



# PMEG1030EJ

10 V, 3 A ultra low VF Schottky barrier rectifier

8 October 2024

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: 3 A
- Reverse voltage: 10 V
- Ultra low forward voltage
- Small and flat lead SMD package

## 3. Applications

- Low voltage rectification
- High efficiency DC-to-DC conversion
- Switched-mode power supply
- Reverse 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	$T_{sp} \leq 55\text{ °C}$	-	-	3	A
$V_R$	reverse voltage		-	-	10	V
$V_F$	forward voltage	$I_F = 3\text{ A}$ ; pulsed; $t_p \leq 300\text{ }\mu\text{s}$ ; $\delta \leq 0.02$ ; $T_{amb} = 25\text{ °C}$	-	390	530	mV

## 5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	K	cathode[1]	 SC-90 (SOD323F)	 aaa-003679
2	A	anode		

[1] The marking bar indicates the cathode.

6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
PMEG1030EJ	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
PMEG1030EJ	E 7

8. Limiting values

Table 5. Limiting values

In accordance with the Absolute Maximum Rating System (IEC 60134).

Symbol	Parameter	Conditions		Min	Max	Unit
V <sub>R</sub>	reverse voltage			-	10	V
I <sub>F</sub>	forward current	T <sub>sp</sub> ≤ 55 °C		-	3	A
I <sub>FRM</sub>	repetitive peak forward current	t <sub>p</sub> ≤ 1 ms; δ ≤ 0.25		-	5.5	A
I <sub>FSM</sub>	non-repetitive peak forward current	t <sub>p</sub> = 8 ms; square wave; T <sub>j(init)</sub> = 25 °C		-	9	A
P <sub>tot</sub>	total power dissipation	T <sub>amb</sub> ≤ 25 °C	[1]	-	360	mW
			[2]	-	830	mW
T <sub>j</sub>	junction temperature			-	150	°C
T <sub>amb</sub>	ambient temperature			-65	150	°C
T <sub>stg</sub>	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<sup>2</sup>.

9. Thermal characteristics

Table 6. Thermal characteristics

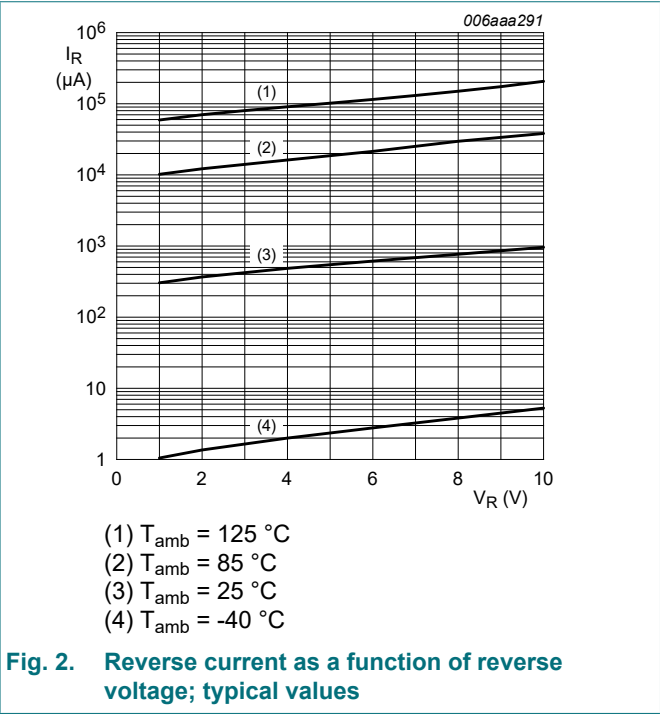
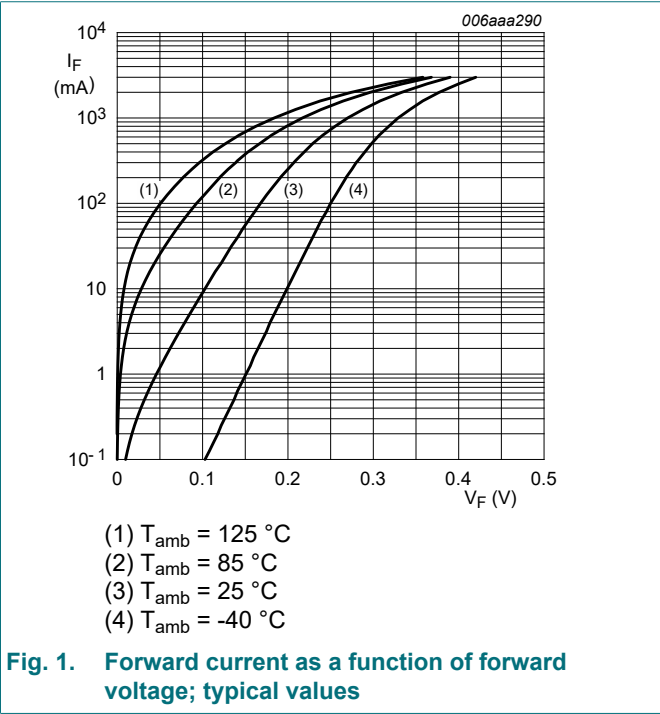
Symbol	Parameter	Conditions		Min	Typ	Max	Unit
R <sub>th(j-a)</sub>	thermal resistance from junction to ambient	in free air	[1] [2]	-	-	350	K/W
			[1] [3]	-	-	150	K/W
R <sub>th(j-sp)</sub>	thermal resistance from junction to solder point			-	-	55	K/W

