



# PMEG6030CEP-Q

60 V, 3 A low VF Schottky barrier rectifier

10 March 2025

Product data sheet

## 1. General description

Planar Schottky barrier rectifier with an integrated guard ring for stress protection, encapsulated in a SOD128 small and flat lead Surface-Mounted Device (SMD) plastic package.

## 2. Features and benefits

- Low forward voltage
- High power capability due to clip-bond technology
- Small and flat lead SMD plastic package
- Suitable for both reflow and wave soldering
- 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 (SMPS)
- Reverse polarity protection
- Low power consumption applications

## 4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$I_{F(AV)}$	average forward current	square-wave pulse; $\delta = 0.5$ ; $f = 20$ kHz; $T_{sp} \leq 160$ °C	-	-	3	A
$V_R$	reverse voltage	$T_j = 25$ °C	-	-	60	V
$V_F$	forward voltage	$I_F = 3$ A; pulsed; $T_j = 25$ °C	[1]	520	600	mV
$I_R$	reverse current	$V_R = 60$ V; pulsed; $T_j = 25$ °C	[1]	60	150	$\mu$ A

[1] Very short pulse, in order to maintain a stable junction temperature.

## 5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	K	cathode[1]	 CFP5 (SOD128)	 K  A sym001
2	A	anode		

[1] The marking bar indicates the cathode.

## 6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
<a href="#">PMEG6030CEP-Q</a>	CFP5	plastic, surface mounted package; 2 terminals; 4 mm pitch; 3.8 mm x 2.6 mm x 1 mm body	<a href="#">SOD128</a>

## 7. Marking

Table 4. Marking codes

Type number	Marking code
PMEG6030CEP-Q	GG

## 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	$T_j = 25\text{ °C}$		-	60	V
$I_{F(AV)}$	average forward current	square-wave pulse; $\delta = 0.5$ ; $f = 20\text{ kHz}$ ; $T_{sp} \leq 160\text{ °C}$		-	3	A
$I_{FSM}$	non-repetitive peak forward current	$t_p = 8.3\text{ ms}$ ; half-sine wave; $T_{j(init)} = 25\text{ °C}$		-	50	A
$P_{tot}$	total power dissipation	$T_{amb} \leq 25\text{ °C}$	[1]	-	750	mW
			[2]	-	1.25	W
$T_j$	junction temperature			-	175	°C
$T_{amb}$	ambient temperature			-55	175	°C
$T_{stg}$	storage temperature			-65	175	°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]	-	-	200	K/W
			[1] [3]	-	-	120	K/W
$R_{th(j-sp)}$	thermal resistance from junction to solder point		[4]	-	-	12	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.

