PMEG6010CEH

60 V, 1 A very low VF Schottky barrier rectifier

5 January 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: $I_F \leq 1$ A
- Reverse voltage: $V_R \leq 60$ 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
- 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_F	forward voltage	I_F = 1 A; $t_p \leq$ 300 µs; $\delta \leq$ 0.02; pulsed; T_j = 25 °C		-	570	660	mV
V_R	reverse voltage			-	-	60	V
I_R	reverse current	V_R = 60 V; T_j = 25 °C		-	11	50	µA

5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	K	cathode[1]	 SOD123F	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
PMEG6010CEH	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
PMEG6010CEH	CA

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			-	60	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; $T_{j(init)} = 25$ °C		-	9	A
P_{tot}	total power dissipation	$T_{amb} \leq 25$ °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 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

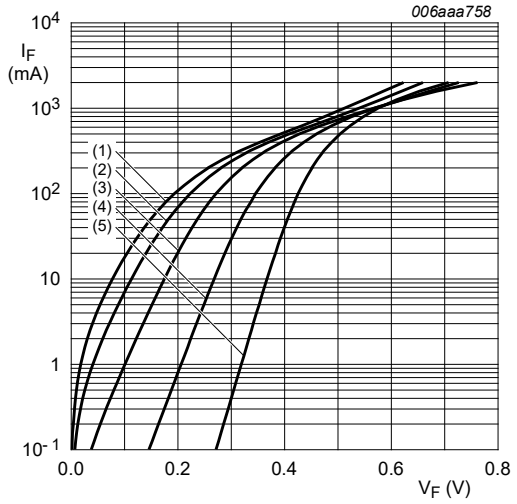
Symbol	Parameter	Conditions		Min	Typ	Max	Unit
$R_{th(j-a)}$	thermal resistance from junction to ambient	in free air	[1] [2]	-	-	330	K/W
			[1] [3]	-	-	150	K/W
$R_{th(j-sp)}$	thermal resistance from junction to solder point		[4]	-	-	60	K/W

[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 cm^2.
[4] Soldering point of cathode tab.

10. Characteristics

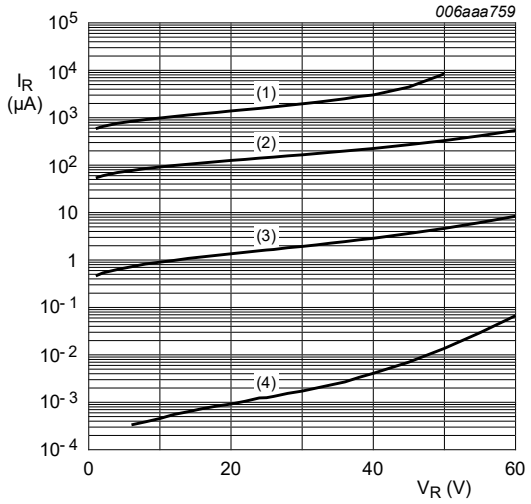
Table 7. Characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
V_F	forward voltage	I_F = 1 mA; $t_p \leq$ 300 µs; $\delta \leq$ 0.02; pulsed; T_j = 25 °C		-	210	250	mV
		I_F = 10 mA; $t_p \leq$ 300 µs; $\delta \leq$ 0.02; pulsed; T_j = 25 °C		-	270	310	mV
		I_F = 100 mA; $t_p \leq$ 300 µs; $\delta \leq$ 0.02; pulsed; T_j = 25 °C		-	350	400	mV
		I_F = 500 mA; $t_p \leq$ 300 µs; $\delta \leq$ 0.02; pulsed		-	460	530	mV
		I_F = 700 mA; $t_p \leq$ 300 µs; $\delta \leq$ 0.02; pulsed		-	510	580	mV
		I_F = 1 A; $t_p \leq$ 300 µs; $\delta \leq$ 0.02; pulsed; T_j = 25 °C		-	570	660	mV
I_R	reverse current	V_R = 5 V; T_j = 25 °C		-	0.8	-	µA
		V_R = 10 V; T_j = 25 °C		-	1.1	-	µA
		V_R = 60 V; T_j = 25 °C		-	11	50	µA
C_d	diode capacitance	V_R = 1 V; f = 1 MHz; T_j = 25 °C		-	60	68	pF



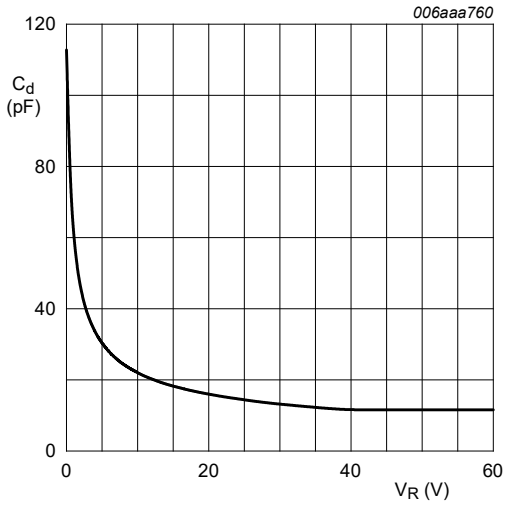
(1) T_{amb} = 150 °C
(2) T_{amb} = 125 °C
(3) T_{amb} = 85 °C
(4) T_{amb} = 25 °C
(5) T_{amb} = -40 °C

