



PMEG2020EJ-Q

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 very small and flat lead SOD323F 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
- Qualified according to AEC-Q101 and recommended for use in automotive applications

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	$T_{sp} \leq 55\text{ °C}$	-	-	2	A
V_R	reverse voltage	$T_j = 25\text{ °C}$	-	-	20	V
V_F	forward voltage	$I_F = 2\text{ A}$; pulsed; $t_p \leq 300\text{ }\mu\text{s}$; $\delta \leq 0.02$; $T_j = 25\text{ °C}$	-	450	525	mV

5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	K	cathode	 SC-90 (SOD323F)	 K A sym001
2	A	anode		

6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
PMEG2020EJ-Q	SC-90	plastic, surface-mounted package; 2 leads; 1.7 mm x 1.25 mm x 0.7 mm body	SOD323F

7. Marking

Table 4. Marking codes

Type number	Marking code
PMEG2020EJ-Q	CA

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	$T_j = 25\text{ °C}$		-	20	V
I_F	forward current	$T_{sp} \leq 55\text{ °C}$		-	2	A
I_{FRM}	repetitive peak forward current	$t_p \leq 1\text{ ms}$; $\delta \leq 0.5$		-	7	A
I_{FSM}	non-repetitive peak forward current	square-wave pulse; $t_p = 8\text{ ms}$; $T_{j(\text{init})} = 25\text{ °C}$		-	9	A
P_{tot}	total power dissipation	$T_{\text{amb}} \leq 25\text{ °C}$	[1]	-	360	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 cm^2 .

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	in free air	[1] [2]	-	-	350	K/W
			[1] [3]	-	-	150	K/W
$R_{\text{th}(j-sp)}$	thermal resistance from junction to solder point		[4]	-	-	55	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.

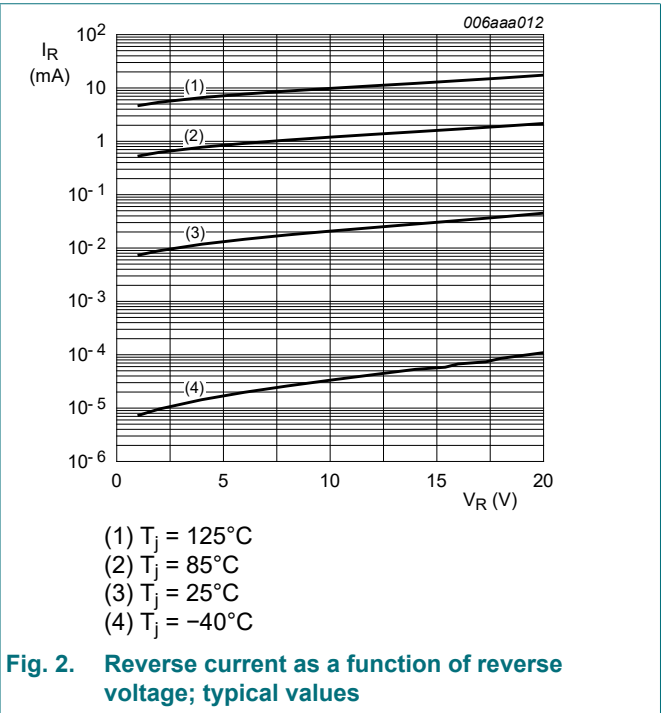
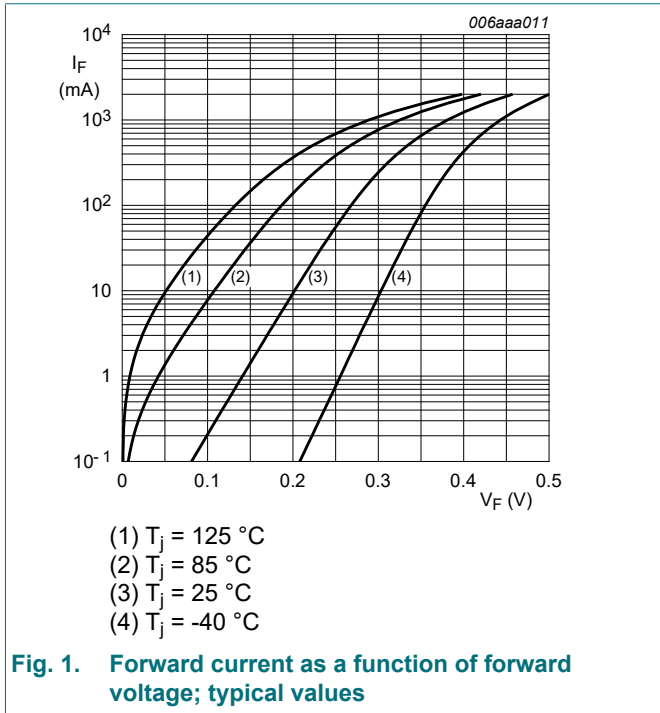
[3] Device mounted on an FR4 PCB, single-sided copper, tin-plated, mounting pad for cathode 1 cm^2 .