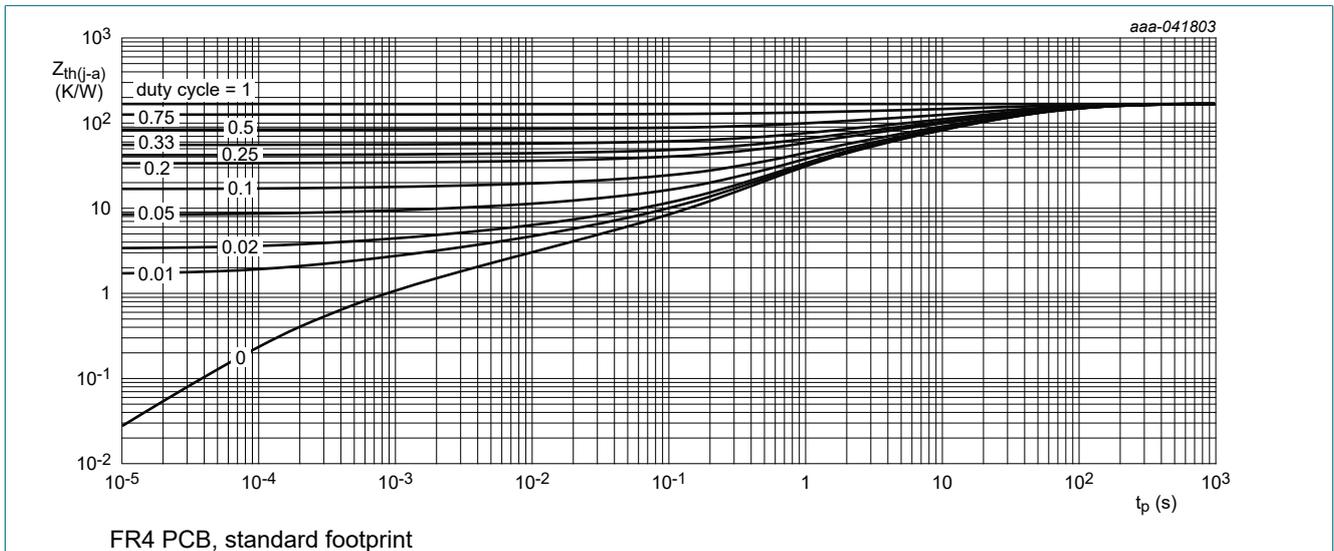


Fig. 1. Transient thermal impedance from junction to ambient as a function of pulse duration; typical values