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



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

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



f = 1 MHz; T_{amb} = 25 °C

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

11. Test information

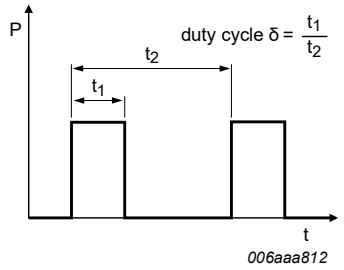


Fig. 4. Duty cycle definition

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.

12. Package outline

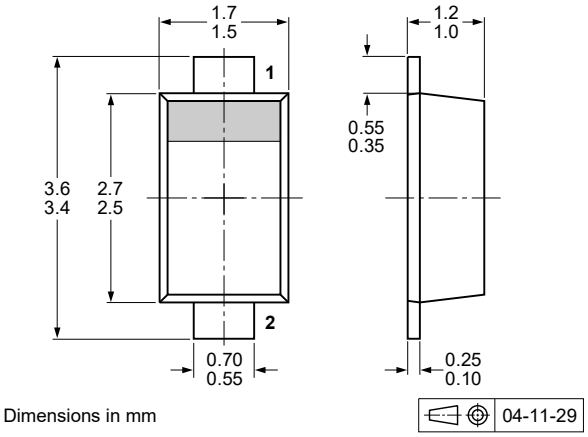


Fig. 5. Package outline SOD123F

13. Soldering

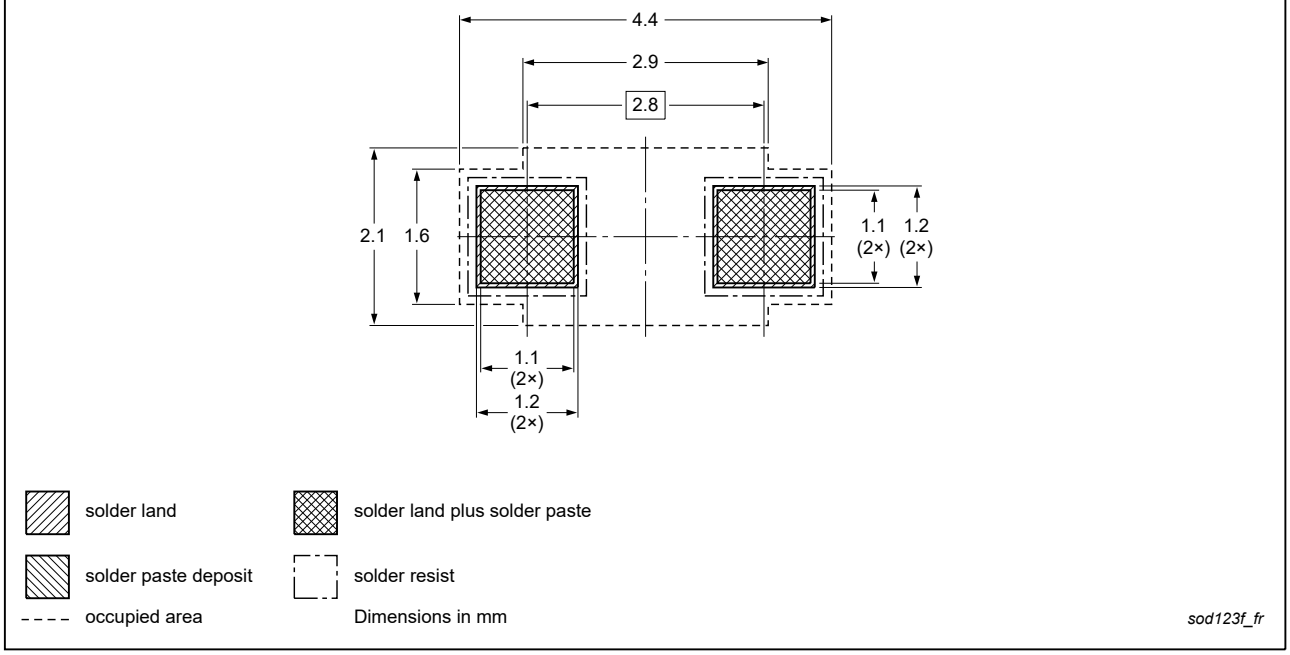


Fig. 6. Reflow soldering footprint for SOD123F

14. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
PMEG6010CEH v.3	20230105	Product data sheet	-	PMEG6010CEH_PMEG6010CEJ_2
Modifications:	• Family data sheet splitted to single type data sheets. • Packing information removed.			
PMEG6010CEH_PMEG6010CEJ_2	20070327	Product data sheet	-	PMEG6010CEJ_1
PMEG6010CEJ_1	20060414	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.

[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".
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