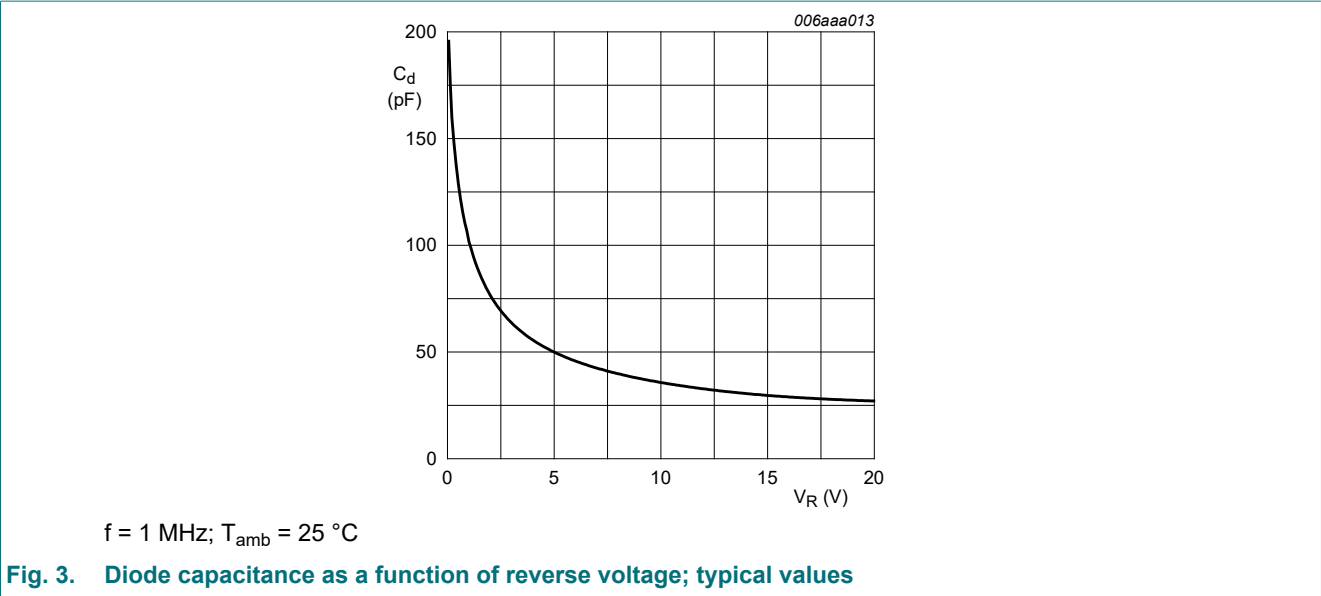
[4] Soldering point of cathode tab.

10. Characteristics

Table 7. Characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V _F	forward voltage	I _F = 0.01 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





