# 1. General description

Planar Maximum Efficiency General Application (MEGA) Schottky barrier rectifier with an integrated guard ring for stress protection, encapsulated in a SOD323 (SC-76) very small SMD plastic package.

### 2. Features and benefits

- · Very low forward voltage
- High surge current
- Very small plastic SMD package
- AEC-Q101 qualified

## 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	Тур	Max	Unit
$V_R$	reverse voltage			-	-	20	V
V <sub>F</sub>	forward voltage	I <sub>F</sub> = 500 mA	[1]	-	355	390	mV
I <sub>R</sub>	reverse current	V <sub>R</sub> = 20 V	[1]	-	40	200	μΑ

<sup>[1]</sup> Pulsed test:  $t_p \le 300 \,\mu s$ ;  $\delta \le 0.02$ 

# 5. Pinning information

#### **Table 2. Pinning information**

1 K cathode 1 2 K A 2 A anode sym001	Pin	Symbol	Description	Simplified outline	Graphic symbol
2 A anode sym001	1	K	cathode	1 2	к <b>-</b> [ <del>-</del> А
SOD323	2	A	anode	SOD323	sym001



# 6. Ordering information

#### **Table 3. Ordering information**

Type number	Package		
	Name	Description	Version
PMEG2005AEA	SOD323	plastic surface-mounted package; 2 leads	SOD323

# 7. Marking

#### Table 4. Marking codes

Type number	Marking code
PMEG2005AEA	E5

# 8. Limiting values

#### Table 5. Limiting values

In accordance with the Absolute Maximum Rating System (IEC 60134).

Symbol	Parameter	Conditions	Min	Max	Unit
V <sub>R</sub>	reverse voltage		-	20	V
l <sub>F</sub>	forward current		-	0.5	Α
I <sub>FRM</sub>	repetitive peak forward current	$t_p \le 1 \text{ ms}; \delta \le 0.5$	-	3.5	А
I <sub>FSM</sub>	non-repetitive peak forward current	t <sub>p</sub> = 8 ms; square wave	-	10	А
Tj	junction temperature		-	150	°C
T <sub>amb</sub>	ambient temperature		-55	150	°C
T <sub>stg</sub>	storage temperature		-65	150	°C

### 9. Thermal characteristics

#### **Table 6. Thermal characteristics**

Symbol	Parameter	Conditions		Min	Тур	Max	Unit
$R_{th(j-a)}$	thermal resistance from	in free air	[1] [2]	-	-	450	K/W
	junction to ambient		[1] [3]	-	-	210	K/W
R <sub>th(j-sp)</sub>	thermal resistance from junction to solder point	Г	[1] [4]	-	-	90	K/W

<sup>[1]</sup> For Schottky barrier diodes thermal runaway has to be considered, as in some applications the reverse power losses P<sub>R</sub> are a significant part of the total power losses. Nomograms for determination of the reverse power losses P<sub>R</sub> and I<sub>F(AV)</sub> rating will be available on request.

- [2] Device mounted on an FR4 PCB, single-sided copper, tin-plated and standard footprint.
- [3] Device mounted on an FR4 PCB, single-sided copper, tin-plated, mounting pad for cathode 1 cm<sup>2</sup>.
- [4] Soldering point of cathode tab.

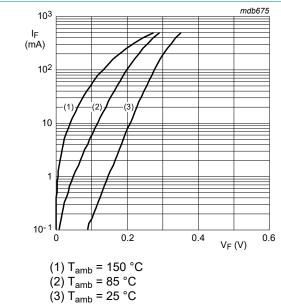
## 10. Characteristics

#### **Table 7. Characteristics**

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

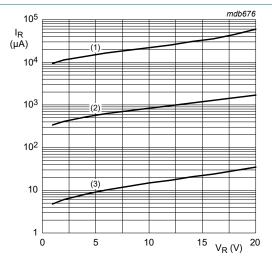
Symbol	Parameter	Conditions		Min	Тур	Max	Unit
V <sub>F</sub>	forward voltage	I <sub>F</sub> = 0.1 mA	[1]	-	90	130	mV
		I <sub>F</sub> = 1 mA	[1]	-	150	190	mV
		I <sub>F</sub> = 10 mA	[1]	-	210	240	mV
		I <sub>F</sub> = 100 mA [1] - 280	330	mV			
		I <sub>F</sub> = 500 mA	[1]	-	355	390	mV
I <sub>R</sub>	reverse current	V <sub>R</sub> = 10 V	[1]	-	15	40	μΑ
		V <sub>R</sub> = 20 V	[1]	-	40	200	μΑ
C <sub>d</sub>	diode capacitance	V <sub>R</sub> = 1 V; f = 1 MHz		-	66	80	pF

