



# PMEG2010EA-Q

20 V, 1 A low VF Schottky barrier diode

4 November 2022

Product data sheet

## 1. General description

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

## 2. Features and benefits

- Forward current: 1 A
- Reverse voltage: 20 V
- Ultra high-speed switching
- Very low forward voltage
- Very small plastic SMD package
- Qualified according to AEC-Q101 and recommended for use in automotive applications

## 3. Applications

- Ultra high-speed switching
- Voltage clamping
- Protection circuits

## 4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$I_F$	forward current		-	-	1	A
$V_R$	reverse voltage		-	-	20	V
$V_F$	forward voltage	$I_F = 1 \text{ A}$ ; $t_p \leq 300 \mu\text{s}$ ; $\delta \leq 0.02$ ; $T_{\text{amb}} = 25 \text{ }^\circ\text{C}$	-	480	550	mV
$I_R$	reverse current	$V_R = 15 \text{ V}$ ; $t_p \leq 300 \mu\text{s}$ ; $\delta \leq 0.02$ ; $T_{\text{amb}} = 25 \text{ }^\circ\text{C}$	-	10	50	$\mu\text{A}$

## 5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	K	cathode	 SOD323	 001aaa020
2	A	anode		

## 6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
<a href="#">PMEG2010EA-Q</a>	SOD323	plastic, surface-mounted package; 2 leads; 1.3 mm pitch; 1.7 mm x 1.25 mm x 0.95 mm body	<a href="#">SOD323</a>

## 7. Marking

Table 4. Marking codes

Type number	Marking code
PMEG2010EA-Q	E1

## 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		-	1	A
$I_{FSM}$	non-repetitive peak forward current	$t_p = 8.3$ ms; half sinewave; $T_{J(\text{init})} = 25$ °C	-	5	A
$T_j$	junction temperature		-	150	°C
$T_{\text{amb}}$	ambient temperature		-55	150	°C
$T_{\text{stg}}$	storage temperature		-65	150	°C

## 9. Thermal characteristics

Table 6. Thermal characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$R_{\text{th}(j-a)}$	thermal resistance from junction to ambient	[1] [2]	-	-	220	K/W
		[3] [2]	-	-	180	K/W

[1] Device mounted on an FR4 Printed-Circuit Board (PCB), single-sided copper 10 x 10 mm.

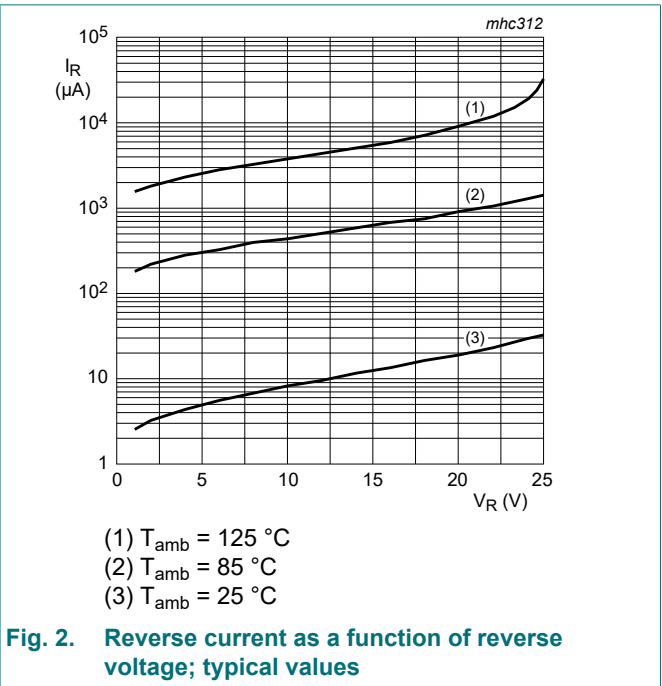
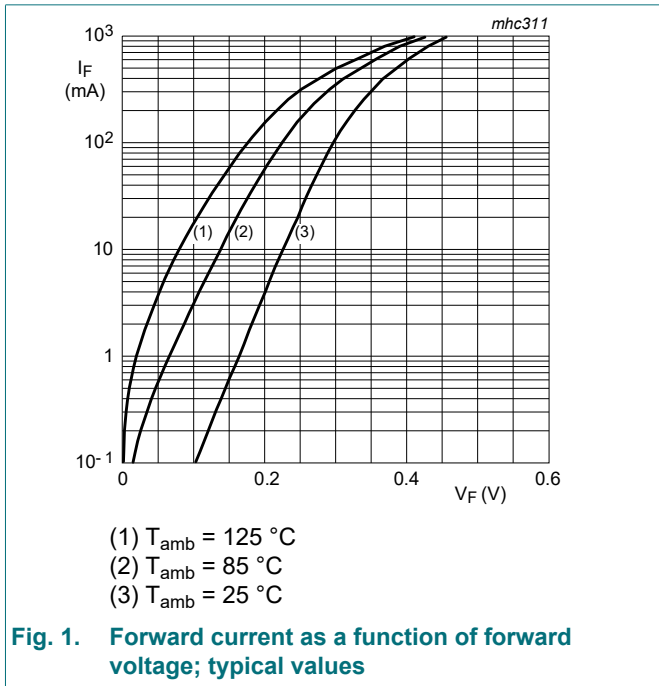
[2] For Schottky barrier diodes thermal runaway has to be considered, as in some applications the reverse power losses  $P_R$  are a significant part of the total power losses.

