



PMEG1020EH

10 V, 2 A ultra low VF Schottky barrier rectifier

22 December 2022

Product data sheet

1. General description

Planar Schottky barrier rectifier with an integrated guard ring for stress protection, encapsulated in a small SOD123F Surface-Mounted Device (SMD) plastic package.

2. Features and benefits

- Forward current: ≤ 2 A
- Reverse voltage: ≤ 10 V
- Ultra low forward voltage
- Small and flat lead SMD plastic packages
- AEC-Q101 qualified

3. Applications

- Low voltage rectification
- High efficiency DC-to-DC conversion
- Switch mode power supply
- 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		-	-	10	V
I_F	forward current	$T_{sp} \leq 55$ °C	-	-	2	A
I_R	reverse current	$V_R = 5$ V; $T_{amb} = 25$ °C	-	0.7	2	mA

5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	K	cathode	 SOD123F	 sym001
2	A	anode		

6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
PMEG1020EH	SOD123F	plastic, surface-mounted package; 2 leads; 2.6 mm x 1.6 mm x 1.1 mm body	SOD123F

7. Marking

Table 4. Marking codes

Type number	Marking code
PMEG1020EH	A8

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			-	10	V
I_F	forward current	$T_{sp} \leq 55\text{ °C}$		-	2	A
I_{FRM}	repetitive peak forward current	$t_p \leq 1\text{ ms}$; $\delta \leq 0.25$		-	7	A
I_{FSM}	non-repetitive peak forward current	$t_p = 8\text{ ms}$; square wave		-	9	A
P_{tot}	total power dissipation	$T_{amb} \leq 25\text{ °C}$	[1]	-	375	mW
			[2]	-	830	mW
T_j	junction temperature			-	150	°C
T_{amb}	ambient temperature			-65	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.

[2] Device mounted on an FR4 PCB, single-sided copper, tin-plated, mounting pad for cathode 1 cm².

9. Thermal characteristics

Table 6. Thermal characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
$R_{th(j-a)}$	thermal resistance from junction to ambient		[1] [2]	-	-	330	K/W
			[3] [2]	-	-	150	K/W
$R_{th(j-sp)}$	thermal resistance from junction to solder point		[4]	-	-	60	K/W

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

[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.

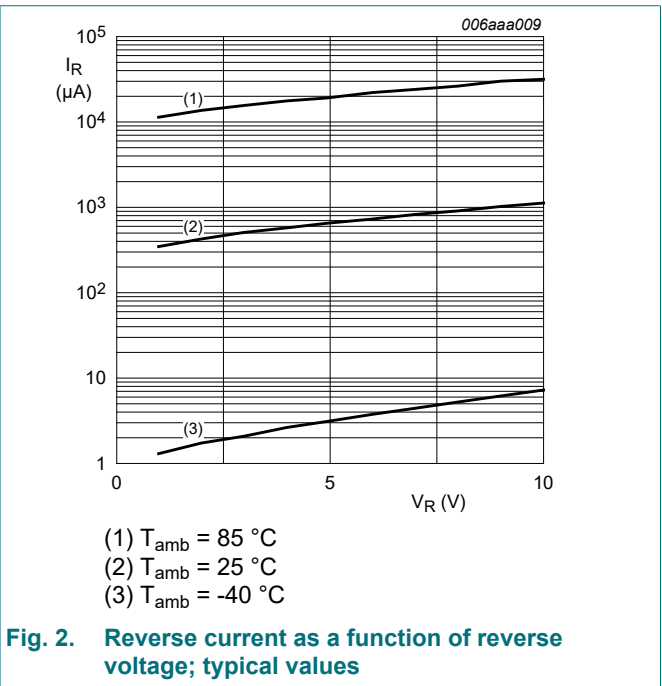
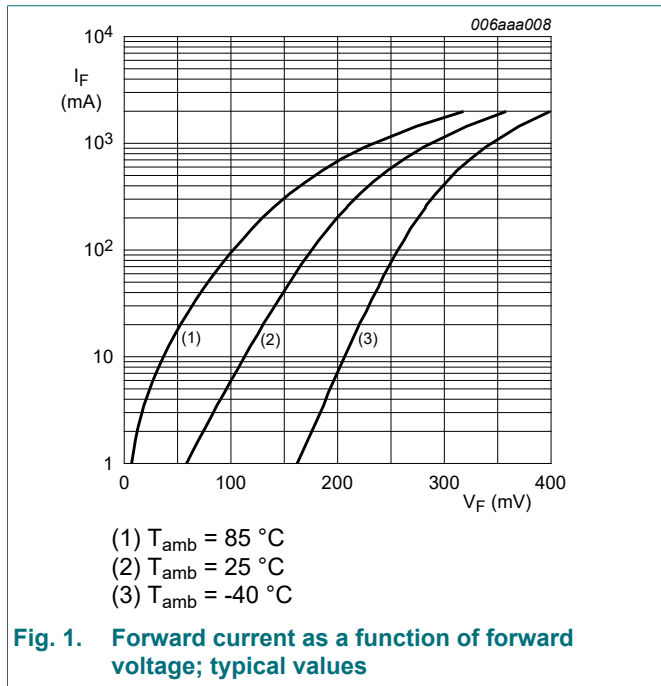
[3] Device mounted on an FR4 PCB, single-sided copper, tin-plated, mounting pad for cathode 1 cm².

