



PMEG2020EH

20 V, 2 A very low VF Schottky barrier rectifier

26 April 2023

Product data sheet

1. General description

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

2. Features and benefits

- Forward current: 2 A
- Reverse voltage: 20 V
- Very low forward voltage
- Small and flat lead SMD plastic package
- 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
I_F	forward current	$T_{sp} \leq 55\text{ }^{\circ}\text{C}$	-	-	2	A
V_R	reverse voltage	$T_j = 25\text{ }^{\circ}\text{C}$	-	-	20	V
V_F	forward voltage	$I_F = 2\text{ A}$; pulsed; $t_p \leq 300\text{ }\mu\text{s}$; $\delta \leq 0.02$; $T_j = 25\text{ }^{\circ}\text{C}$	-	450	525	mV

5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	K	cathode	 SOD123F	 $\text{K} \rightarrow \text{A}$ sym001
2	A	anode		

6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
PMEG2020EH	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
PMEG2020EH	A6

8. Limiting values

Table 5. Limiting values

In accordance with the Absolute Maximum Rating System (IEC60134).

Symbol	Parameter	Conditions		Min	Max	Unit
V _R	reverse voltage	T _j = 25 °C		-	20	V
I _F	forward current	T _{sp} ≤ 55 °C		-	2	A
I _{FRM}	repetitive peak forward current	t _p ≤ 1 ms; δ ≤ 0.5		-	7	A
I _{FSM}	non-repetitive peak forward current	square-wave pulse; t _p = 8 ms; T _{j(init)} = 25 °C		-	9	A
P _{tot}	total power dissipation	T _{amb} ≤ 25 °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

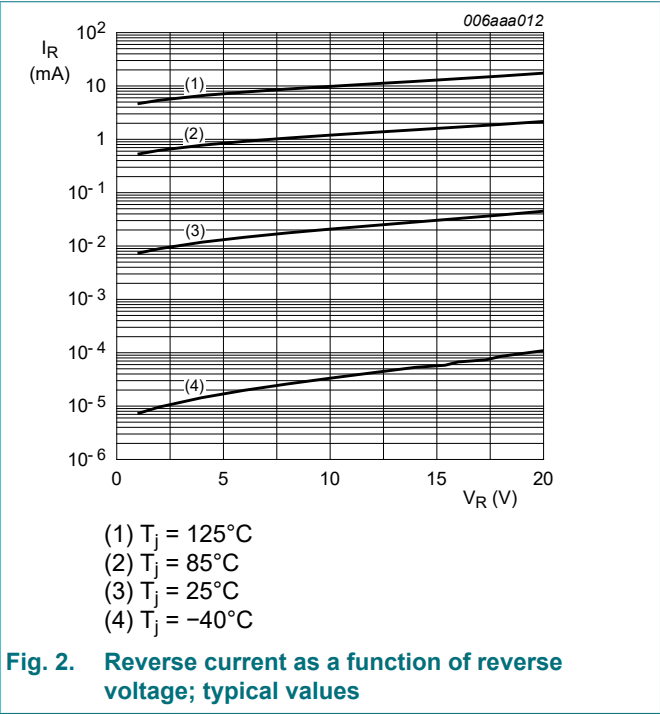
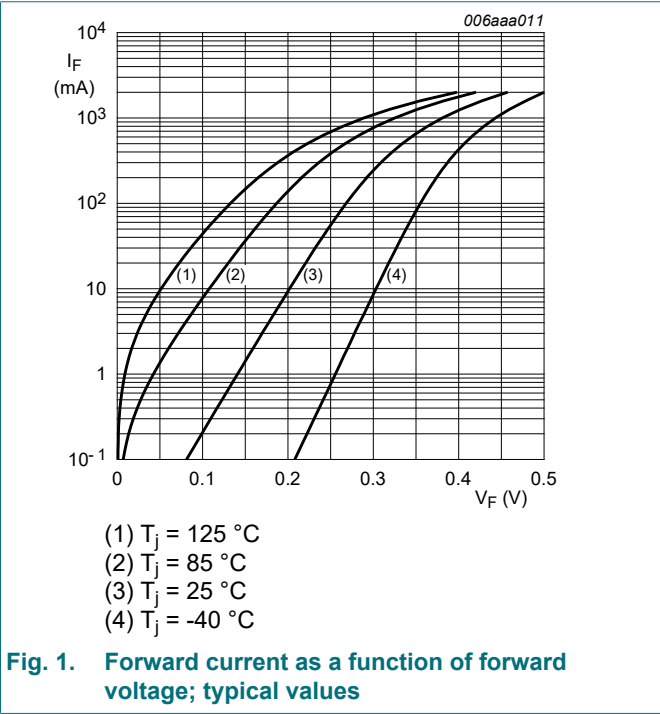
Symbol	Parameter	Conditions		Min	Typ	Max	Unit
R _{th(j-a)}	thermal resistance from junction to ambient	in free air	[1] [2]	-	-	330	K/W
			[1] [3]	-	-	150	K/W
R _{th(j-sp)}	thermal resistance from junction to solder point		[4]	-	-	60	K/W