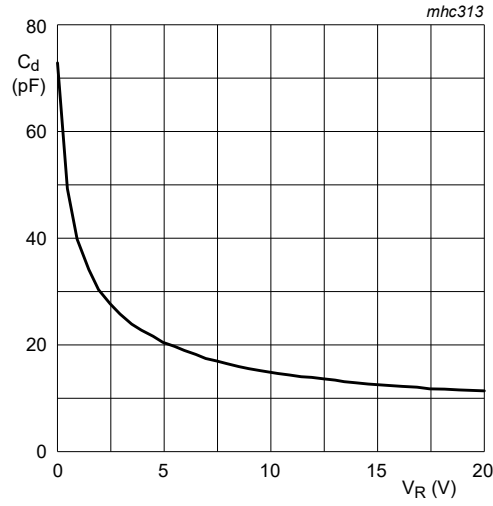
[3] Device mounted on an FR4 Printed-Circuit Board (PCB), single-sided copper 40 x 40 mm.

### 10. Characteristics

Table 7. Characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V <sub>F</sub>	forward voltage	I <sub>F</sub> = 10 mA; t <sub>p</sub> ≤ 300 μs; δ ≤ 0.02; T <sub>amb</sub> = 25 °C	-	240	270	mV
		I <sub>F</sub> = 100 mA; t <sub>p</sub> ≤ 300 μs; δ ≤ 0.02; T <sub>amb</sub> = 25 °C	-	300	350	mV
		I <sub>F</sub> = 1 A; t <sub>p</sub> ≤ 300 μs; δ ≤ 0.02; T <sub>amb</sub> = 25 °C	-	480	550	mV
I <sub>R</sub>	reverse current	V <sub>R</sub> = 5 V; t <sub>p</sub> ≤ 300 μs; δ ≤ 0.02; T <sub>amb</sub> = 25 °C	-	5	10	μA
		V <sub>R</sub> = 8 V; t <sub>p</sub> ≤ 300 μs; δ ≤ 0.02; T <sub>amb</sub> = 25 °C	-	7	20	μA
		V <sub>R</sub> = 15 V; t <sub>p</sub> ≤ 300 μs; δ ≤ 0.02; T <sub>amb</sub> = 25 °C	-	10	50	μA
C <sub>d</sub>	diode capacitance	V <sub>R</sub> = 5 V; f = 1 MHz; T <sub>amb</sub> = 25 °C	-	19	25	pF





