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## Product Reference Information

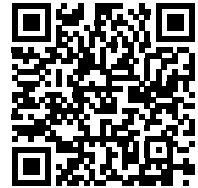
**Part Number:** PMEG6030EP,115  
**Manufacturer:** Nexperia USA Inc.  
**Package:** SOD-128  
**Availability:** Please confirm with sales

**Product Page:**

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**Note:**

This PDF includes an ANTREX product reference cover page.

The original manufacturer datasheet follows from the next page.

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# PMEG6030EP

60 V, 3 A low VF Schottky barrier rectifier

20 February 2023

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

- Average forward current:  $I_{F(AV)} \leq 3$  A
- Reverse voltage:  $V_R \leq 60$  V
- 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

## 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 | $\delta = 0.5$ ; $f = 20$ kHz; square wave; $T_{sp} \leq 135$ °C | -   | -   | 3   | A       |
| $V_R$       | reverse voltage         | $T_j = 25$ °C                                                    | -   | -   | 60  | V       |
| $V_F$       | forward voltage         | $I_F = 3$ A; $T_j = 25$ °C                                       | -   | 460 | 530 | mV      |
| $I_R$       | reverse current         | $V_R = 60$ V; $T_j = 25$ °C                                      | -   | 80  | 200 | $\mu$ A |

## 5. Pinning information

Table 2. Pinning information

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

[1] The marking bar indicates the cathode.

## 6. Ordering information

Table 3. Ordering information

| Type number | Package |                                                                                           |         |
|-------------|---------|-------------------------------------------------------------------------------------------|---------|
|             | Name    | Description                                                                               | Version |
| PMEG6030EP  | CFP5    | plastic, surface mounted package; 2 terminals; 4 mm pitch;<br>3.8 mm x 2.6 mm x 1 mm body | SOD128  |

### 6.1. Ordering options

Table 4. Ordering options

| Type number | Orderable part number | Packing       | Equivalent standard orderable part number |
|-------------|-----------------------|---------------|-------------------------------------------|
| PMEG6030EP  | PMEG6030EP,115        | Reel 7" Q1/T1 | -                                         |

## 7. Marking

Table 5. Marking codes

| Type number | Marking code |
|-------------|--------------|
| PMEG6030EP  | AB           |

## 8. Limiting values

Table 6. Limiting values

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

| Symbol      | Parameter                           | Conditions                                                                                    |     | Min | Max  | Unit               |
|-------------|-------------------------------------|-----------------------------------------------------------------------------------------------|-----|-----|------|--------------------|
| $V_R$       | reverse voltage                     | $T_j = 25\text{ }^{\circ}\text{C}$                                                            |     | -   | 60   | V                  |
| $I_{F(AV)}$ | average forward current             | $\delta = 0.5$ ; $f = 20\text{ kHz}$ ; square wave; $T_{amb} \leq 50\text{ }^{\circ}\text{C}$ | [1] | -   | 3    | A                  |
|             |                                     | $\delta = 0.5$ ; $f = 20\text{ kHz}$ ; square wave; $T_{sp} \leq 135\text{ }^{\circ}\text{C}$ |     | -   | 3    | A                  |
| $I_{FSM}$   | non-repetitive peak forward current | $t_p = 8.3\text{ ms}$ ; half sine wave; $T_{j(init)} = 25\text{ }^{\circ}\text{C}$            |     | -   | 50   | A                  |
| $P_{tot}$   | total power dissipation             | $T_{amb} \leq 25\text{ }^{\circ}\text{C}$                                                     | [2] | -   | 625  | mW                 |
|             |                                     |                                                                                               | [3] | -   | 1.05 | W                  |
|             |                                     |                                                                                               | [1] | -   | 2.1  | W                  |
| $T_j$       | junction temperature                |                                                                                               |     | -   | 150  | $^{\circ}\text{C}$ |
| $T_{amb}$   | ambient temperature                 |                                                                                               |     | -55 | 150  | $^{\circ}\text{C}$ |
| $T_{stg}$   | storage temperature                 |                                                                                               |     | -65 | 150  | $^{\circ}\text{C}$ |

- [1] Device mounted on a ceramic PCB, Al<sub>2</sub>O<sub>3</sub>, standard footprint.
- [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>.

9. Thermal characteristics

Table 7. 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  |
|                |                                                  |             | [3] [2] | -   | -   | 120 | K/W  |
|                |                                                  |             | [4] [2] | -   | -   | 60  | K/W  |
| $R_{th(j-sp)}$ | thermal resistance from junction to solder point |             | [5]     | -   | -   | 12  | K/W  |

- [1] Device mounted on an FR4 PCB, single-sided copper, tin-plated and standard footprint.
- [2] 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.
- [3] Device mounted on an FR4 PCB, single-sided copper, tin-plated, mounting pad for cathode 1 cm<sup>2</sup>.
- [4] Device mounted on a ceramic PCB, Al<sub>2</sub>O<sub>3</sub>, standard footprint.
- [5] Soldering point of cathode tab.

