



PMEG4005AEA

40 V, 0.5 A very low VF Schottky barrier rectifier

13 February 2023

Product data sheet

1. General description

Planar 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

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
I_F	forward current		-	-	0.5	A
V_R	reverse voltage	$T_J = 25\text{ }^{\circ}\text{C}$	-	-	40	V
V_F	forward voltage	$I_F = 500\text{ mA}$	[1]	420	470	mV
I_R	reverse current	$V_R = 40\text{ V}$	[1]	30	100	μA

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

5. Pinning information

Table 2. Pinning information

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

[1] The marking bar indicates the cathode.

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 ≤ 1 ms; δ ≤ 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

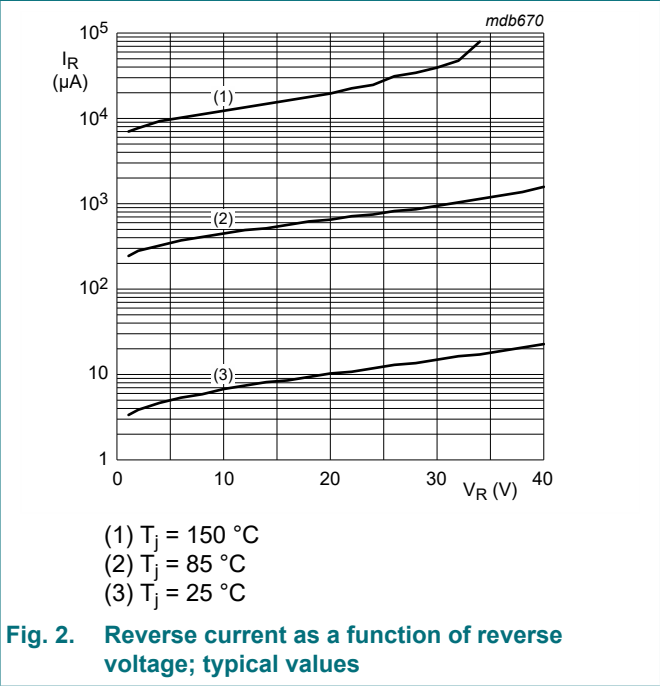
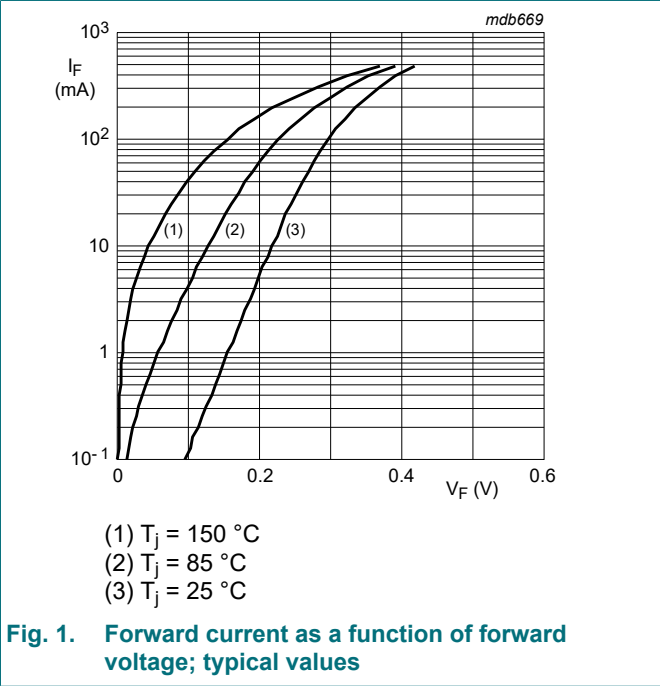
- [1] For Schottky barrier diodes thermal runaway has to be considered, as in some applications the reverse power losses P_R are a significant part of the total power losses.
- [2] Device mounted on an FR4 PCB, single-sided copper, tin-plated and standard footprint.
- [3] Device mounted on an FR4 PCB, single-sided copper, tin-plated, mounting pad for cathode 1 cm².
- [4] Soldering point of cathode tab.

