PMEG4005AEA

Very low VF MEGA Schottky barrier rectifier

29 May 2019 **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 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

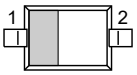
Table 1. Quick reference data

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
V_R	reverse voltage	T_j = 25 °C		-	-	40	V
V_F	forward voltage	I_F = 500 mA	[1]	-	420	470	mV
I_R	reverse current	V_R = 40 V	[1]	-	30	100	µA

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

5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	K	cathode[1]	 SOD323	 sym001
2	A	anode		

[1] The marking bar indicates the cathode.

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6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
PMEG4005AEA	SOD323	plastic, surface-mounted package; 2 leads; 1.3 mm pitch; 1.7 mm x 1.25 mm x 0.95 mm body	SOD323

7. Marking

Table 4. Marking codes

Type number	Marking code
PMEG4005AEA	E3

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	T_j = 25 °C		-	40	V
I_F	forward current			-	0.5	A
I_{FRM}	repetitive peak forward current	$t_p \leq$ 1 ms; $\delta \leq$ 0.5		-	3.5	A
I_{FSM}	non-repetitive peak forward current	t_p = 8 ms; square wave		-	10	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] [3]	-	-	210	K/W
$R_{th(j-sp)}$	thermal resistance from junction to solder point		[1] [4]	-	-	90	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 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 cm2.
[4] Soldering point of cathode tab.

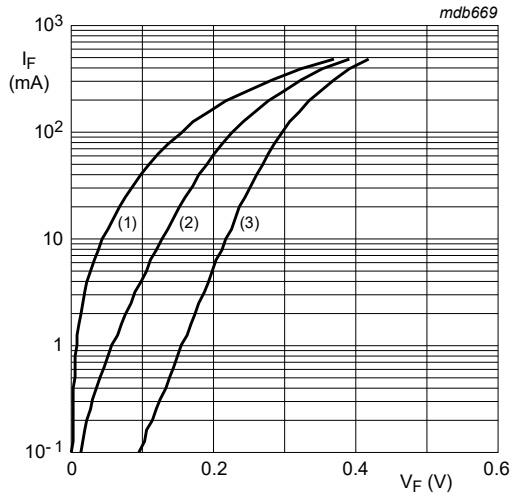
10. Characteristics

Table 7. Characteristics

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

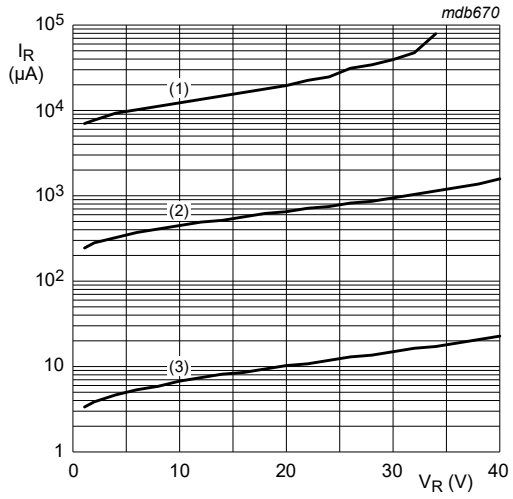
Symbol	Parameter	Conditions		Min	Typ	Max	Unit
V_F	forward voltage	I_F = 0.1 mA	[1]	-	95	130	mV
		I_F = 1 mA	[1]	-	155	210	mV
		I_F = 10 mA	[1]	-	220	270	mV
		I_F = 100 mA	[1]	-	295	350	mV
		I_F = 500 mA	[1]	-	420	470	mV
I_R	reverse current	V_R = 10 V	[1]	-	7	20	µA
		V_R = 40 V	[1]	-	30	100	µA
C_d	diode capacitance	V_R = 1 V; f = 1 MHz		-	43	50	pF

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



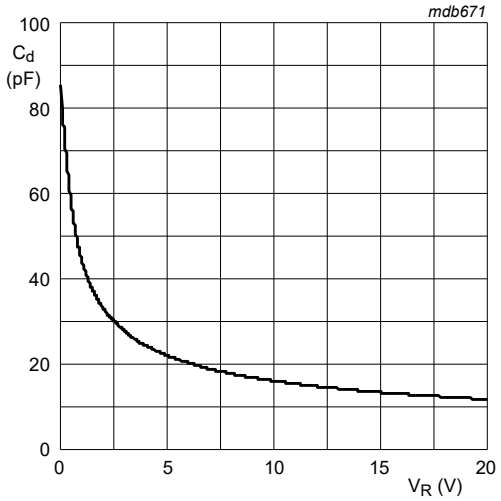
(1) T_j = 150 °C
(2) T_j = 85 °C
(3) T_j = 25 °C