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

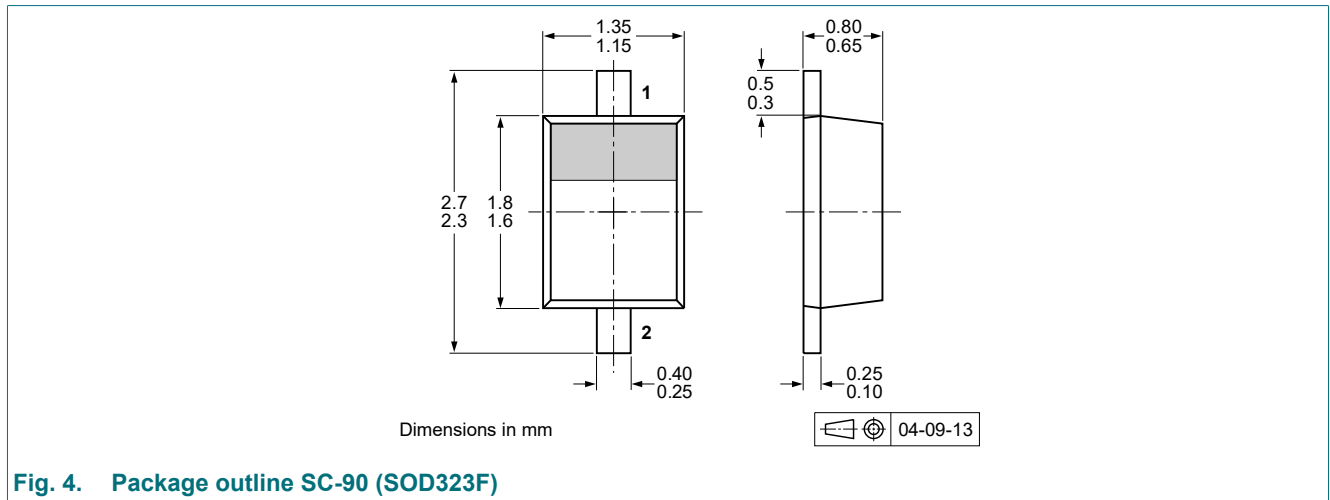


Fig. 4. Package outline SC-90 (SOD323F)

13. Soldering

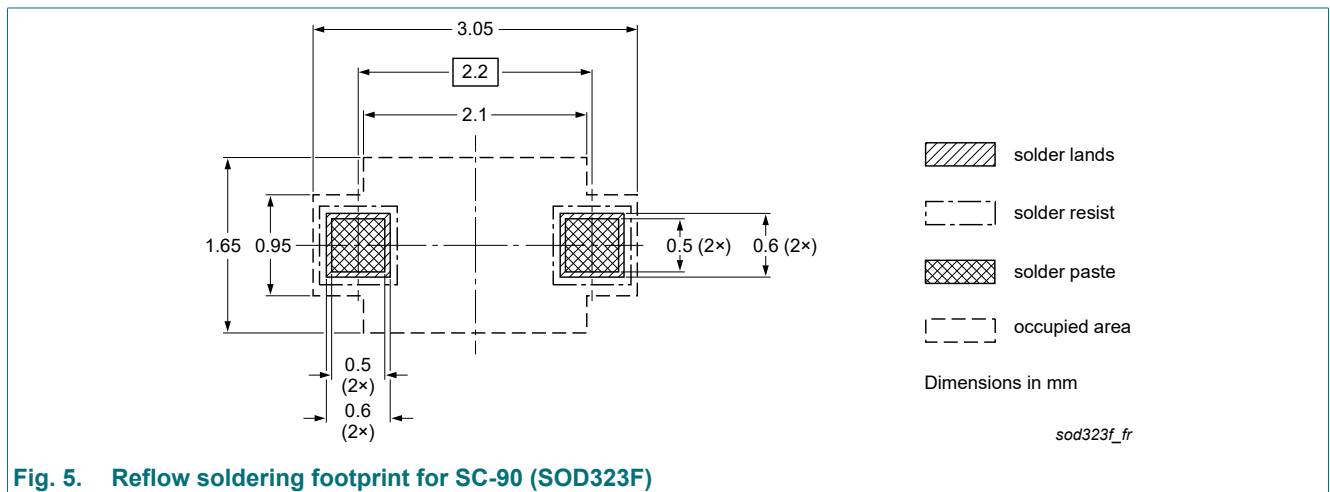


Fig. 5. Reflow soldering footprint for SC-90 (SOD323F)

14. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
PMEG2020EJ-Q v.1	20230426	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.

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- [2] The term 'short data sheet' is explained in section "Definitions".
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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. Test information.....	5
12. Package outline.....	5
13. Soldering.....	5
14. Revision history.....	6
15. Legal information.....	7

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