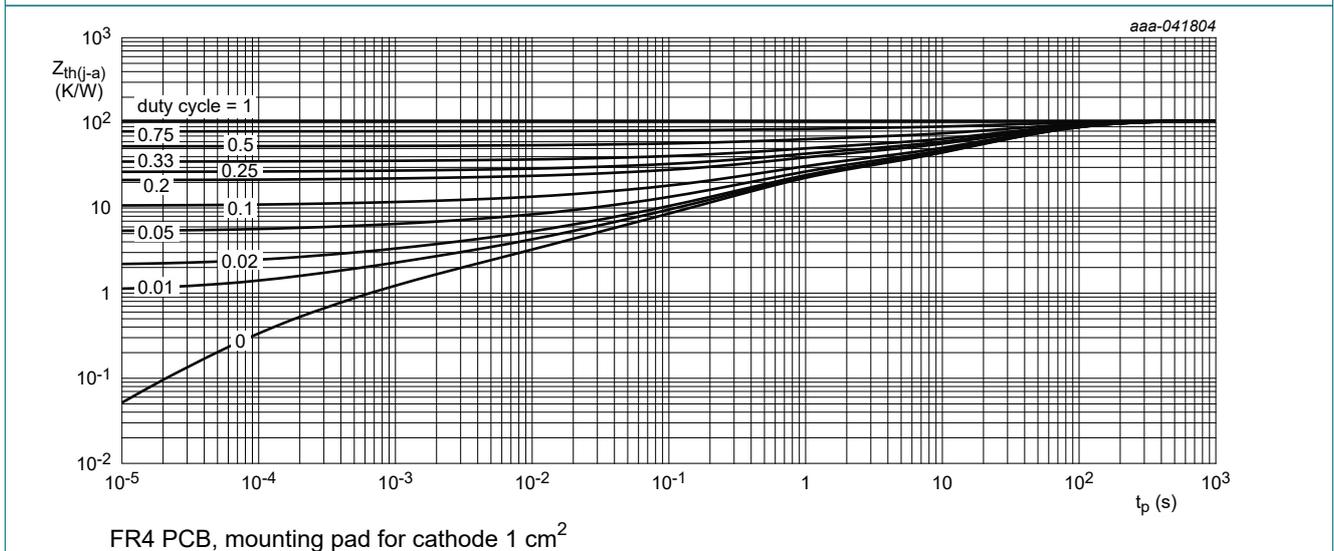


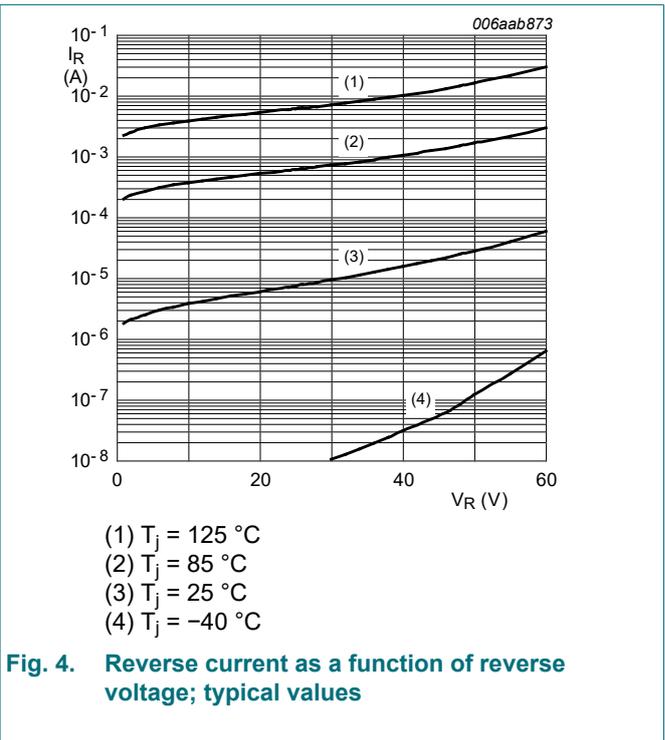
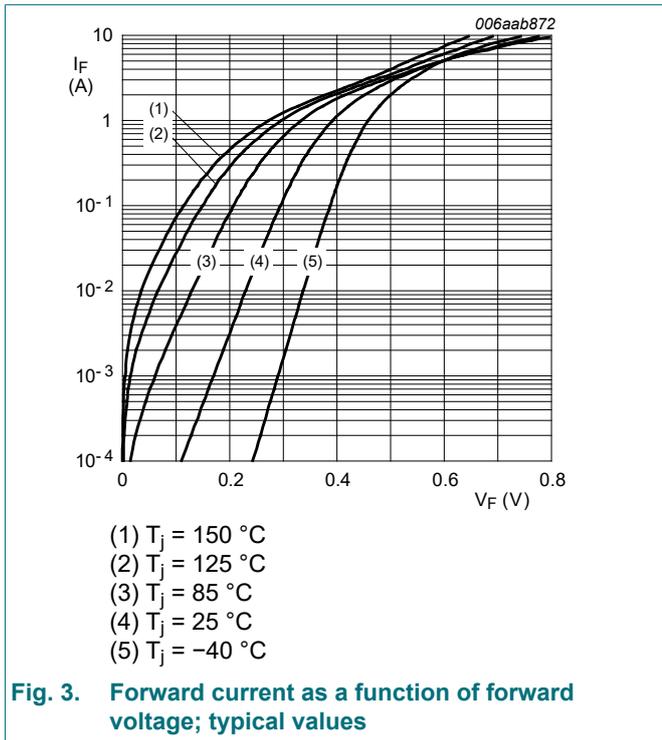
Fig. 2. Transient thermal impedance from junction to ambient as a function of pulse duration; typical values

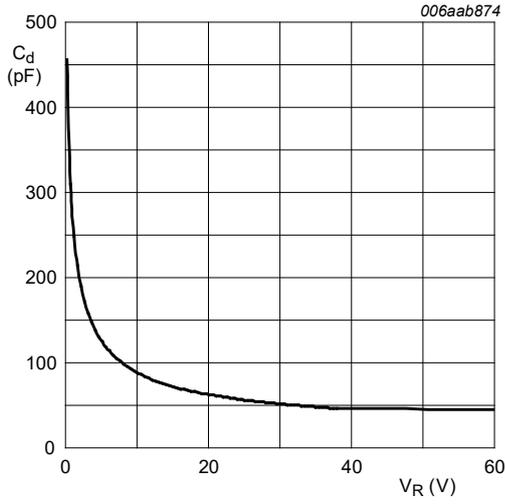
### 10. Characteristics

Table 7. Characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit	
V <sub>F</sub>	forward voltage	I <sub>F</sub> = 1 A; pulsed; T <sub>j</sub> = 25 °C	[1]	-	400	460	mV
		I <sub>F</sub> = 3 A; pulsed; T <sub>j</sub> = 25 °C	[1]	-	520	600	mV
		I <sub>F</sub> = 3 A; pulsed; T <sub>j</sub> = -40 °C	[1]	-	560	-	mV
		I <sub>F</sub> = 3 A; pulsed; T <sub>j</sub> = 125 °C	[1]	-	500	-	mV
I <sub>R</sub>	reverse current	V <sub>R</sub> = 10 V; pulsed; T <sub>j</sub> = 25 °C	[1]	-	3.5	-	μA
		V <sub>R</sub> = 60 V; pulsed; T <sub>j</sub> = 25 °C	[1]	-	60	150	μA
C <sub>d</sub>	diode capacitance	V <sub>R</sub> = 1 V; f = 1 MHz; T <sub>j</sub> = 25 °C		-	240	-	pF
		V <sub>R</sub> = 10 V; f = 1 MHz; T <sub>j</sub> = 25 °C		-	80	-	pF
t <sub>rr</sub>	reverse recovery time ramp recovery	dI <sub>F</sub> /dt = 200 A/μs; I <sub>F</sub> = 6 A; V <sub>R</sub> = 26 V; T <sub>j</sub> = 25 °C		-	8.5	-	ns
I <sub>RM</sub>	peak reverse recovery current	dI <sub>F</sub> /dt = 200 A/s; I <sub>F</sub> = 6 A; V <sub>R</sub> = 26 V; T <sub>j</sub> = 25 °C		-	0.8	-	A
Q <sub>rr</sub>	reverse recovery charge			-	3.8	-	nC