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



(1) T_j = 150 °C
(2) T_j = 85 °C
(3) T_j = 25 °C

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



f = 1 MHz; T_{amb} = 25 °C

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

11. Package outline

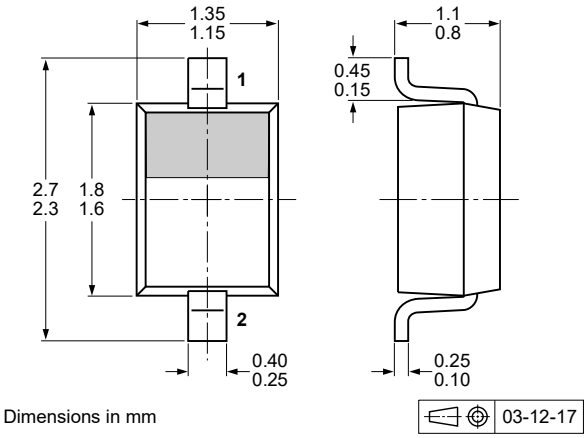


Fig. 4. Package outline SOD323

12. Soldering

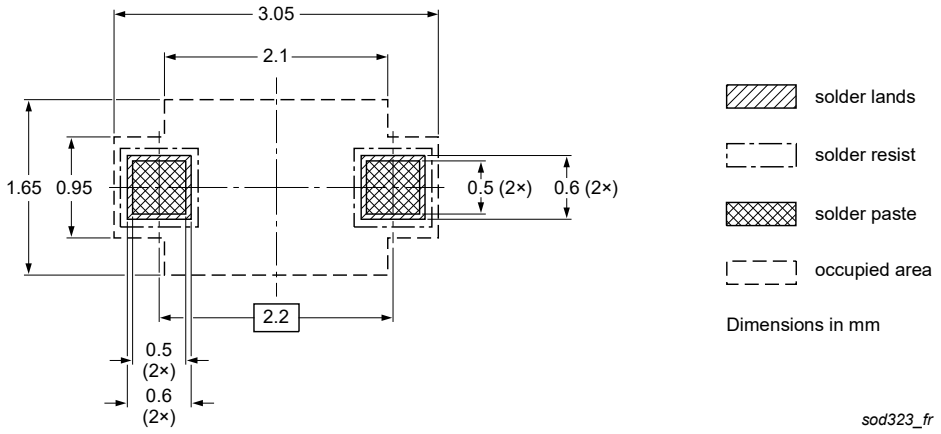


Fig. 5. Reflow soldering footprint for SOD323

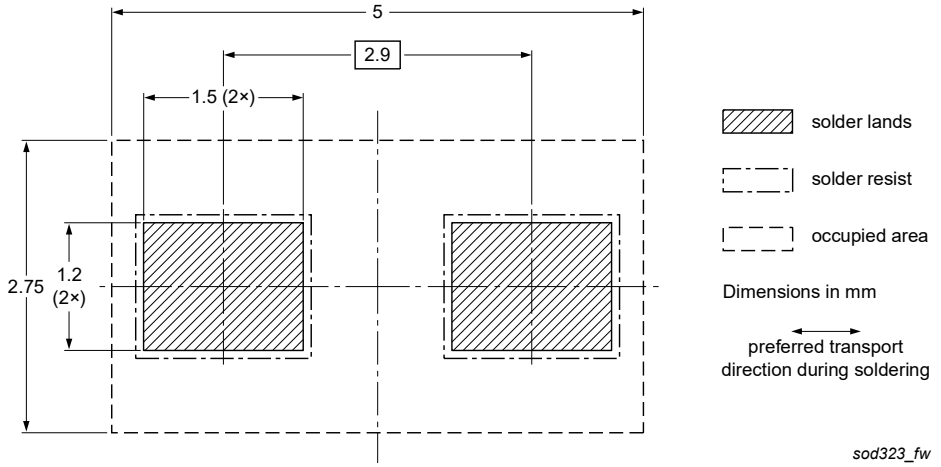


Fig. 6. Wave soldering footprint for SOD323

13. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
PMEG4005AEA v.2	20190529	Product data sheet	-	PMEG2005AEA_3005_4005 v.1
Modifications:	• Family data sheet separated to single data sheets. • The format of this data sheet has been redesigned to comply with the identity guidelines of Nexperia. • Legal texts have been adapted to the new company name where appropriate.			
PMEG2005AEA_3005_4005 v.1	20030820	Product data sheet	-	-

14. 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.

[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".
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Date of release: 29 May 2019

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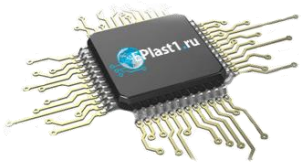

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