



# PMEG4002EB-Q

200 mA very low VF MEGA Schottky barrier rectifier

30 September 2021

Product data sheet

## 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.

## 2. Features and benefits

- Forward current: 200 mA
- Reverse voltage: 40 V
- Very low forward voltage
- Ultra small and flat lead SMD plastic package
- Qualified according to AEC-Q101 and recommended for use in automotive applications

## 3. Applications

- Low voltage rectification
- High efficiency DC-to-DC conversion
- Switch mode power supply
- Inverse polarity protection
- Low power consumption applications



## 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	$I_F = 200 \text{ mA}; T_{\text{amb}} = 25 \text{ }^\circ\text{C}$	-	520	600	mV

## 5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	K	cathode <sup>[1]</sup>	 SC-79 (SOD523)	 sym001
2	A	anode		

[1] The marking bar indicates the cathode.

## 6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
PMEG4002EB-Q	SC-79	plastic, surface-mounted package; 2 leads; 1.2 mm x 0.8 mm x 0.6 mm body	SOD523

## 7. Marking

Table 4. Marking codes

Type number	Marking code
PMEG4002EB-Q	L9

## 8. 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	-	1	A
$T_j$	junction temperature		-	150	°C
$T_{amb}$	ambient temperature		-65	150	°C
$T_{stg}$	storage temperature		-65	150	°C

## 9. Thermal characteristics

Table 6. Thermal characteristics

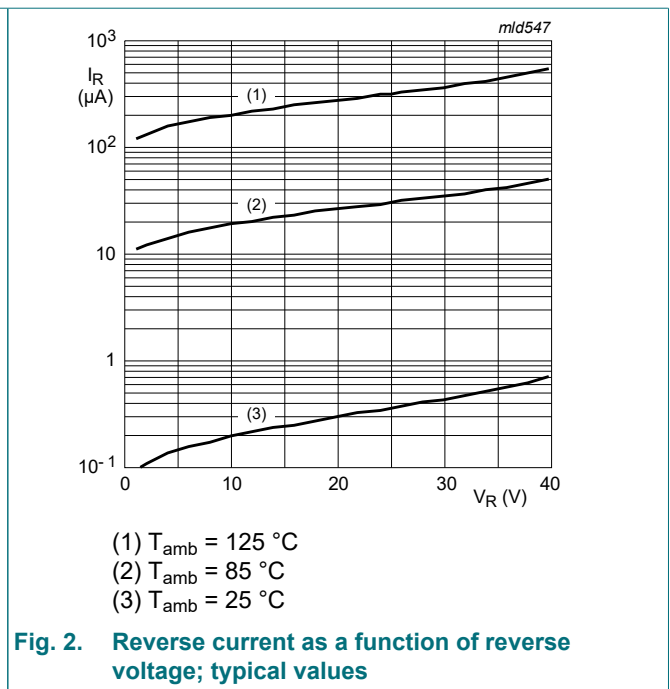
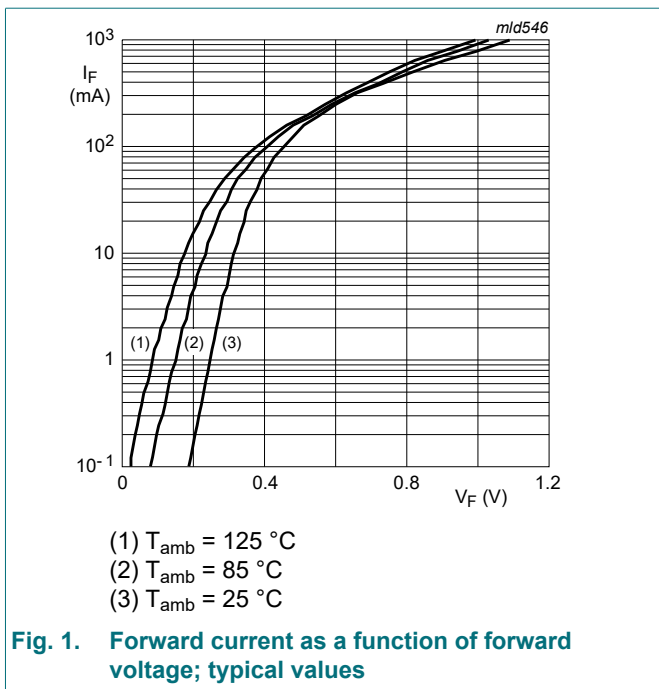
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$R_{th(j-a)}$	thermal resistance from junction to ambient	in free air	[1] [2]	-	450	K/W

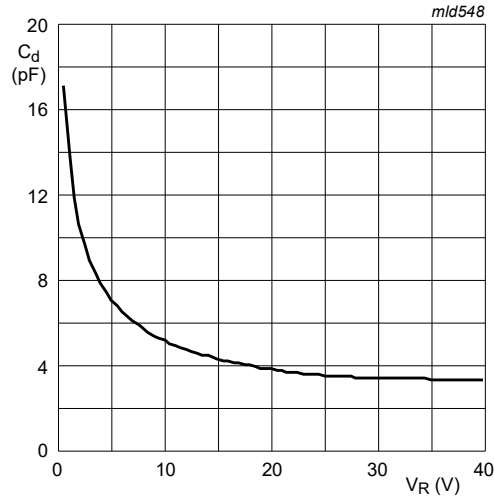
- [1] For Schottky barrier diodes thermal runaway has to be considered, as in some applications the reverse power losses  $P_R$  are a significant part of the total power losses.
- [2] Device mounted on an FR4 Printed-Circuit Board (PCB), single-sided copper, tin-plated and standard footprint.