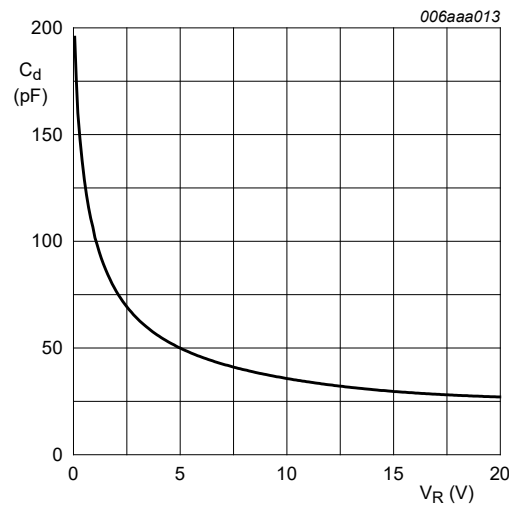
- [1] For Schottky barrier diodes thermal runaway has to be considered, as in some applications the reverse power losses P_R are a significant part of the total power losses.
- [2] Device mounted on an FR4 PCB, single-sided copper, tin-plated and standard footprint.
- [3] Device mounted on an FR4 PCB,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

10. Characteristics

Table 7. Characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V _F	forward voltage	I _F = 0.01 A; pulsed; t _p ≤ 300 μs; δ ≤ 0.02; T _j = 25 °C	-	200	220	mV
		I _F = 0.1 A; pulsed; t _p ≤ 300 μs; δ ≤ 0.02; T _j = 25 °C	-	260	290	mV
		I _F = 1 A; pulsed; t _p ≤ 300 μs; δ ≤ 0.02; T _j = 25 °C	-	370	430	mV
		I _F = 2 A; pulsed; t _p ≤ 300 μs; δ ≤ 0.02; T _j = 25 °C	-	450	525	mV
I _R	reverse current	V _R = 5 V; T _j = 25 °C	-	15	50	μA
		V _R = 10 V; T _j = 25 °C	-	20	80	μA
		V _R = 20 V; T _j = 25 °C	-	45	200	μA
C _d	diode capacitance	V _R = 5 V; f = 1 MHz; T _j = 25 °C	-	50	60	pF





