



# PMEG6010CEH-Q

60 V, 1 A very low VF Schottky barrier rectifier

21 March 2022

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
- 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		-	-	60	V
$V_F$	forward voltage	$I_F = 1$ A; $t_p \leq 300$ $\mu$ s; $\delta \leq 0.02$ ; pulsed; $T_j = 25$ °C	-	570	660	mV
$I_R$	reverse current	$V_R = 60$ V; $T_j = 25$ °C	-	11	50	$\mu$ A

## 5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	K	cathode[1]	 SOD123F	 K $\rightarrow$ A 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-Q	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-Q	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	$T_{sp} \leq 55\text{ °C}$		-	1	A
$I_{FRM}$	repetitive peak forward current	$t_p \leq 1\text{ ms}$ ; $\delta \leq 0.25$		-	7	A
$I_{FSM}$	non-repetitive peak forward current	$t_p = 8\text{ ms}$ ; square wave; $T_{j(\text{init})} = 25\text{ °C}$		-	9	A
$P_{tot}$	total power dissipation	$T_{amb} \leq 25\text{ °C}$	[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<sup>2</sup>.

## 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<sup>2</sup>.  
 [4] Soldering point of cathode tab.

## 10. Characteristics

Table 7. Characteristics

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

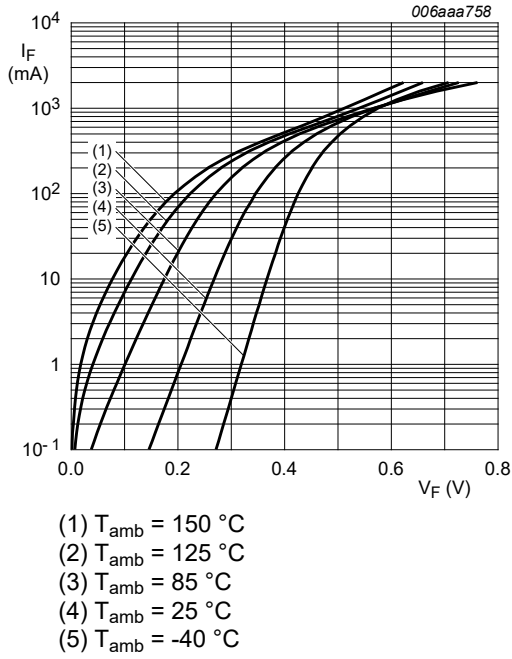


Fig. 1. Forward current as a function of forward voltage; typical values

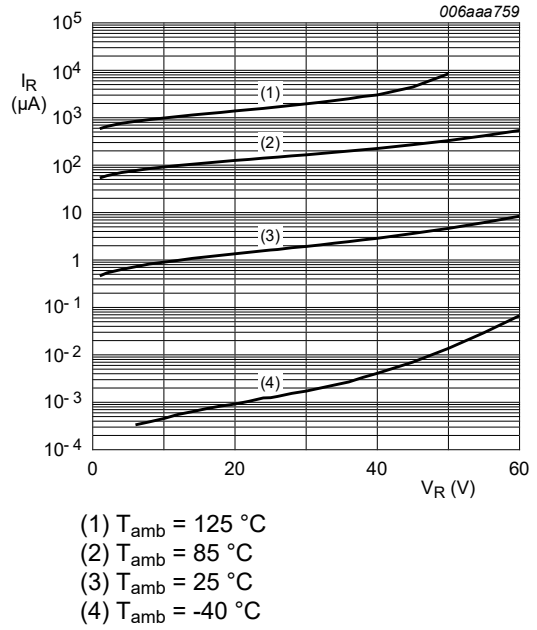
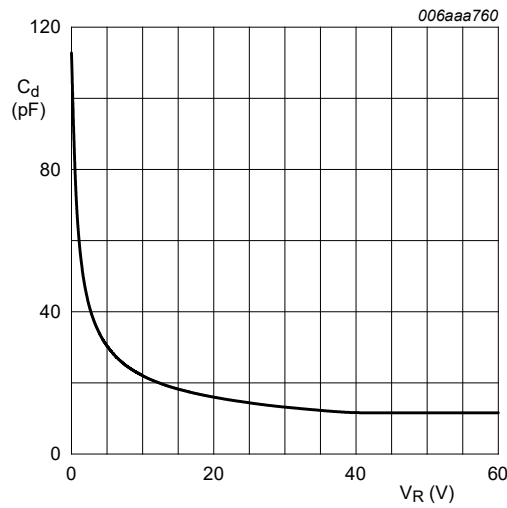