T<sub>amb</sub> = 25 °C  
f = 1 MHz

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

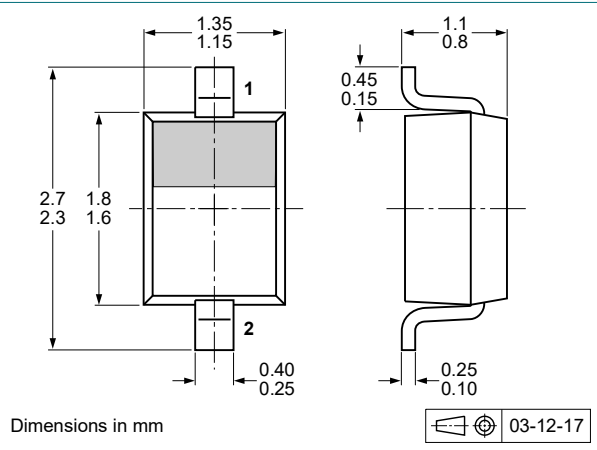


Fig. 4. Package outline SOD323

### 13. Soldering

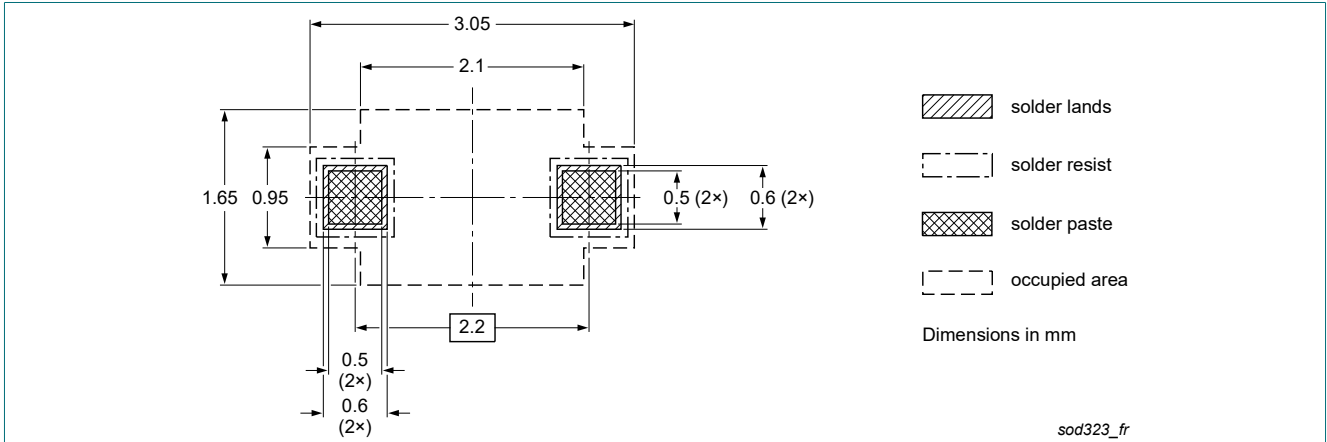


Fig. 5. Reflow soldering footprint for SOD323

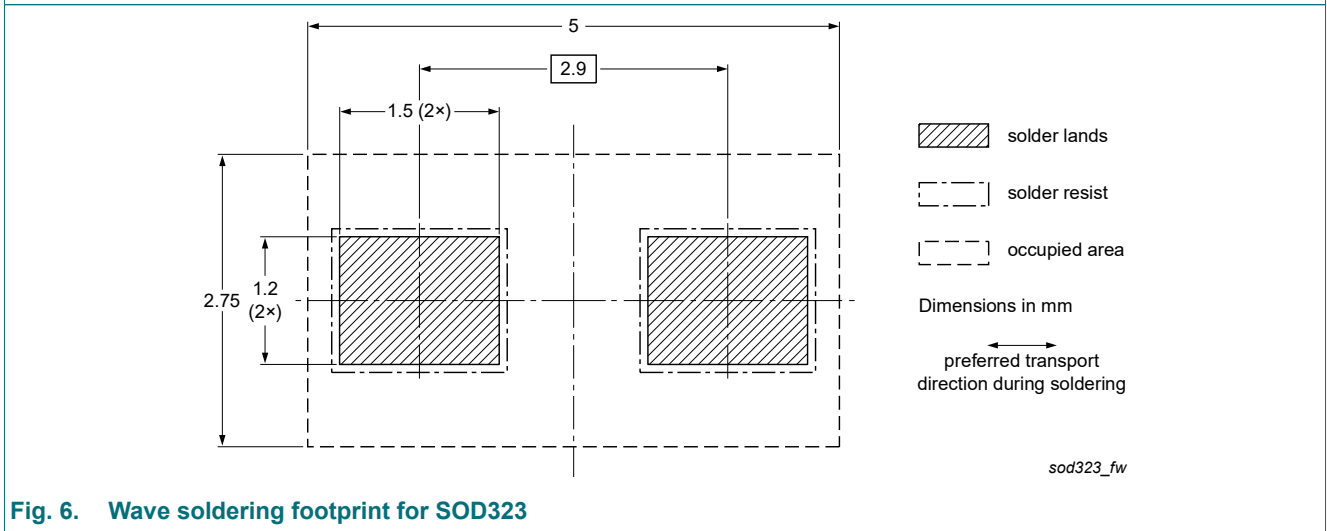


Fig. 6. Wave soldering footprint for SOD323

## 14. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
PMEG2010EA-Q v.1	20221104	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.

- [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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