#### [1] Pulsed test: $t_p \le 300 \ \mu s; \ \delta \le 0.02$



(3) 
$$T_{amb} = 25 \, ^{\circ}C$$

Forward current as a function of forward voltage; typical values



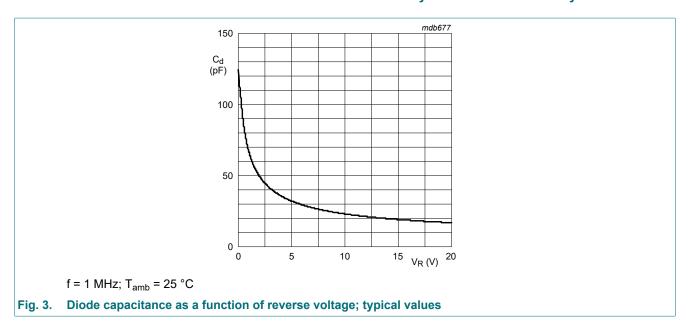
(1) T<sub>amb</sub> = 150 °C (2) T<sub>amb</sub> = 85 °C (3) T<sub>amb</sub> = 25 °C

(3) 
$$T_{amb} = 25 \, ^{\circ}\text{C}$$

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

Nexperia PMEG2005AEA

#### Very low VF MEGA Schottky barrier rectifier

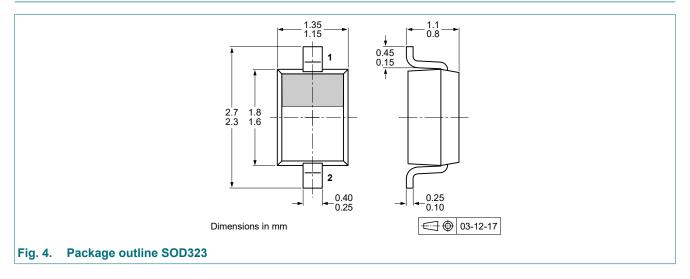


### 11. Test information

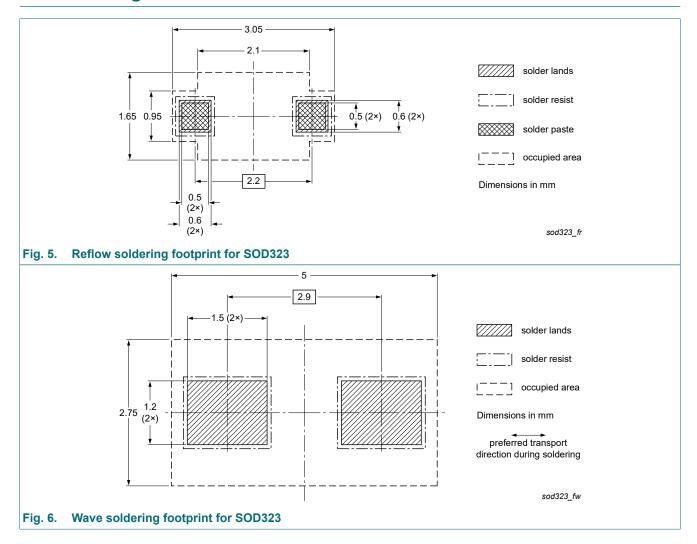
### **Quality information**

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



# 13. Soldering



# 14. Revision history

#### Table 8. Revision history

Tuble 6. Revision history					
Data sheet ID	Release date	Data sheet status	Change notice	Supersedes	
PMEG2005AEA v.2	20190614	Product data sheet	-	PMEG2005AEA_3005_4005 v.1	
Modifications:	The format of th of Nexperia.	et separated to single da is data sheet has been re e been adapted to the ne	edesigned to con	nply with the identity guidelines	
PMEG2005AEA_3005_4005 v.1	20030820	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.

- 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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