



# PMEG2010AEB-Q

20 V, 1 A low VF MEGA Schottky barrier rectifier

25 October 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 plastic SMD package.

## 2. Features and benefits

- Forward current: 1.0 A
- Reverse voltage: 20 V
- Ultra low forward voltage
- Ultra small SMD package
- Qualified according to AEC-Q101 and recommended for use in automotive applications

## 3. Applications

- Low voltage rectification
- High efficiency DC/DC conversion
- Voltage clamping
- Inverse-polarity protection
- Low power consumption applications



## 4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$V_R$	reverse voltage		-	-	20	V
$V_F$	forward voltage	$I_F = 1 \text{ A}$ ; $T_{amb} = 25 \text{ }^\circ\text{C}$	-	510	620	mV
$I_F$	forward current	$T_{sp} \leq 55 \text{ }^\circ\text{C}$	-	-	1	A

## 5. Pinning information

Table 2. Pinning information

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

## 6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
PMEG2010AEB-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
PMEG2010AEB-Q	L6

## 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			-	20	V
$I_F$	forward current	$T_{sp} \leq 55\text{ °C}$		-	1	A
$I_{FRM}$	repetitive peak forward current	$t_p \leq 1\text{ ms}$ ; $\delta \leq 0.5$		-	3.5	A
$I_{FSM}$	non-repetitive peak forward current	square-wave pulse; $t_p = 8\text{ ms}$		-	6	A
$T_j$	junction temperature		[1]	-	150	°C
$T_{amb}$	ambient temperature		[1]	-65	150	°C
$T_{stg}$	storage temperature			-65	150	°C

- [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. Nomograms for determining the reverse power losses  $P_R$  and  $I_{F(AV)}$  rating will be available on request.

## 9. Thermal characteristics

**Table 6. Thermal characteristics**

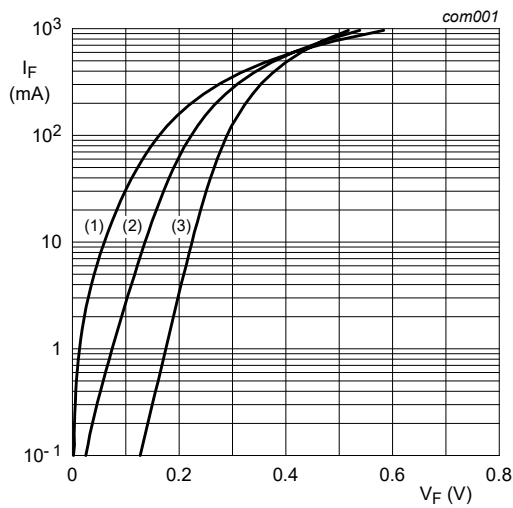
Symbol	Parameter	Conditions		Min	Typ	Max	Unit
$R_{th(j-a)}$	thermal resistance from junction to ambient	in free air	[1] [2]	-	-	400	K/W
$R_{th(j-sp)}$	thermal resistance from junction to solder point		[2] [3]	-	-	75	K/W

- [1] Refer to SOD523 (SC-79) standard mounting conditions.  
 [2] 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. Nomograms for determining the reverse power losses  $P_R$  and  $I_{F(AV)}$  rating will be available on request.  
 [3] Solder point of cathode tab.

## 10. Characteristics

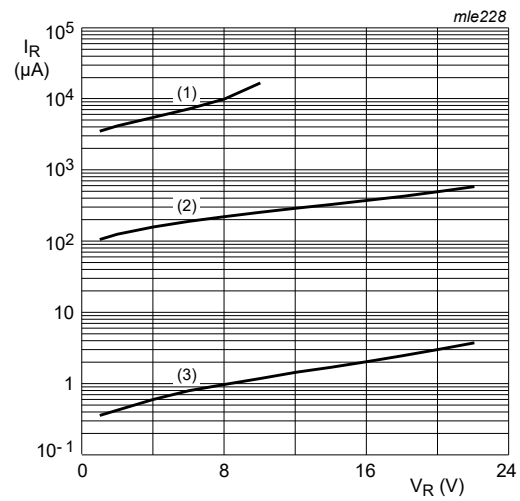
Table 7. Characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$V_F$	forward voltage	$I_F = 0.1 \text{ mA}; T_{\text{amb}} = 25 \text{ }^\circ\text{C}$	-	30	60	mV
		$I_F = 1 \text{ mA}; T_{\text{amb}} = 25 \text{ }^\circ\text{C}$	-	80	110	mV
		$I_F = 10 \text{ mA}; T_{\text{amb}} = 25 \text{ }^\circ\text{C}$	-	140	190	mV
		$I_F = 100 \text{ mA}; T_{\text{amb}} = 25 \text{ }^\circ\text{C}$	-	230	290	mV
		$I_F = 1 \text{ A}; T_{\text{amb}} = 25 \text{ }^\circ\text{C}$	-	510	620	mV
$I_R$	reverse current	$V_R = 10 \text{ V}; t_p \leq 300 \text{ } \mu\text{s}; \delta \leq 0.02;$ pulsed; $T_{\text{amb}} = 25 \text{ }^\circ\text{C}$	-	0.17	0.6	mA
		$V_R = 20 \text{ V}; t_p \leq 300 \text{ } \mu\text{s}; \delta \leq 0.02;$ pulsed; $T_{\text{amb}} = 25 \text{ }^\circ\text{C}$	-	0.32	1.5	mA
$C_d$	diode capacitance	$V_R = 1 \text{ V}; f = 1 \text{ MHz}$	-	19	25	pF