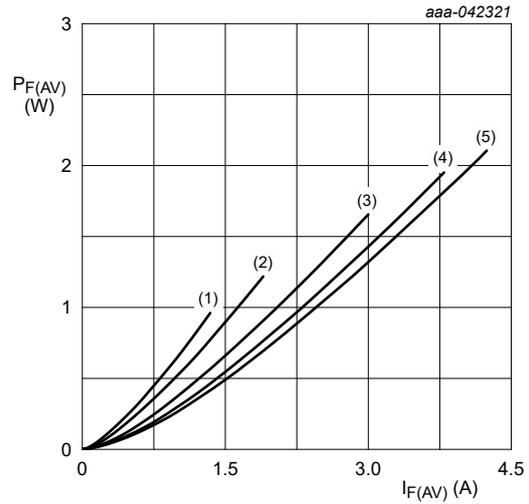
[1] Very short pulse, in order to maintain a stable junction temperature.





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

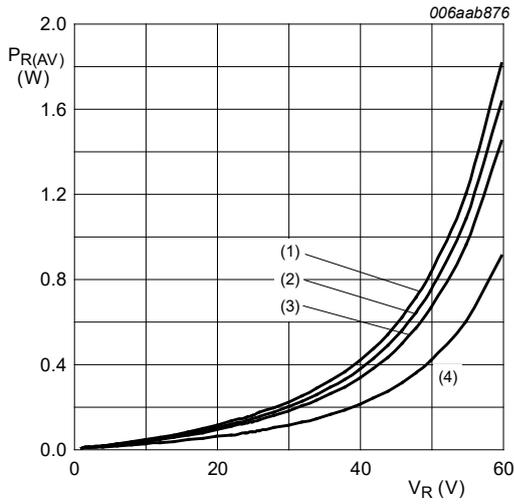
**Fig. 5. Diode capacitance as a function of reverse voltage; typical values**



$T_j = 175 \text{ }^\circ\text{C}$

- (1)  $\delta = 0.1$
- (2)  $\delta = 0.2$
- (3)  $\delta = 0.5$
- (4)  $\delta = 0.8$
- (5)  $\delta = 1$

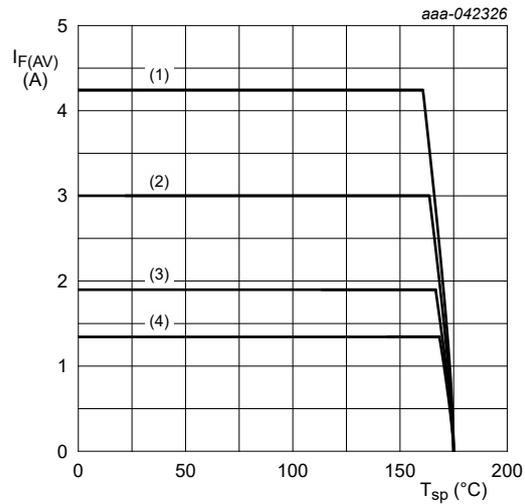
**Fig. 6. Average forward power dissipation as a function of average forward current; typical values**



$T_j = 125 \text{ }^\circ\text{C}$

- (1)  $\delta = 1$
- (2)  $\delta = 0.9$
- (3)  $\delta = 0.8$
- (4)  $\delta = 0.5$

**Fig. 7. Average reverse power dissipation as a function of reverse voltage; typical values**



$T_j = 175 \text{ }^\circ\text{C}$

- (1)  $\delta = 1; \text{DC}$
- (2)  $\delta = 0.5; f = 20 \text{ kHz}$
- (3)  $\delta = 0.2; f = 20 \text{ kHz}$
- (4)  $\delta = 0.1; f = 20 \text{ kHz}$