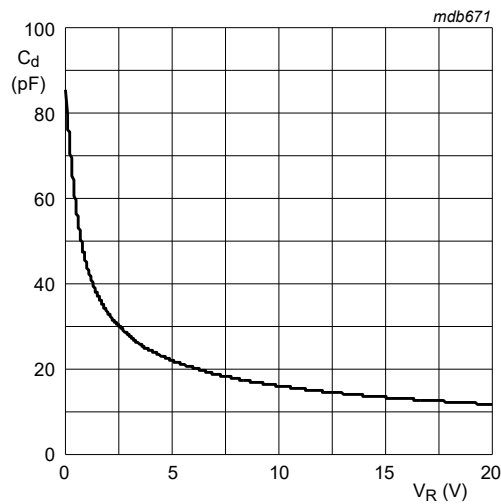
10. Characteristics

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 ≤ 300 µs; δ ≤ 0.02





f = 1 MHz; T_{amb} = 25 °C

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

11. Package outline

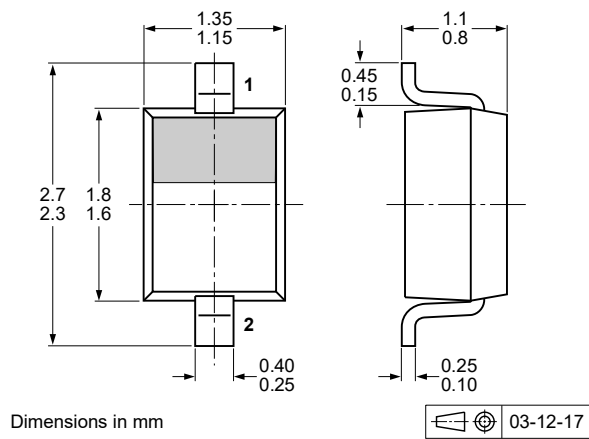


Fig. 4. Package outline SOD323

12. Soldering

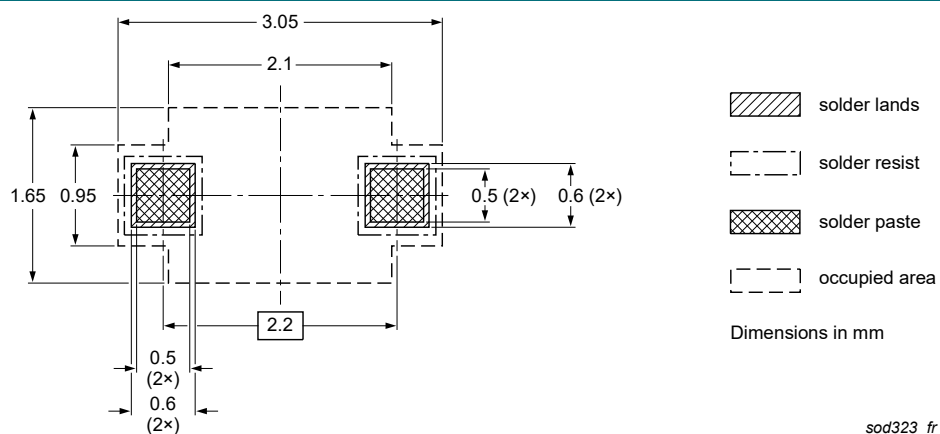


Fig. 5. Reflow soldering footprint for SOD323

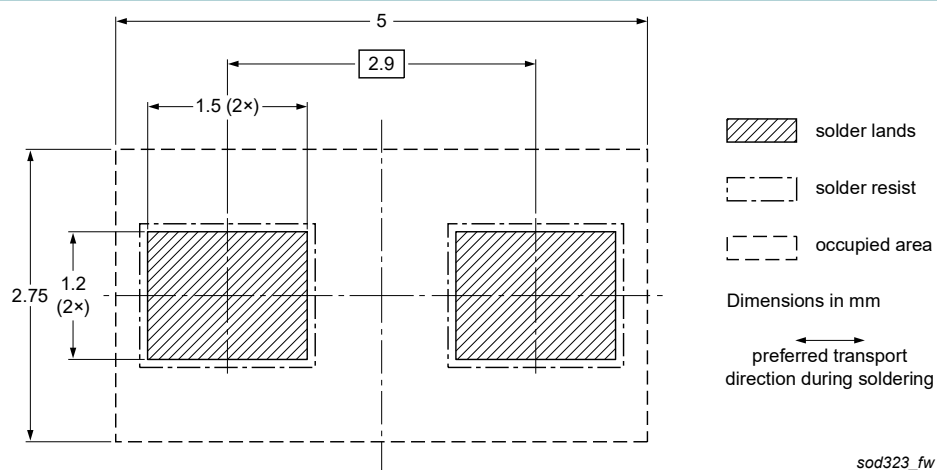


Fig. 6. Wave soldering footprint for SOD323

13. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
PMEG4005AEA v.4	20230213	Product data sheet	-	PMEG4005AEA v.3
Modifications:	• Graph in Fig. 2 corrected at unit of Y-axis			
PMEG4005AEA v.3	20230101	Product data sheet	-	PMEG4005AEA v.2
PMEG4005AEA v.2	20190529	Product data sheet	-	PMEG2005AEA_3005_4005 v.1
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".
- [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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Contents

1. General description..... 1

2. Features and benefits..... 1

3. Applications..... 1

4. Quick reference data..... 1

5. Pinning information..... 1

6. Ordering information..... 2

7. Marking..... 2

8. Limiting values..... 2

9. Thermal characteristics..... 2

10. Characteristics..... 3

11. Package outline..... 4

12. Soldering..... 5

13. Revision history..... 6

14. Legal information..... 7

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Date of release: 13 February 2023