

PMEG4002EB

0.2 A very low V_F MEGA Schottky barrier rectifier in SOD523 package

Rev. 02 — 13 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 SOD523 (SC-79) ultra small and flat lead Surface Mounted Device (SMD) plastic package.

1.2 Features

- Forward current: 200 mA
- Reverse voltage: 40 V
- Very low forward voltage
- Ultra 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

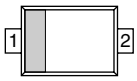
Symbol	Parameter	Conditions		Min	Typ	Max	Unit
I_F	forward current			-	-	200	mA
V_R	reverse voltage			-	-	40	V
V_F	forward voltage	I_F = 200 mA	[1]	-	520	600	mV

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

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2. Pinning information

Table 2. Pinning

Pin	Description	Simplified outline	Symbol
1	cathode [1]		
2	anode		

sym001

[1] The marking bar indicates the cathode.

3. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
PMEG4002EB	SC-79	plastic surface mounted package; 2 leads	SOD523

4. Marking

Table 4. Marking codes

Type number	Marking code
PMEG4002EB	L9

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		-	40	V
I_F	forward current		-	200	mA
I_{FRM}	repetitive peak forward current	$t_p \leq 1$ s; $\delta \leq 0.5$	-	300	mA
I_{FSM}	non-repetitive peak forward current	t_p = 8.3 ms half sine wave; JEDEC method	-	1	A
T_j	junction temperature		-	150	°C
T_{amb}	ambient temperature		–65	+150	°C
T_{stg}	storage temperature		–65	+150	°C

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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]	-	-	450	K/W

[1] Device mounted on an FR4 Printed-Circuit Board (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.

7. Characteristics

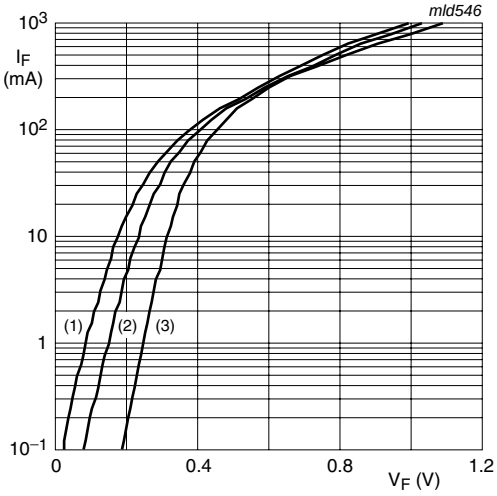
Table 7. Characteristics

T_{amb} = 25 °C unless otherwise specified.

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
V_F	forward voltage	I_F = 0.1 mA		-	190	220	mV
		I_F = 1 mA		-	250	290	mV
		I_F = 10 mA		-	320	360	mV
		I_F = 100 mA		-	440	500	mV
		I_F = 200 mA		-	520	600	mV
I_R	reverse current	V_R = 25 V	[1]	-	-	0.5	µA
C_d	diode capacitance	V_R = 1 V; f = 1 MHz		-	-	20	pF

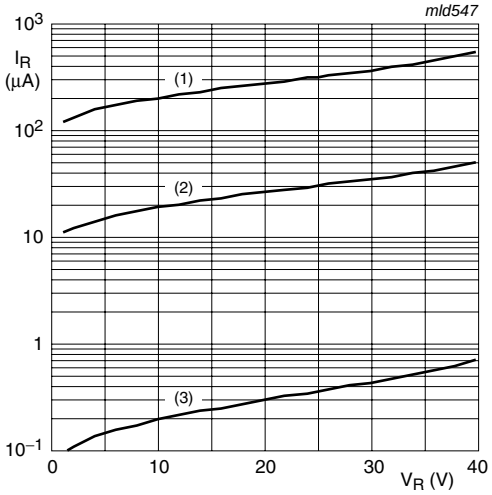
[1] Pulse test: $t_p \leq 300$ µs; $\delta \leq 0.02$.

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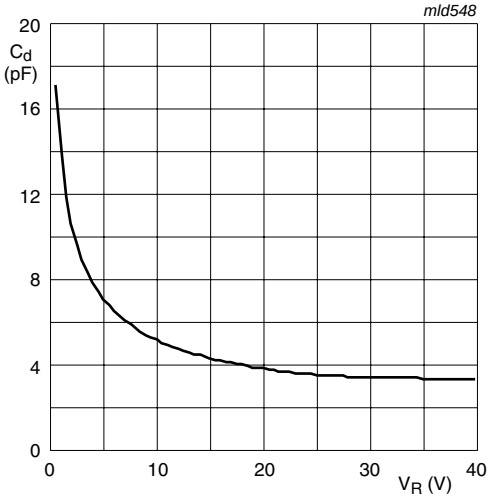
(1) T_{amb} = 125 °C
(2) T_{amb} = 85 °C
(3) T_{amb} = 25 °C

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



(1) T_{amb} = 125 °C
(2) T_{amb} = 85 °C
(3) T_{amb} = 25 °C

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



T_{amb} = 25 °C; f = 1 MHz

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

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8. Package outline

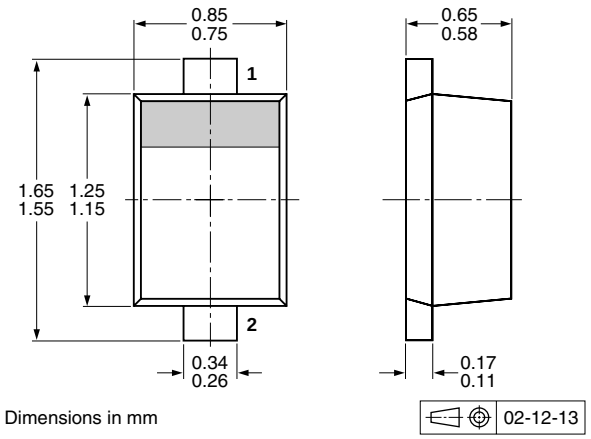


Fig 4. Package outline SOD523 (SC-79)

9. Packing information

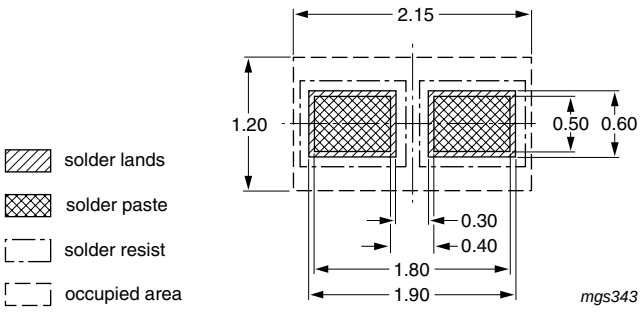
Table 8. Packing methods

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

Type number	Package	Description	Packing quantity	
			3000	10000
PMEG4002EB	SOD523	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 5. Reflow soldering footprint SOD523 (SC-79)

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11. Revision history

Table 9. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
PMEG4002EB_2	20100113	Product data sheet	-	PMEG4002EB_1
Modifications:	• 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. • Figure 5 “Reflow soldering footprint SOD523 (SC-79)”: updated			
PMEG4002EB_1	20050712	Product data sheet	-	-

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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.nxp.com.

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