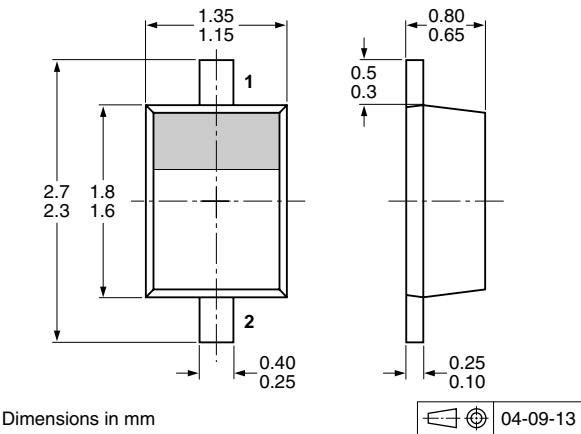


Fig 5. Package outline SOD323F (SC-90)

9. Packing information

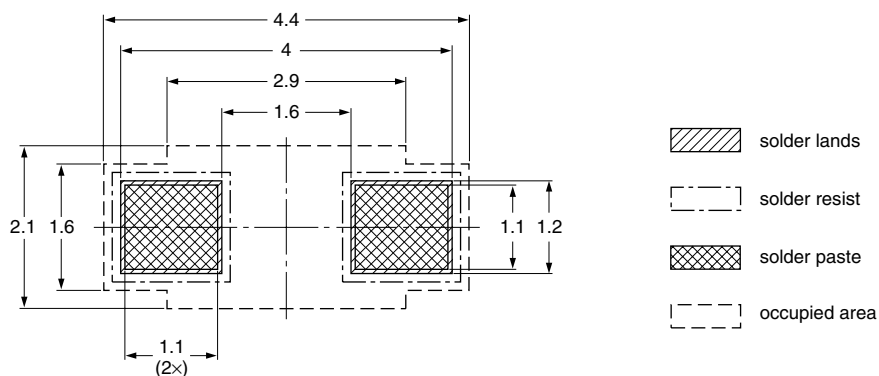
Table 9. Packing methods

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

Type number	Package	Description	Packing quantity	
			3000	10000
PMEG1030EH	SOD123F	4 mm pitch, 8 mm tape and reel	-115	-135
PMEG1030EJ	SOD323F	4 mm pitch, 8 mm tape and reel	-115	-135

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

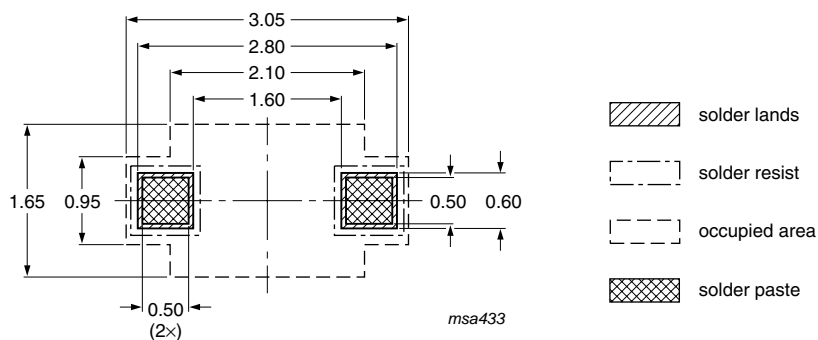
10. Soldering



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	Supersedes
PMEG1030EH_EJ_4	20100115	Product data sheet	-	PMEG1030EH_EJ_3
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.			
PMEG1030EH_EJ_3	20050602	Product data sheet	-	PMEG1030EH_EJ_2
PMEG1030EH_EJ_2	20050405	Product data sheet	-	PMEG1030EJ_1
PMEG1030EJ_1	20050124	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".

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