PMEG4010BEA

40 V, 1 A very low VF Schottky barrier rectifier

4 January 2023 **Product data sheet**

1. General description

Planar Schottky barrier rectifier with an integrated guard ring for stress protection, encapsulated in a very small SOD323 (SC-76) Surface-Mounted Device (SMD) plastic package.

2. Features and benefits

- Forward current: 1 A
- Reverse voltage: 40 V
- Very low forward voltage
- Very small plastic SMD package

3. Applications

- High efficiency DC-to-DC conversion
- Voltage clamping
- Protection circuits
- Low voltage rectification
- Blocking diode
- Low power consumption applications

4. Quick reference data

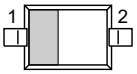
Table 1. Quick reference data

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
I_F	forward current	$T_{sp} \leq 55$ °C	[1]	-	-	1	A
V_R	reverse voltage			-	-	40	V
V_F	forward voltage	I_F = 1000 mA; T_{amb} = 25 °C		-	540	640	mV
I_R	reverse current	V_R = 40 V; $t_p \leq 300$ µs; $\delta \leq 0.02$; T_{amb} = 25 °C		-	30	100	µA

[1] Device mounted on an FR4 Printed-Circuit Board (PCB), single-sided copper, tin-plated and standard footprint.

5. Pinning information

Table 2. Pinning information

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

nexperia

6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
PMEG4010BEA	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
PMEG4010BEA	V3

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	$T_{sp} \leq 55$ °C	[1]	-	1	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	square-wave pulse; $t_p = 8$ ms		-	10	A
T_j	junction temperature			-	150	°C
T_{amb}	ambient temperature			-55	150	°C
T_{stg}	storage temperature			-65	150	°C

[1] Device mounted on an FR4 Printed-Circuit Board (PCB), single-sided copper, tin-plated and standard footprint.

9. Thermal characteristics

Table 6. Thermal characteristics

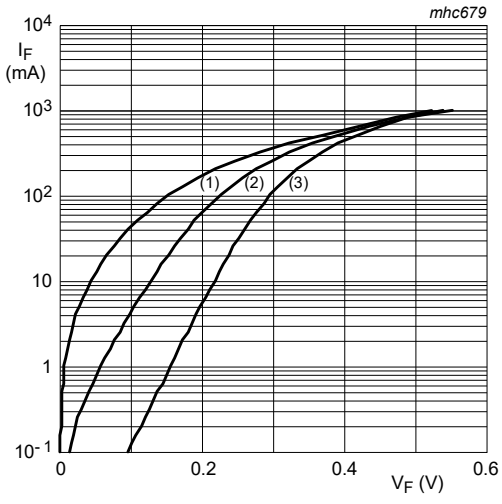
Symbol	Parameter	Conditions		Min	Typ	Max	Unit
$R_{th(j-a)}$	thermal resistance from junction to ambient	in free air	[1] [2]	-	-	450	K/W
			[1] [3]	-	-	210	K/W
$R_{th(j-sp)}$	thermal resistance from junction to solder point		[4]	-	-	90	K/W

[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 cm^2.
[4] Soldering point of cathode tab.

10. Characteristics

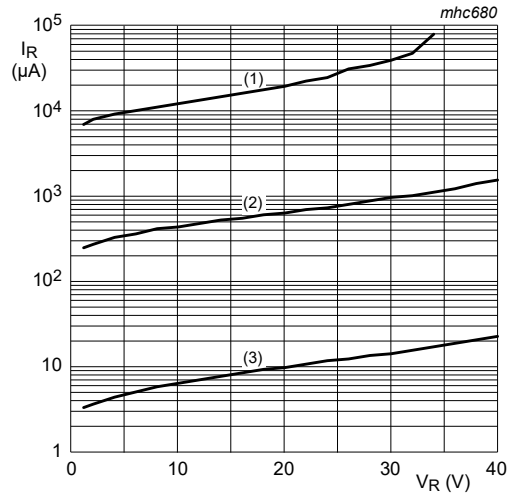
Table 7. Characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
V_F	forward voltage	I_F = 0.1 mA; T_{amb} = 25 °C		-	95	130	mV
		I_F = 1 mA; T_{amb} = 25 °C		-	155	210	mV
		I_F = 10 mA; T_{amb} = 25 °C		-	220	270	mV
		I_F = 100 mA; T_{amb} = 25 °C		-	295	350	mV
		I_F = 500 mA; T_{amb} = 25 °C		-	420	470	mV
		I_F = 1000 mA; T_{amb} = 25 °C		-	540	640	mV
I_R	reverse current	V_R = 10 V; $t_p \leq$ 300 µs; $\delta \leq$ 0.02; T_{amb} = 25 °C		-	7	20	µA
		V_R = 40 V; $t_p \leq$ 300 µs; $\delta \leq$ 0.02; T_{amb} = 25 °C		-	30	100	µA
C_d	diode capacitance	V_R = 1 V; f = 1 MHz; T_{amb} = 25 °C		-	43	50	pF