**Fig. 8. Average forward current as a function of solder point temperature; typical values**

### 11. Test information

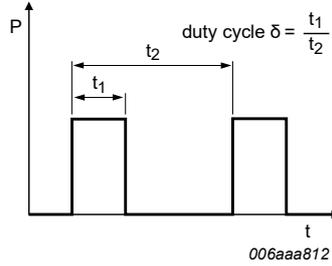


Fig. 9. Duty cycle definition

The current ratings for the typical waveforms are calculated according to the equations:

$$I_{F(AV)} = I_M \times \delta \text{ with } I_M \text{ defined as peak current}$$

$$I_{RMS} = I_{F(AV)} \text{ at DC}$$

$$I_{RMS} = I_M \times \sqrt{\delta} \text{ with } I_{RMS} \text{ defined as RMS current}$$

#### 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

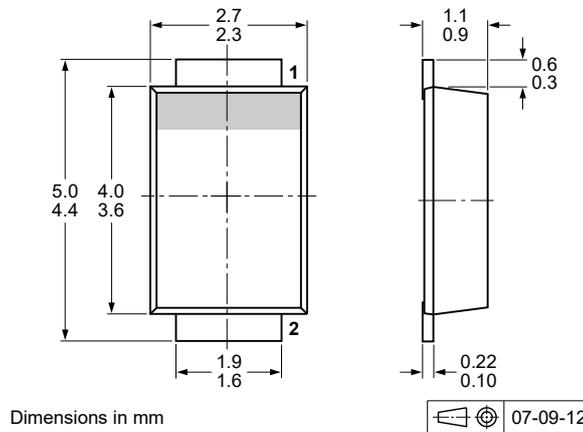


Fig. 10. Package outline CFP5 (SOD128)