## 10. Characteristics

Table 7. Characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$V_F$	forward voltage	$I_F = 0.1 \text{ mA}; T_{amb} = 25 \text{ }^\circ\text{C}$	-	190	220	mV
		$I_F = 1 \text{ mA}; T_{amb} = 25 \text{ }^\circ\text{C}$	-	250	290	mV
		$I_F = 10 \text{ mA}; T_{amb} = 25 \text{ }^\circ\text{C}$	-	320	360	mV
		$I_F = 100 \text{ mA}; T_{amb} = 25 \text{ }^\circ\text{C}$	-	440	500	mV
		$I_F = 200 \text{ mA}; T_{amb} = 25 \text{ }^\circ\text{C}$	-	520	600	mV
$I_R$	reverse current	$V_R = 25 \text{ V}; t_p \leq 300 \text{ } \mu\text{s}; \delta \leq 0.02;$ pulsed; $T_{amb} = 25 \text{ }^\circ\text{C}$	-	-	0.5	$\mu\text{A}$
$C_d$	diode capacitance	$V_R = 1 \text{ V}; f = 1 \text{ MHz}; T_{amb} = 25 \text{ }^\circ\text{C}$	-	20	-	pF





f = 1 MHz; T<sub>amb</sub> = 25 °C

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

## 11. Test information

### Quality information

This product has been qualified in accordance with the Automotive Electronics Council (AEC) standard Q101 - *Stress test qualification for discrete semiconductors*, and is suitable for use in automotive applications.

## 12. Package outline

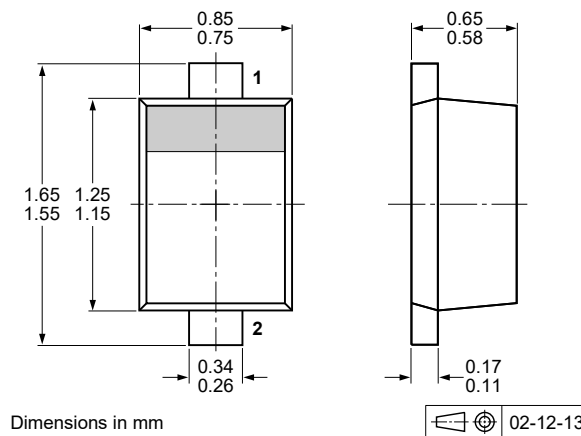


Fig. 4. Package outline SC-79 (SOD523)

### 13. Soldering

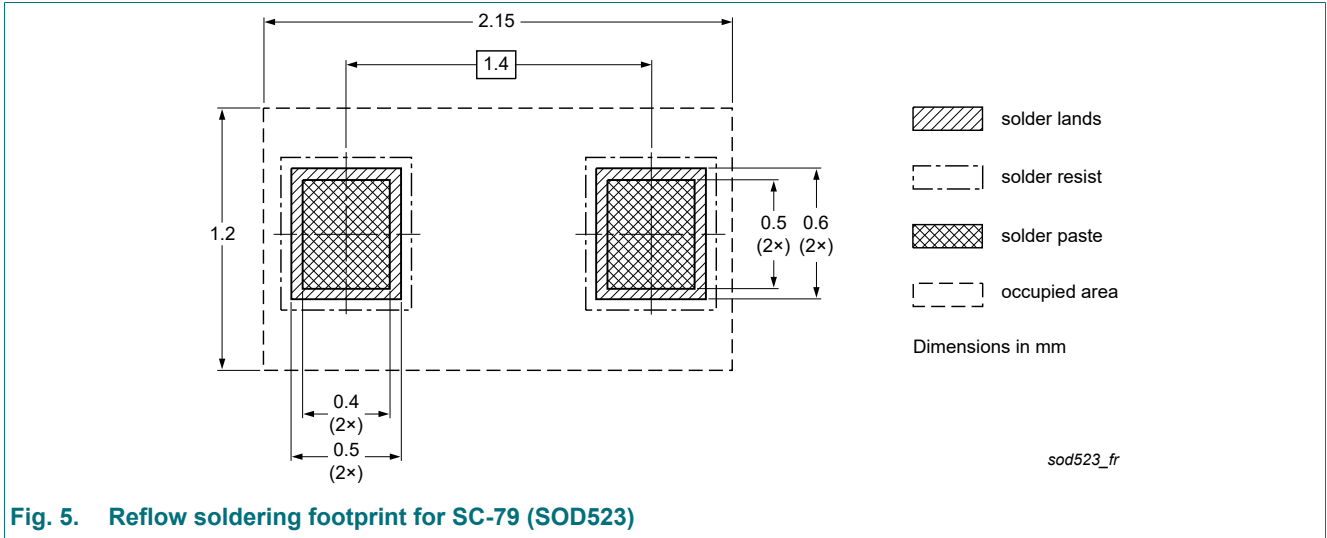


Fig. 5. Reflow soldering footprint for SC-79 (SOD523)

## 14. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
PMEG4002EB-Q v.1	20210930	Product data sheet	-	-

## 15. Legal information

### 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.

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- [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 <https://www.nexperia.com>.

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