

PMEG3010CEJ-Q

30 V, 1 A very low VF Schottky barrier rectifier

15 July 2022 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 (SC-90) Surface-Mounted Device (SMD) plastic package.

2. Features and benefits

- Forward current: : $I_F \leq 1$ A
- Reverse voltage: $V_R \leq 30$ 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
- 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	$T_{sp} \leq 55$ °C		-	-	1	A
V_R	reverse voltage			-	-	30	V
V_F	forward voltage	$I_F = 1$ A; $t_p \leq 300$ µs; $\delta \leq 0.02$; pulsed; $T_{amb} = 25$ °C		-	450	520	mV

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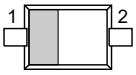
5. Pinning information

Table 2. Pinning information

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

[1] The marking bar indicates the cathode.

6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
PMEG3010CEJ-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
PMEG3010CEJ-Q	EN

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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			-	30	V
I_F	forward current	$T_{sp} \leq 55$ °C		-	1	A
I_{FRM}	repetitive peak forward current	$t_p \leq 1$ ms; $\delta \leq 0.25$		-	7	A
I_{FSM}	non-repetitive peak forward current	$t_p = 8$ ms; square wave		-	10	A
P_{tot}	total power dissipation	$T_{amb} \leq 25$ °C	[1]	-	350	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
$R_{th(j-a)}$	thermal resistance from junction to ambient	in free air	[1] [2]	-	-	350	K/W
			[1] [3]	-	-	150	K/W
$R_{th(j-sp)}$	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.

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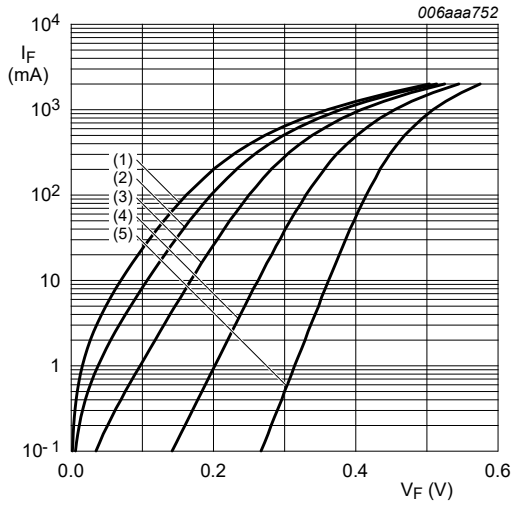
10. Characteristics

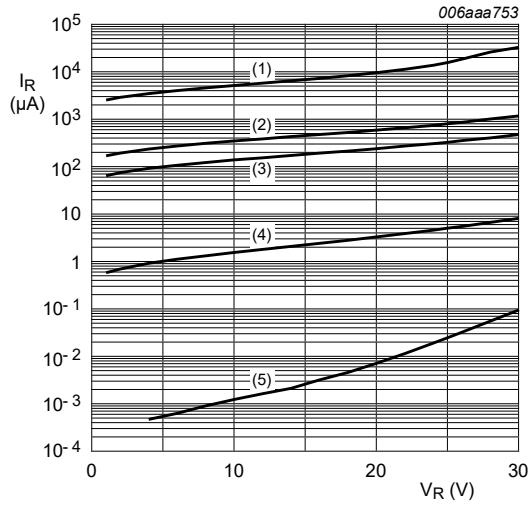
Table 7. Characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
V_F	forward voltage	I_F = 1 mA; $t_p \leq$ 300 µs; $\delta \leq$ 0.02; pulsed; T_{amb} = 25 °C		-	200	240	mV
		I_F = 10 mA; $t_p \leq$ 300 µs; $\delta \leq$ 0.02; pulsed; T_{amb} = 25 °C		-	260	310	mV
		I_F = 100 mA; $t_p \leq$ 300 µs; $\delta \leq$ 0.02; pulsed; T_{amb} = 25 °C		-	330	390	mV
		I_F = 500 mA; $t_p \leq$ 300 µs; $\delta \leq$ 0.02; pulsed; T_{amb} = 25 °C		-	400	440	mV
		I_F = 700 mA; $t_p \leq$ 300 µs; $\delta \leq$ 0.02; pulsed; T_{amb} = 25 °C		-	420	450	mV
		I_F = 1 A; $t_p \leq$ 300 µs; $\delta \leq$ 0.02; pulsed; T_{amb} = 25 °C		-	450	520	mV
I_R	reverse current	V_R = 5 V; T_{amb} = 25 °C		-	1.2	-	µA
		V_R = 10 V; T_{amb} = 25 °C		-	1.8	-	µA
		V_R = 30 V; T_{amb} = 25 °C		-	10	50	µA
C_d	diode capacitance	V_R = 1 V; f = 1 MHz; T_{amb} = 25 °C		-	90	100	pF