$f = 1 \text{ MHz}$; $T_{\text{amb}} = 25 \text{ }^{\circ}\text{C}$

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

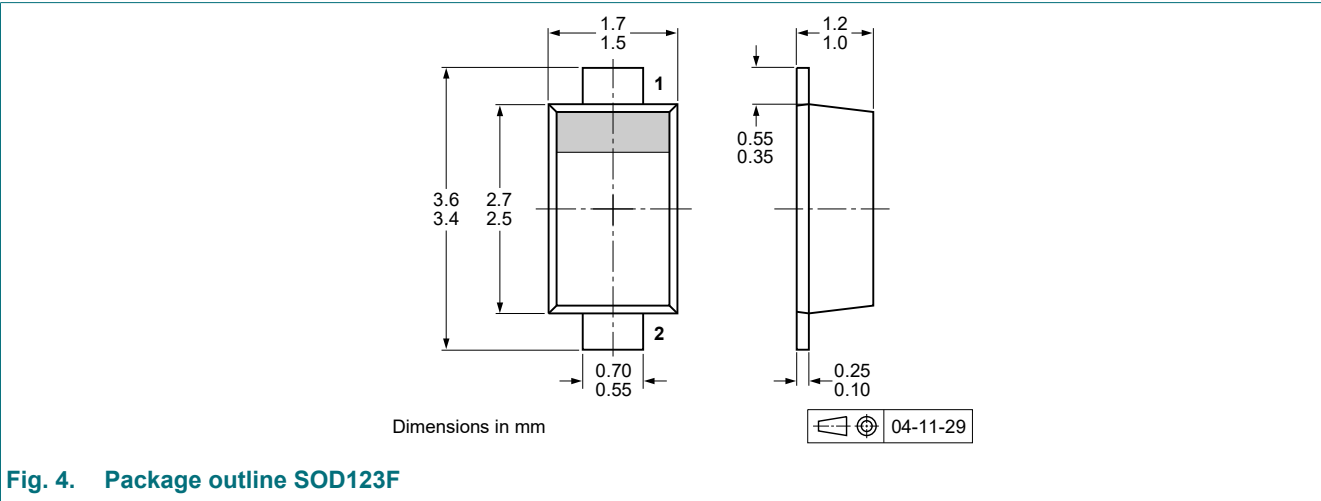


Fig. 4. Package outline SOD123F

13. Soldering

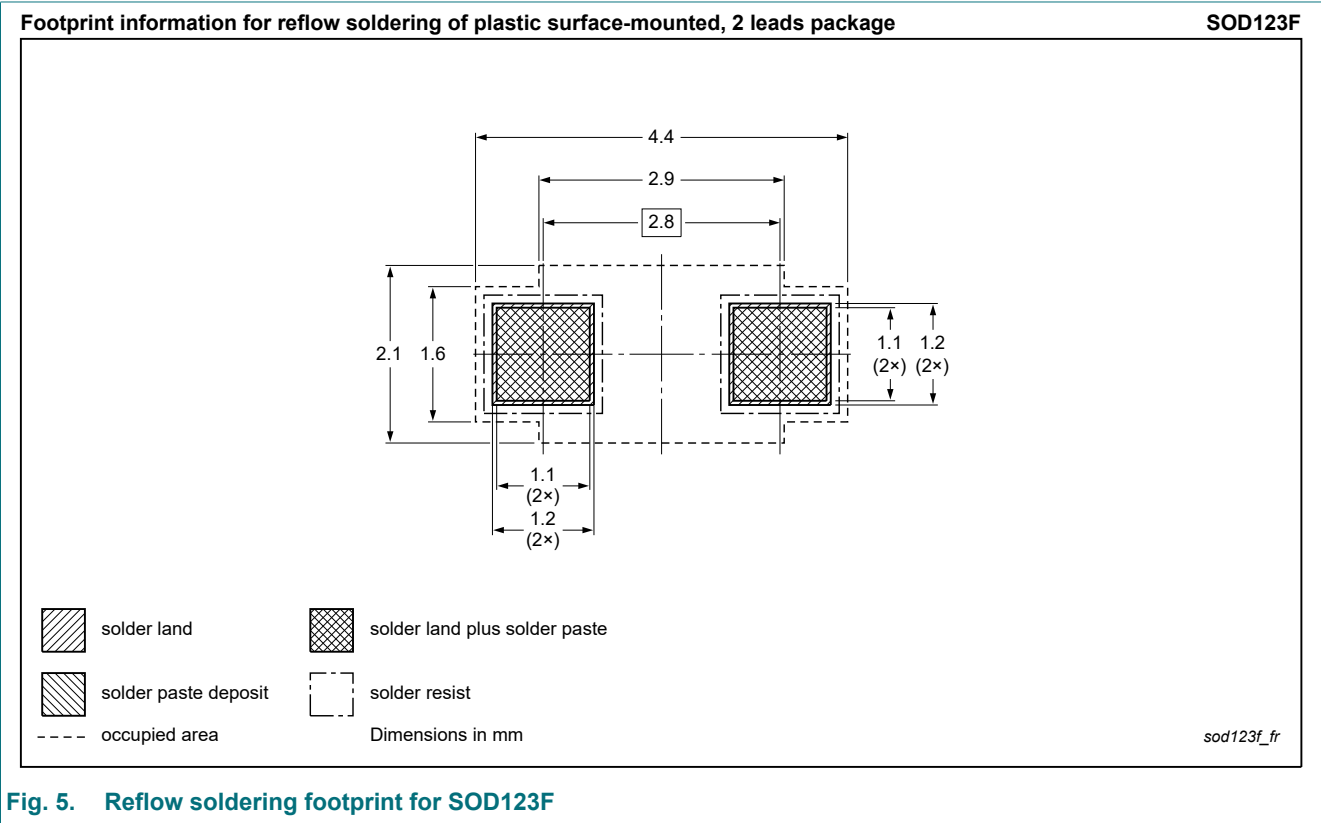


Fig. 5. Reflow soldering footprint for SOD123F

14. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
PMEG2020EH v.5	20230426	Product data sheet	-	PMEG2020EH_EJ_4
Modifications:	• Family data sheet splitted to single type data sheets.			
PMEG2020EH_EJ_4	20100115	Product data sheet	-	PMEG2020EH_EJ_3
PMEG2020EH_EJ_3	20050810	Product data sheet		PMEG2020EH_2 PMEG2020EJ_2
PMEG2020EH_2	20050523	Product data sheet	-	PMEG2020EH_1
PMEG2020EH_1	20050304	Preliminary data sheet	-	-
PMEG2020EJ_2	20050131	Product data sheet	-	PMEG2020EJ_1
PMEG2020EJ_1	20040830	Preliminary 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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