

PMEG4002EB

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

Rev. 01 — 12 July 2005

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	$I_F = 200 \text{ mA}$	[1] -	520	600	mV

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

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2. Pinning information

Table 2: Pinning

Pin	Description	Simplified outline	Symbol
1	cathode		
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

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.

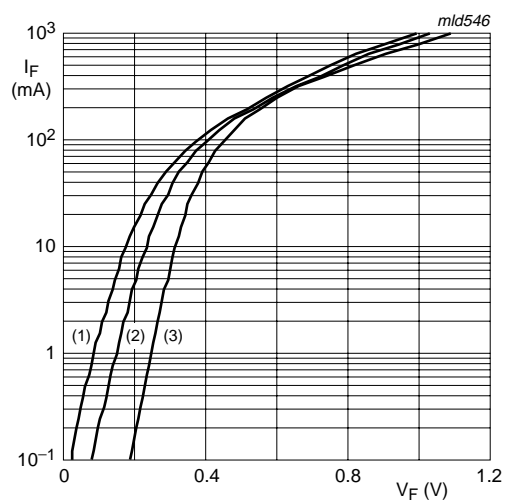
7. Characteristics

Table 7: Characteristics

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

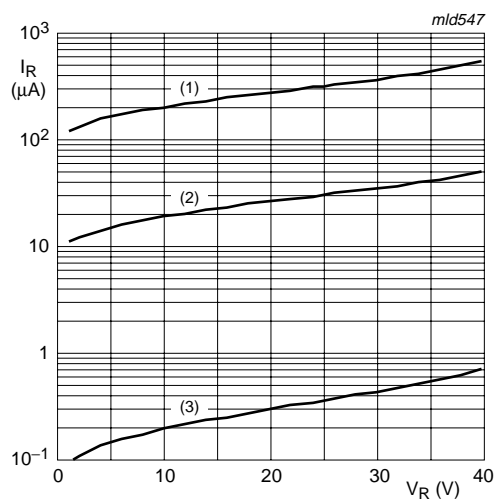
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_F	forward voltage	$I_F = 0.1\text{ mA}$	-	190	220	mV
		$I_F = 1\text{ mA}$	-	250	290	mV
		$I_F = 10\text{ mA}$	-	320	360	mV
		$I_F = 100\text{ mA}$	-	440	500	mV
		$I_F = 200\text{ mA}$	-	520	600	mV
I_R	reverse current	$V_R = 25\text{ V}$	[1] -	-	0.5	μA
C_d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

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



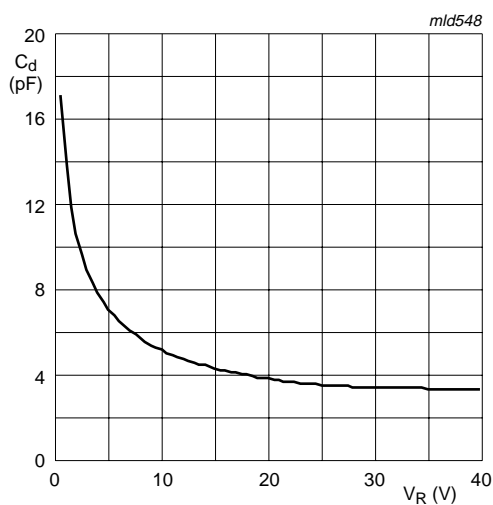
- (1) $T_{amb} = 125\text{ °C}$
 (2) $T_{amb} = 85\text{ °C}$
 (3) $T_{amb} = 25\text{ °C}$