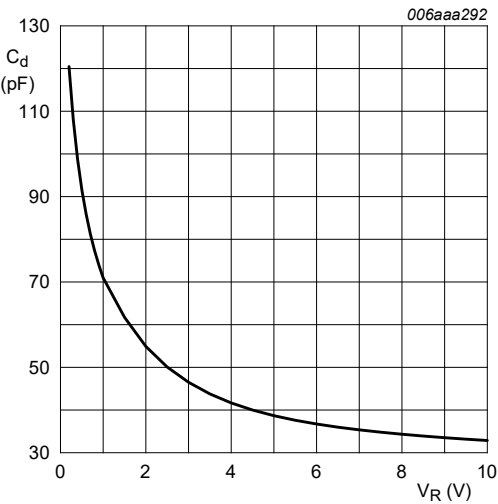
- [1] For Schottky barrier diodes thermal runaway has to be considered, as in some applications the reverse power losses P<sub>R</sub> are a significant part of the total power losses.
- [2] Device mounted on an FR4 PCB, single-sided copper, tin-plated and standard footprint.
- [3] Device mounted on an FR4 PCB, single-sided copper, tin-plated, mounting pad for cathode 1 cm<sup>2</sup>.

10. Characteristics

Table 7. Characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
V <sub>F</sub>	forward voltage	I <sub>F</sub> = 10 mA; pulsed; t <sub>p</sub> ≤ 300 μs; δ ≤ 0.02; T <sub>amb</sub> = 25 °C		-	100	130	mV
		I <sub>F</sub> = 100 mA; pulsed; t <sub>p</sub> ≤ 300 μs; δ ≤ 0.02; T <sub>amb</sub> = 25 °C		-	170	200	mV
		I <sub>F</sub> = 1 A; pulsed; t <sub>p</sub> ≤ 300 μs; δ ≤ 0.02; T <sub>amb</sub> = 25 °C		-	280	350	mV
		I <sub>F</sub> = 3 A; pulsed; t <sub>p</sub> ≤ 300 μs; δ ≤ 0.02; T <sub>amb</sub> = 25 °C		-	390	530	mV
I <sub>R</sub>	reverse current	V <sub>R</sub> = 5 V; T <sub>amb</sub> = 25 °C		-	0.55	2	mA
		V <sub>R</sub> = 8 V; T <sub>amb</sub> = 25 °C		-	0.8	2.5	mA
		V <sub>R</sub> = 10 V; T <sub>amb</sub> = 25 °C		-	1	3	mA
C <sub>d</sub>	diode capacitance	V <sub>R</sub> = 1 V; f = 1 MHz; T <sub>amb</sub> = 25 °C		-	70	85	pF





f = 1 MHz; T<sub>amb</sub> = 25 °C

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

11. Test information

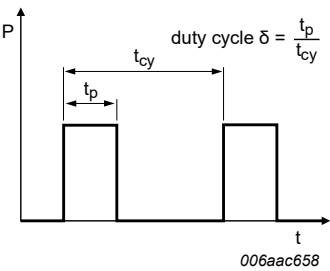


Fig. 4. Duty cycle definition

The current ratings for the typical waveforms are calculated according to the equations:  
 $I_{F(AV)} = I_M \times \delta$  with  $I_M$  defined as peak current,  $I_{RMS} = I_{F(AV)}$  at DC, and  $I_{RMS} = I_M \times \sqrt{\delta}$  with  $I_{RMS}$  defined as RMS current.