(1) T_{amb} = 150 °C
(2) T_{amb} = 125 °C
(3) T_{amb} = 85 °C
(4) T_{amb} = 25 °C
(5) T_{amb} = -40 °C

Fig. 1. Forward current as a function of forward voltage; typical values



(1) T_{amb} = 150 °C
(2) T_{amb} = 125 °C
(3) T_{amb} = 85 °C
(4) T_{amb} = 25 °C
(5) T_{amb} = −40 °C

Fig. 2. Reverse current as a function of reverse voltage; typical values

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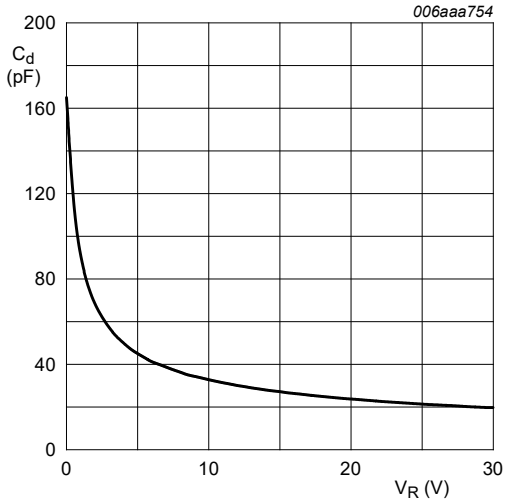

f = 1 MHz; T_{amb} = 25 °C

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

11. Test information

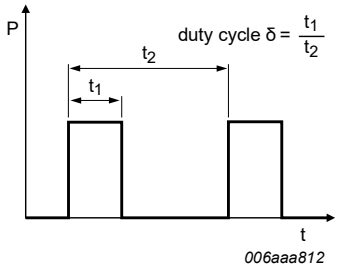

Fig. 4. Duty cycle definition

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.

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12. Package outline

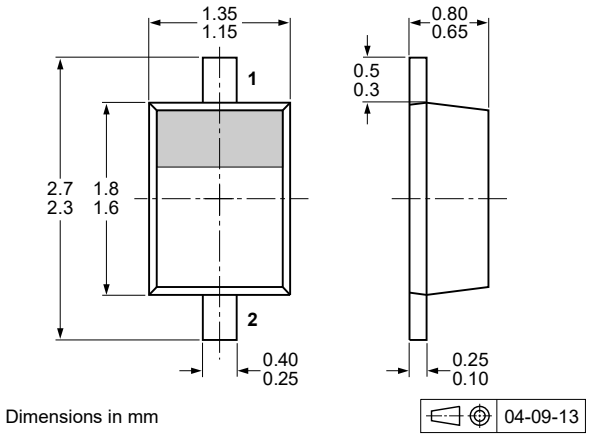

Fig. 5. Package outline SC-90 (SOD323F)

13. Soldering

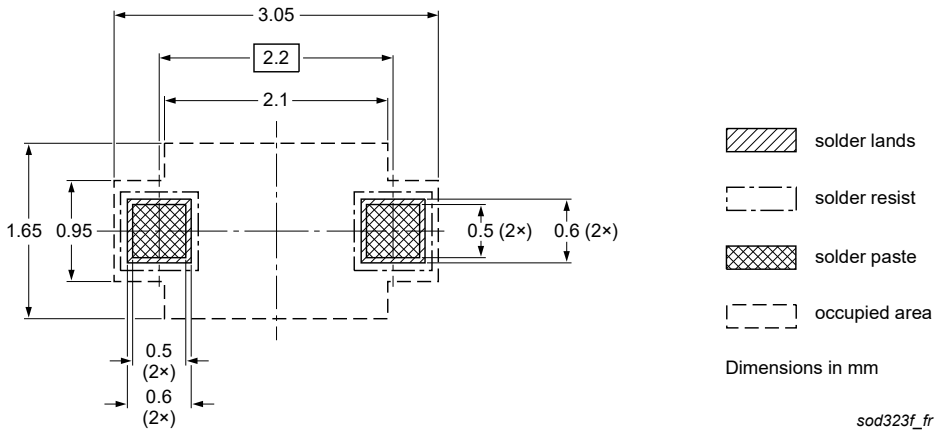

Fig. 6. Reflow soldering footprint for SC-90 (SOD323F)

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14. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
PMEG3010CEJ-Q v.1	20220715	Product data sheet	-	-

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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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