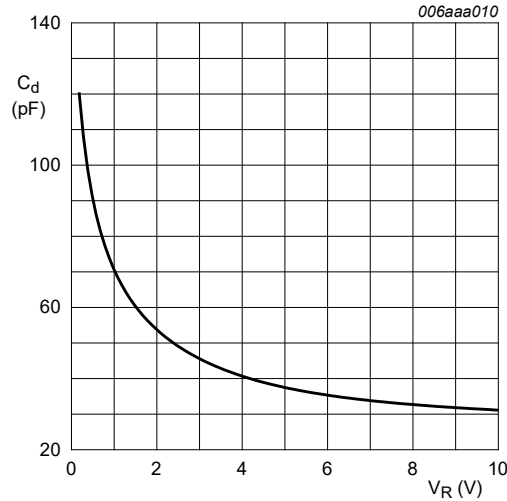
[4] Soldering point of cathode tab.

10. Characteristics

Table 7. Characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_F	forward voltage	$I_F = 0.01\text{ A}$; $t_p \leq 300\ \mu\text{s}$; $\delta \leq 0.02$; pulsed; $T_{\text{amb}} = 25\text{ }^\circ\text{C}$	-	100	130	mV
		$I_F = 0.1\text{ A}$; $t_p \leq 300\ \mu\text{s}$; $\delta \leq 0.02$; pulsed; $T_{\text{amb}} = 25\text{ }^\circ\text{C}$	-	170	200	mV
		$I_F = 1\text{ A}$; $t_p \leq 300\ \mu\text{s}$; $\delta \leq 0.02$; pulsed; $T_{\text{amb}} = 25\text{ }^\circ\text{C}$	-	280	350	mV
		$I_F = 2\text{ A}$; $t_p \leq 300\ \mu\text{s}$; $\delta \leq 0.02$; pulsed; $T_{\text{amb}} = 25\text{ }^\circ\text{C}$	-	350	460	mV
I_R	reverse current	$V_R = 5\text{ V}$; $T_{\text{amb}} = 25\text{ }^\circ\text{C}$	-	0.7	2	mA
		$V_R = 8\text{ V}$; $T_{\text{amb}} = 25\text{ }^\circ\text{C}$	-	1	2.5	mA
		$V_R = 10\text{ V}$; $T_{\text{amb}} = 25\text{ }^\circ\text{C}$	-	1.2	3	mA
C_d	diode capacitance	$V_R = 5\text{ V}$; $f = 1\text{ MHz}$; $T_{\text{amb}} = 25\text{ }^\circ\text{C}$	-	40	50	pF