12. Package outline

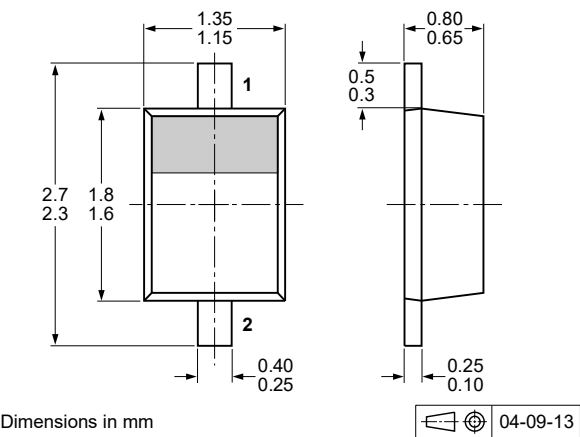


Fig. 5. Package outline SC-90 (SOD323F)

13. Soldering

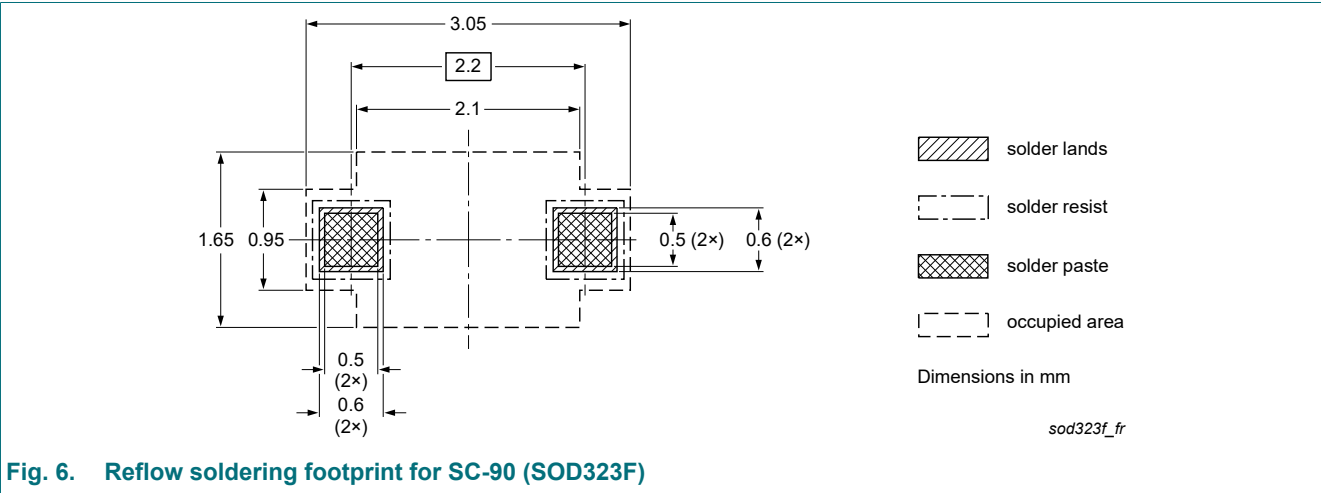


Fig. 6. Reflow soldering footprint for SC-90 (SOD323F)

14. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
PMEG1030EJ v. 6	20241008	Product data sheet	-	PMEG1030EJ v. 5
Modifications:	<ul style="list-style-type: none"><li>Product(s) changed to non-automotive qualification. Please refer to nexperia.com for automotive (-Q) product alternative(s).</li></ul>			
PMEG1030EJ v. 5	20230421	Product data sheet	-	PMEG1030EH_EJ_4
PMEG1030EH_EJ_4	20100115	Product data sheet	-	PMEG1030EH_EJ_3
PMEG1030EH_EJ_3	20050602	Product data sheet	-	PMEG1030EH_EJ_2
PMEG1030EH_EJ_2	20050405	Product data sheet	-	PMEG1030EJ_1
PMEG1030EJ_1	20050124	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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