Fig. 2. Reverse current as a function of reverse voltage; typical values



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

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

## 11. Test information

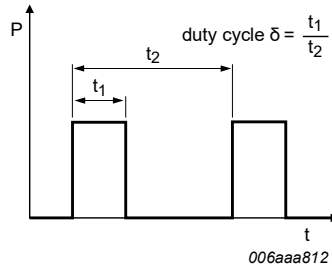


Fig. 4. Duty cycle definition

### 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

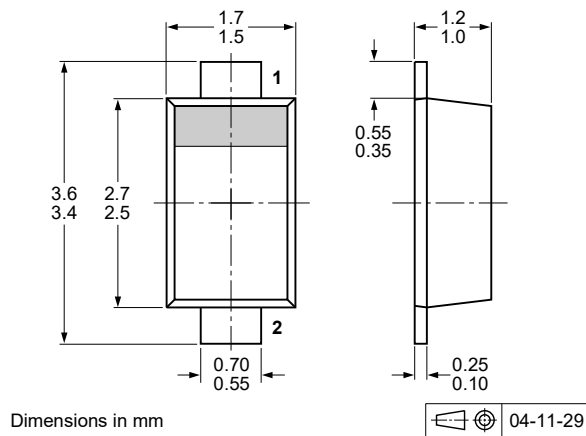


Fig. 5. Package outline SOD123F

### 13. Soldering

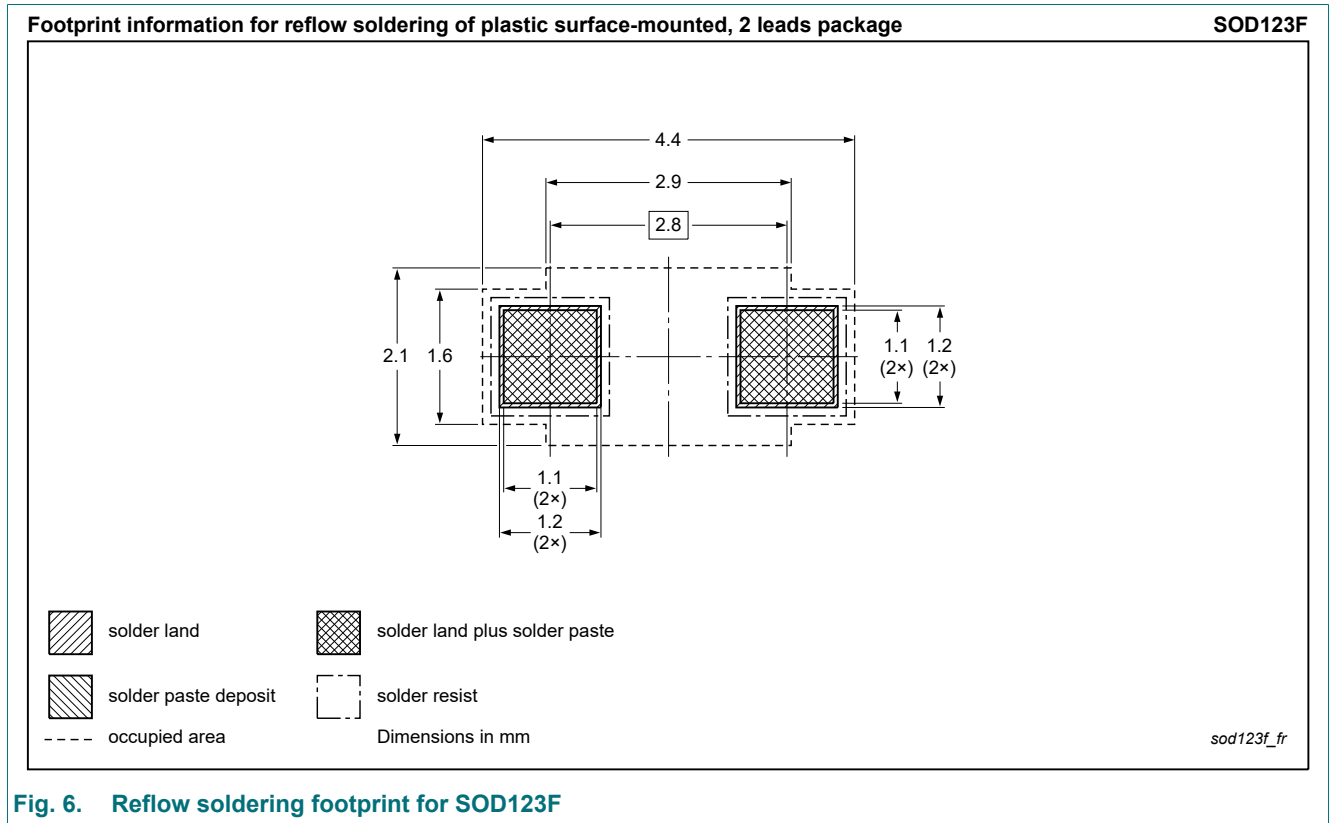


Fig. 6. Reflow soldering footprint for SOD123F

## 14. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
PMEG6010CEH-Q v.1	20220321	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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