### 13. Soldering

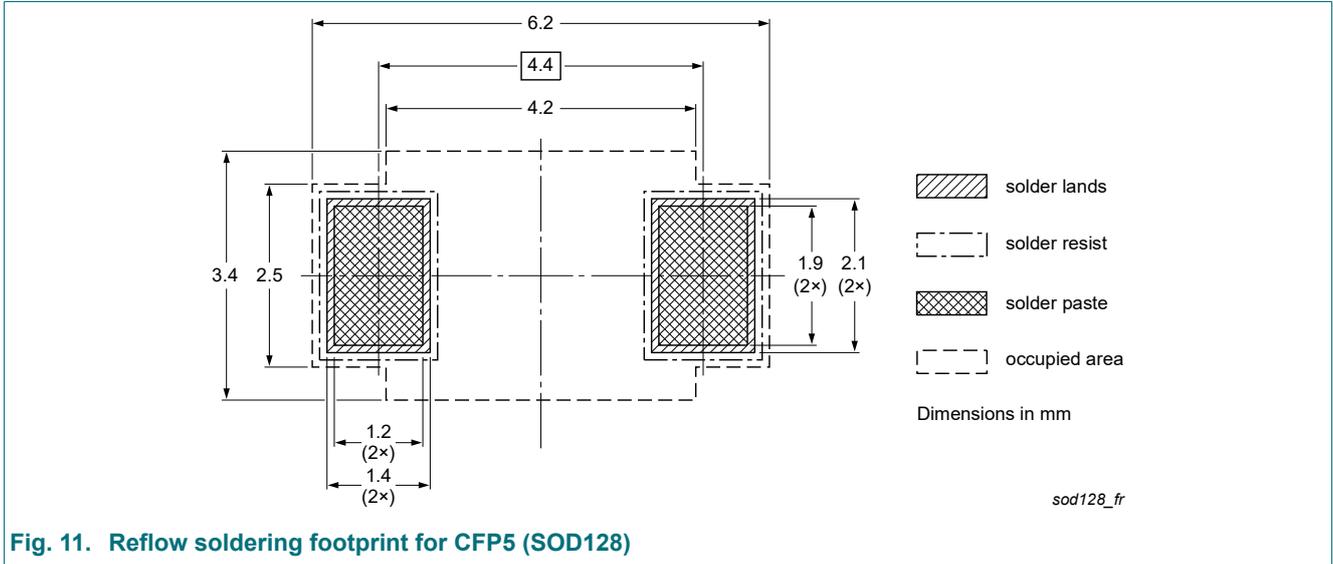
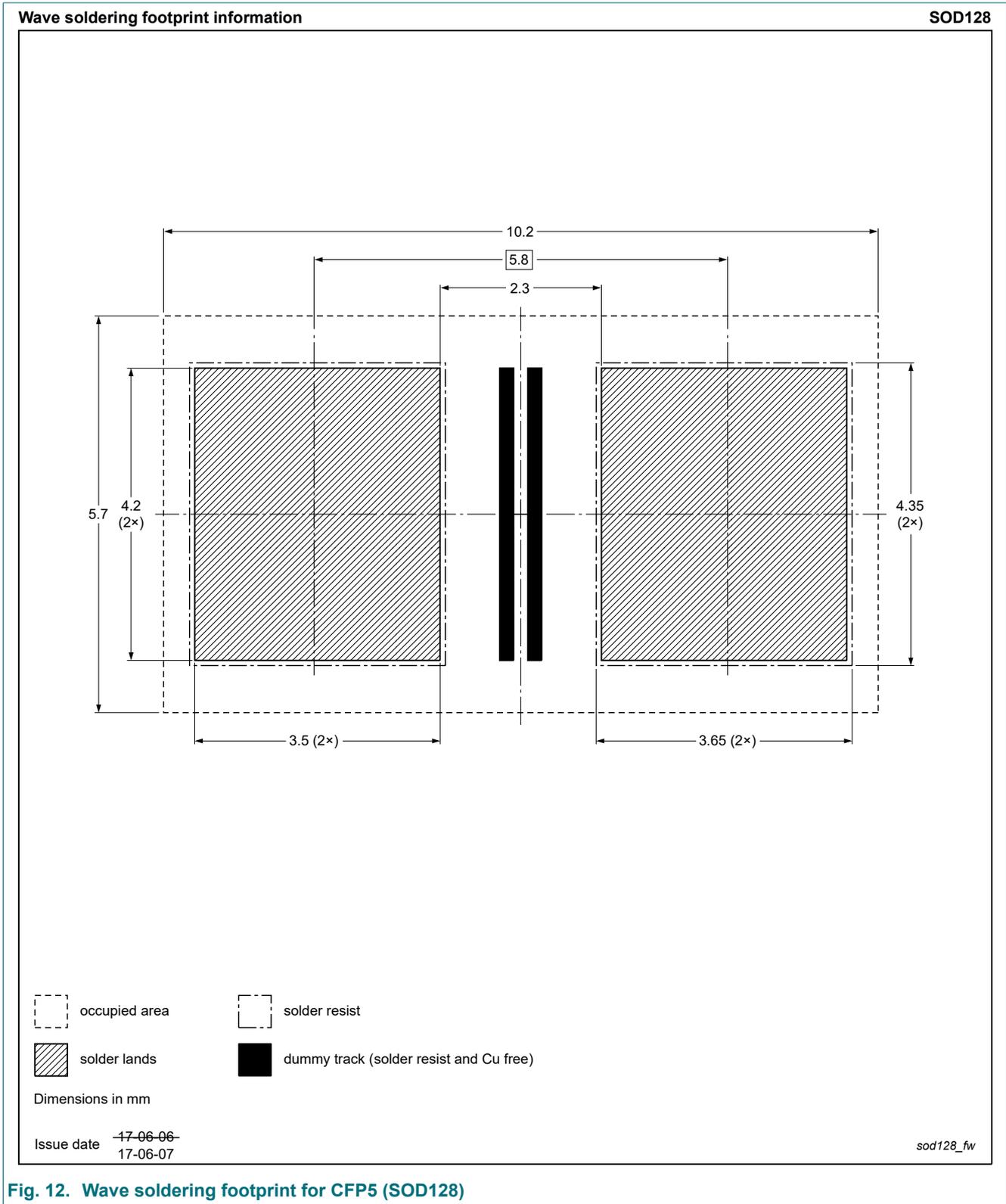


Fig. 11. Reflow soldering footprint for CFP5 (SOD128)



**Fig. 12. Wave soldering footprint for CFP5 (SOD128)**

## 14. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
PMEG6030CEP-Q v.1	20250310	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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