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



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

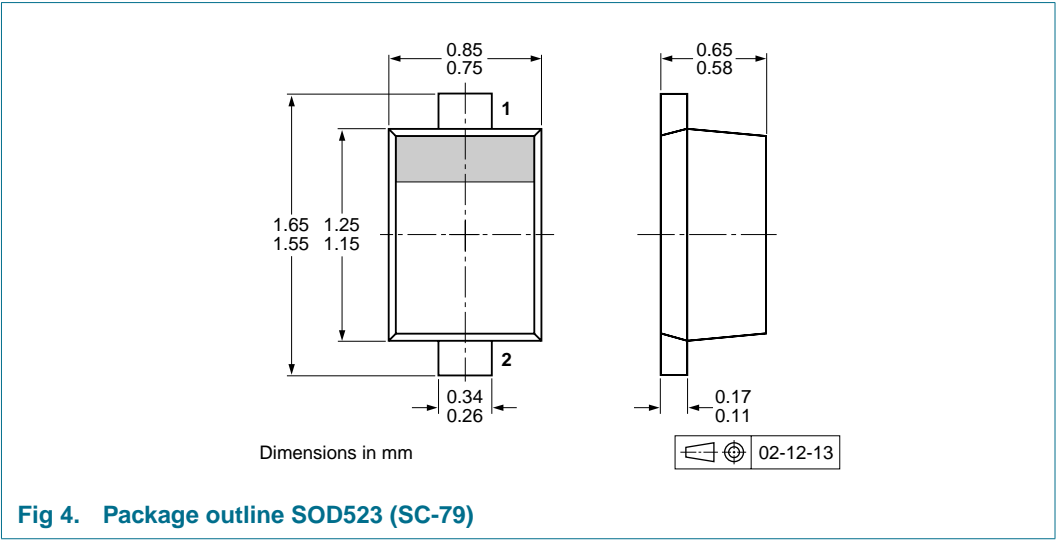
Fig 2. Reverse current as a function of reverse voltage; typical values



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

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

8. Package outline



9. Packing information

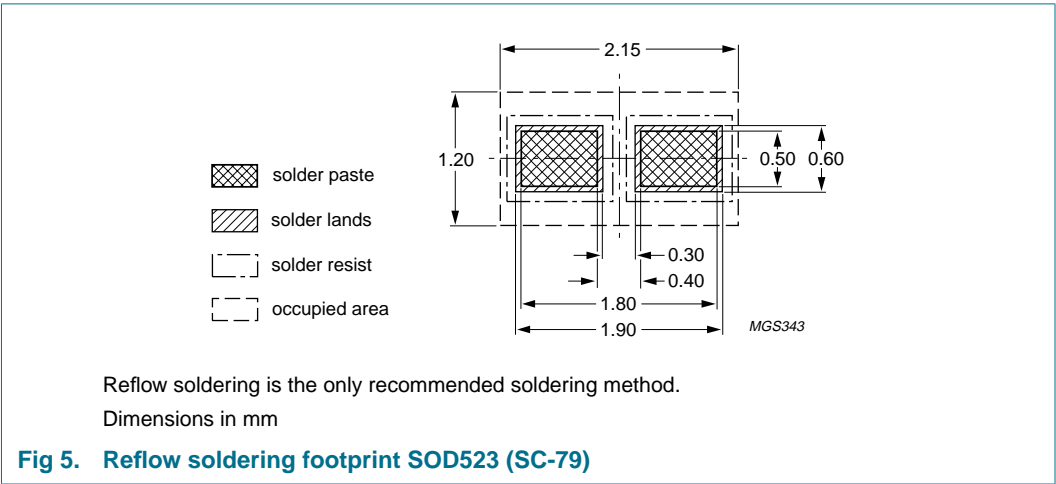
Table 8: Packing methods

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 16](#).

10. Soldering



11. Revision history

Table 9: Revision history

Document ID	Release date	Data sheet status	Change notice	Doc. number	Supersedes
PMEG4002EB_1	20050712	Product data sheet	-	-	-

12. Data sheet status

Level	Data sheet status ^[1]	Product status ^{[2] [3]}	Definition
I	Objective data	Development	This data sheet contains data from the objective specification for product development. Philips Semiconductors reserves the right to change the specification in any manner without notice.
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[3] For data sheets describing multiple type numbers, the highest-level product status determines the data sheet status.

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Limiting values definition — Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 60134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability.

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