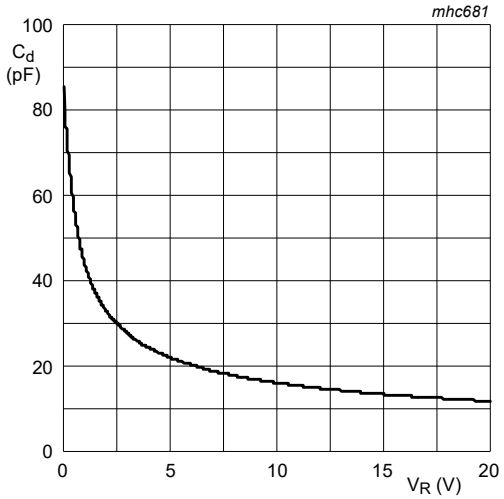
Pulsed condition
(1) T_{amb} = 150 °C
(2) T_{amb} = 85 °C
(3) T_{amb} = 25 °C

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



Pulsed condition
(1) T_{amb} = 150 °C
(2) T_{amb} = 85 °C
(3) T_{amb} = 25 °C

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



T_{amb} = 25 °C; f = 1 MHz

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

11. Package outline

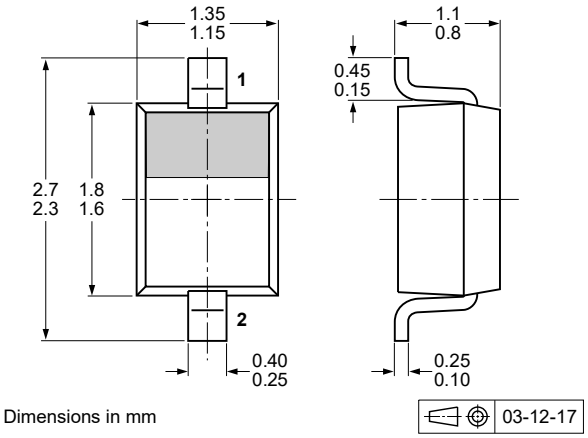


Fig. 4. Package outline SOD323

12. Soldering

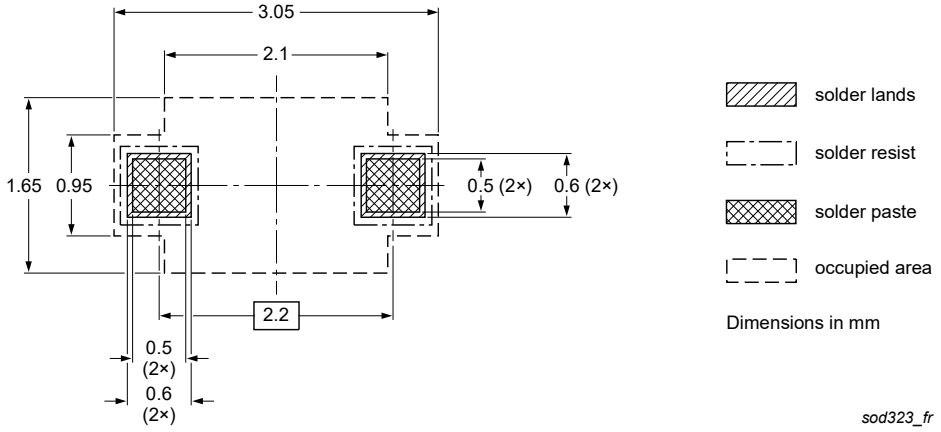


Fig. 5. Reflow soldering footprint for SOD323

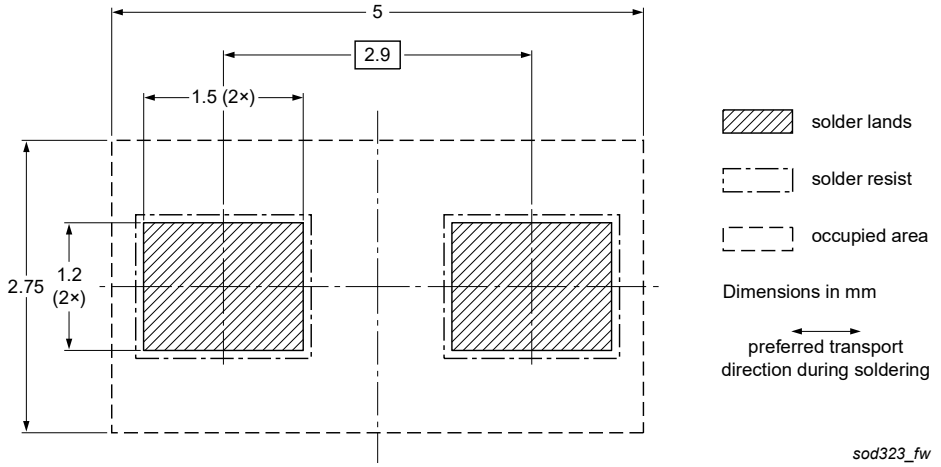


Fig. 6. Wave soldering footprint for SOD323

13. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
PMEG4010BEA v.4	20230104	Product data sheet	-	PMEG4010BEA v.3
Modifications:	• Product changed to non-automotive qualification. Please refer to nexperia.com for automotive (-Q) product alternative(s).			
PMEG4010BEA v.3	20200715	Product data sheet	-	PMEGXX10BEA_ PMEGXX10BEV v.2
PMEGXX10BEA_ PMEGXX10BEV v.2	200406142	Product data sheet	-	PMEGXX10BEA_ PMEGXX10BEV v.1
PMEGXX10BEA_ PMEGXX10BEV v.1	20040402	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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