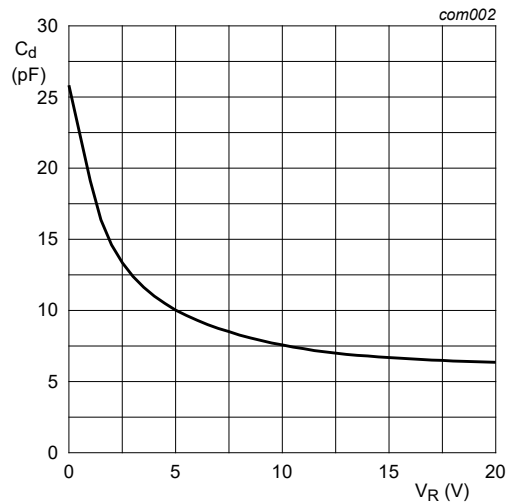
- (1)  $T_{\text{amb}} = 85 \text{ }^\circ\text{C}$
- (2)  $T_{\text{amb}} = 25 \text{ }^\circ\text{C}$
- (3)  $T_{\text{amb}} = -40 \text{ }^\circ\text{C}$

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



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

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



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

**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

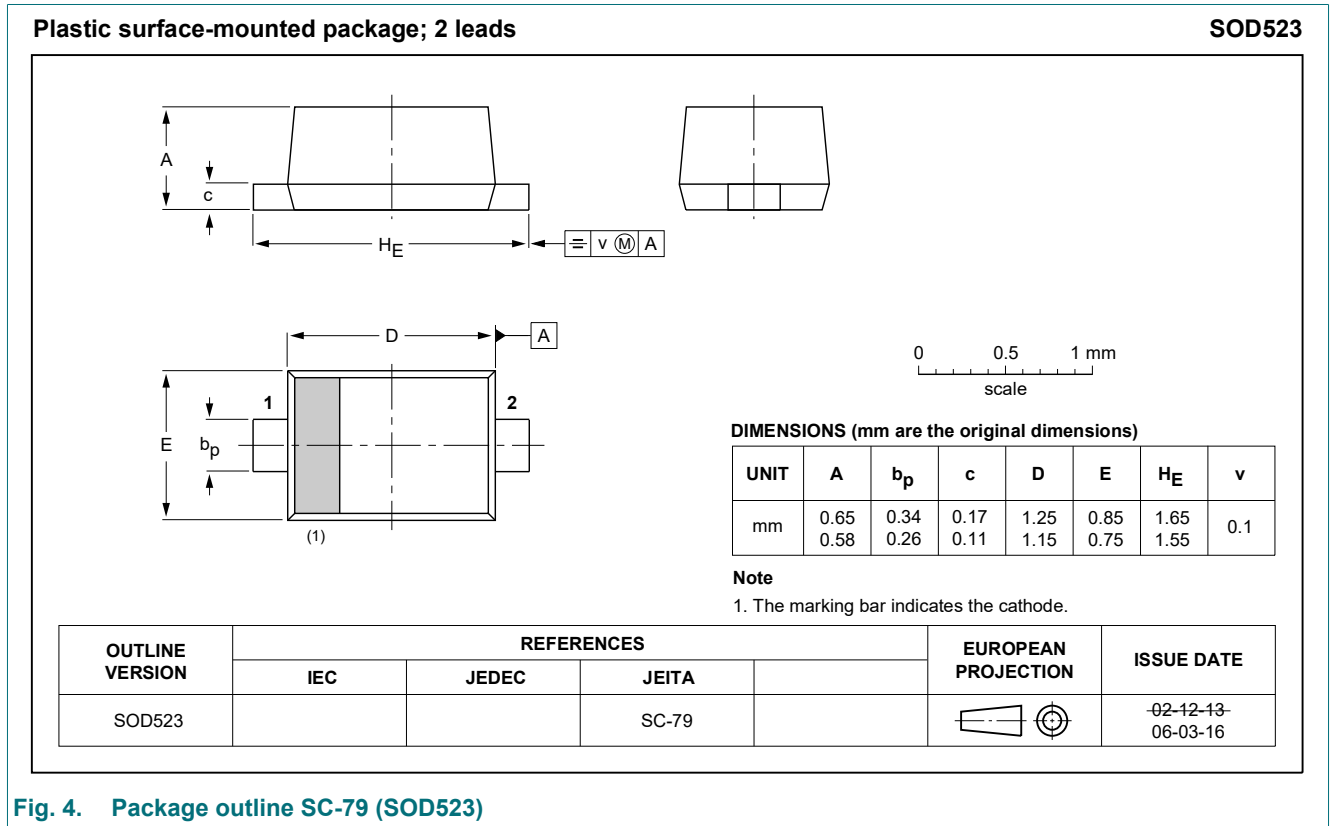


Fig. 4. Package outline SC-79 (SOD523)

### 13. Soldering

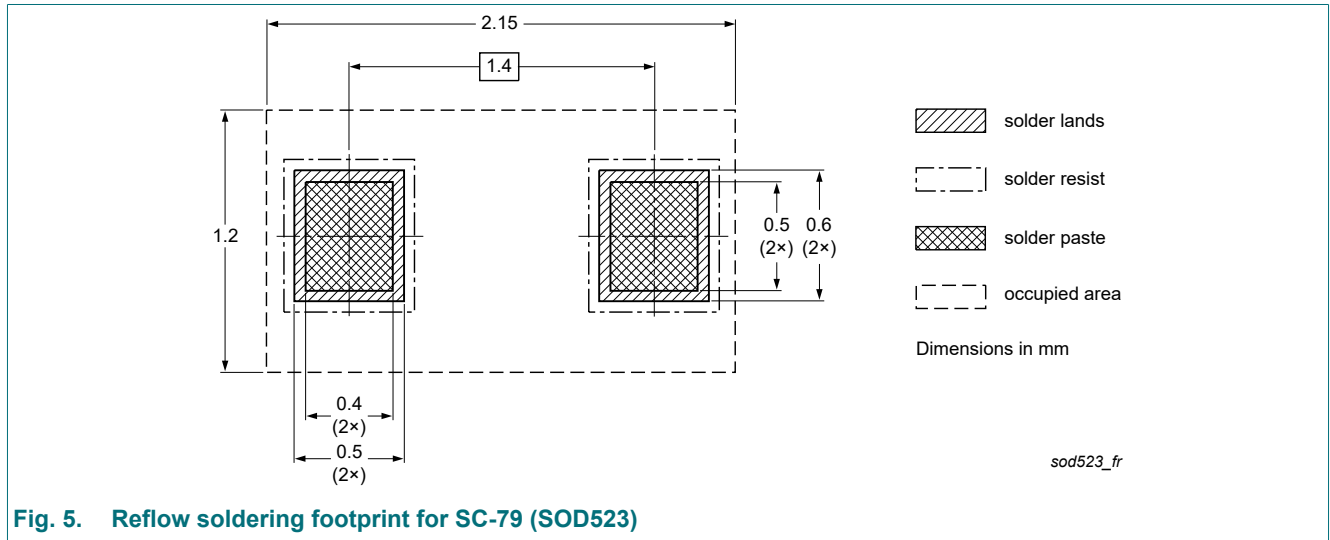


Fig. 5. Reflow soldering footprint for SC-79 (SOD523)

## 14. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
PMEG2010AEB-Q v.1	20211025	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.
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## Contents

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1. General description.....	1
2. Features and benefits.....	1
3. Applications.....	1
4. Quick reference data.....	1
5. Pinning information.....	2
6. Ordering information.....	2
7. Marking.....	2
8. Limiting values.....	3
9. Thermal characteristics.....	3
10. Characteristics.....	4
11. Test information.....	5
12. Package outline.....	6
13. Soldering.....	7
14. Revision history.....	8
15. Legal information.....	9

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