f = 1 MHz; T_{amb} = 25 °C

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

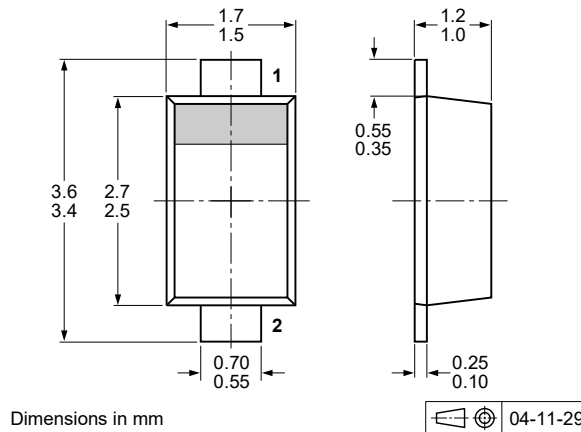


Fig. 4. Package outline SOD123F

13. Soldering

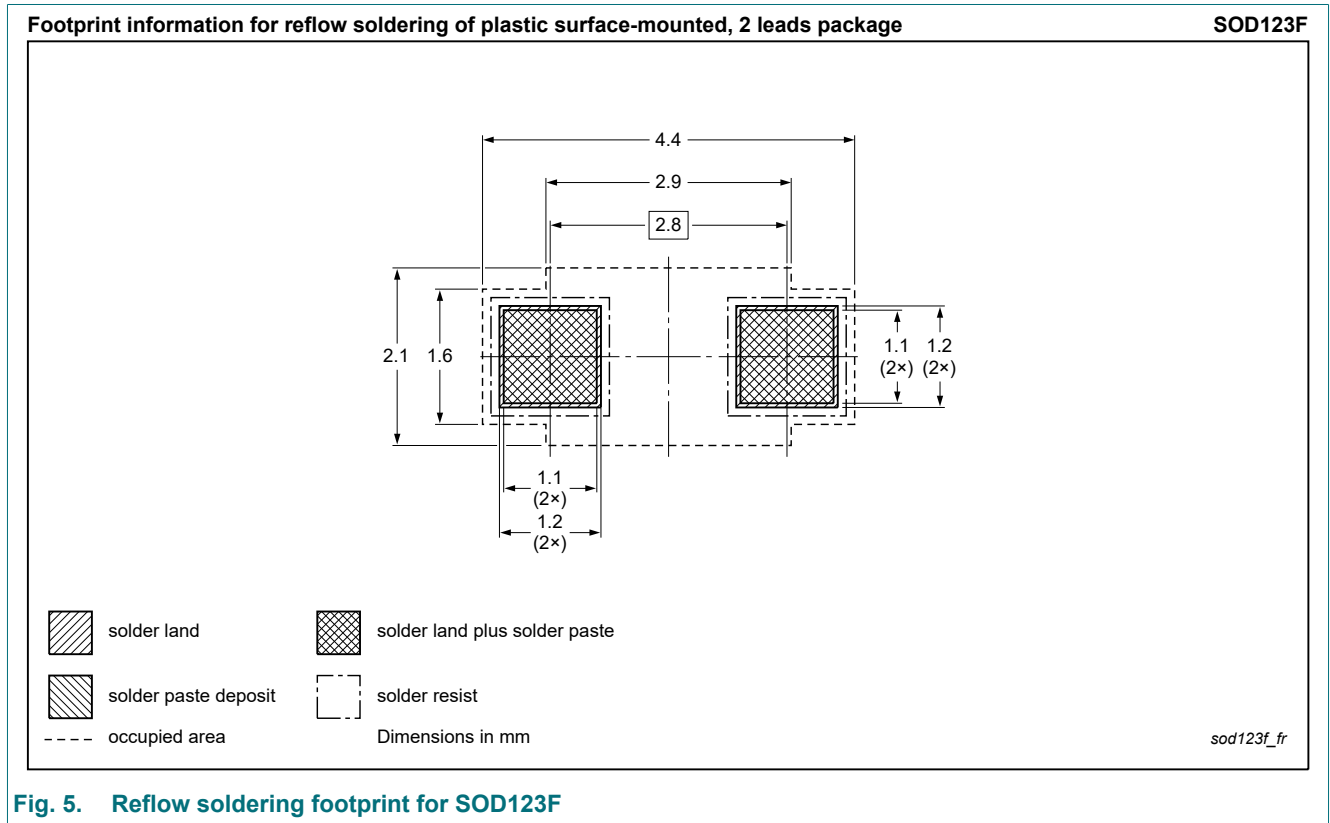


Fig. 5. Reflow soldering footprint for SOD123F

14. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
PMEG1020EH v.5	20221222	Product data sheet	-	PMEG1020EH_EJ_4
Modifications:	<ul style="list-style-type: none"> Family data sheet splitted to single type data sheets. The format of this data sheet has been redesigned to comply with the identity guidelines of Nexperia. Section "Packing information" removed. 			
PMEG1020EH_EJ_4	20100115	Product data sheet	-	PMEG1020EH_EJ_3
PMEG1020EH_EJ_3	20050414	Product data sheet	-	PMEG1020EH_2
PMEG1020EH_2	20041001	Product data sheet	-	PMEG1020EH_1
PMEG1020EH_1	20050203	Objective 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".
- [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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