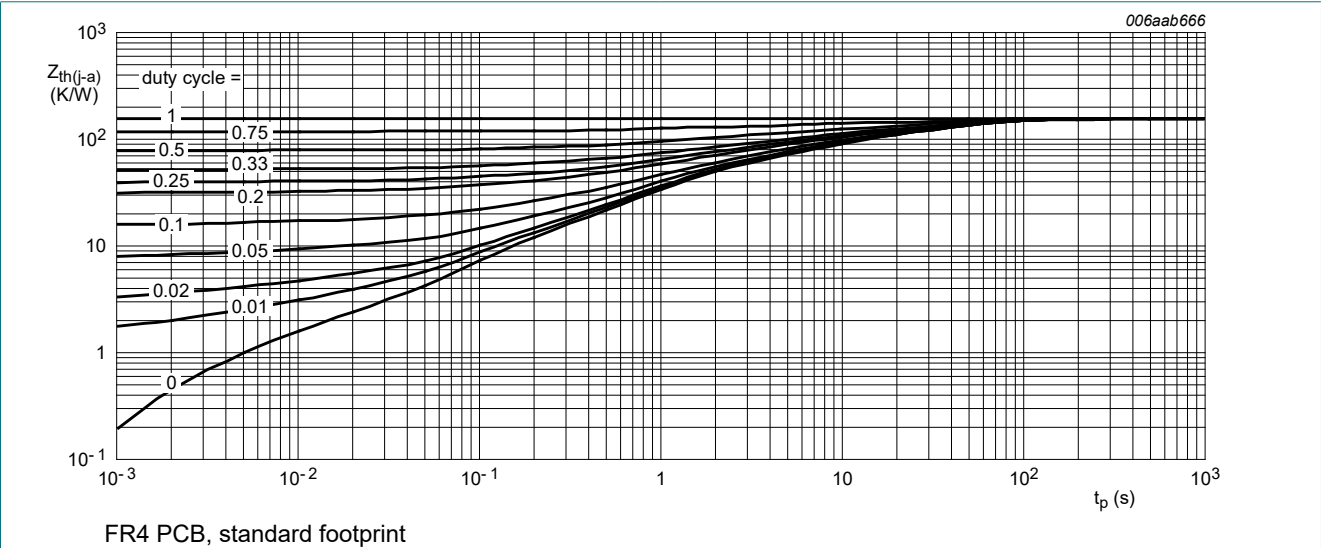


Fig. 1. Transient thermal impedance from junction to ambient as a function of pulse duration; typical values

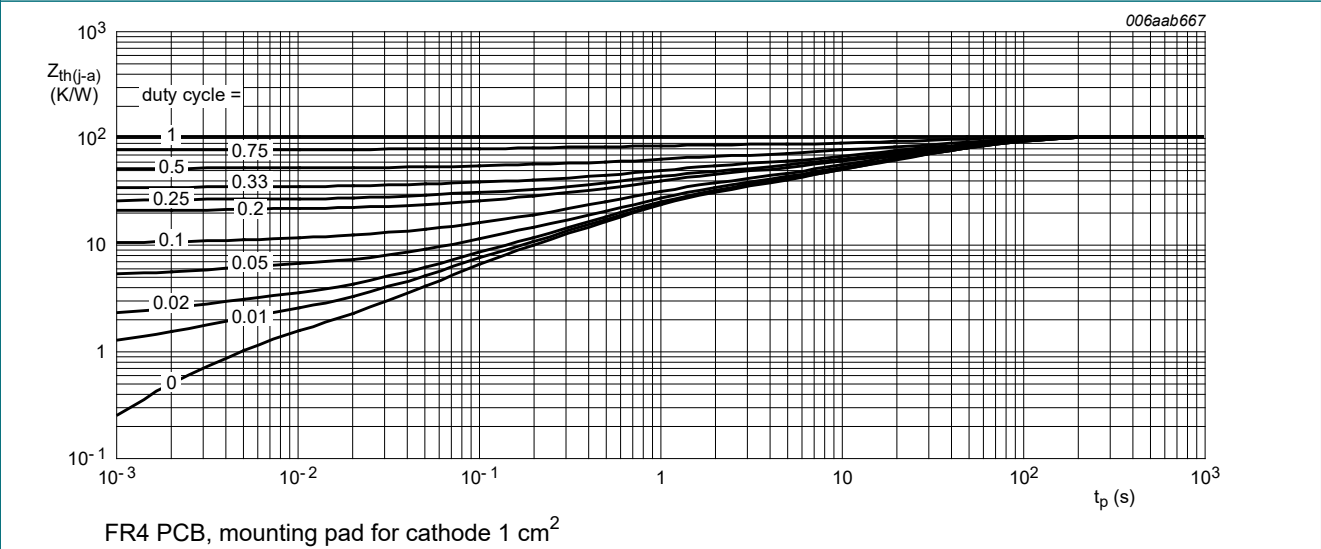
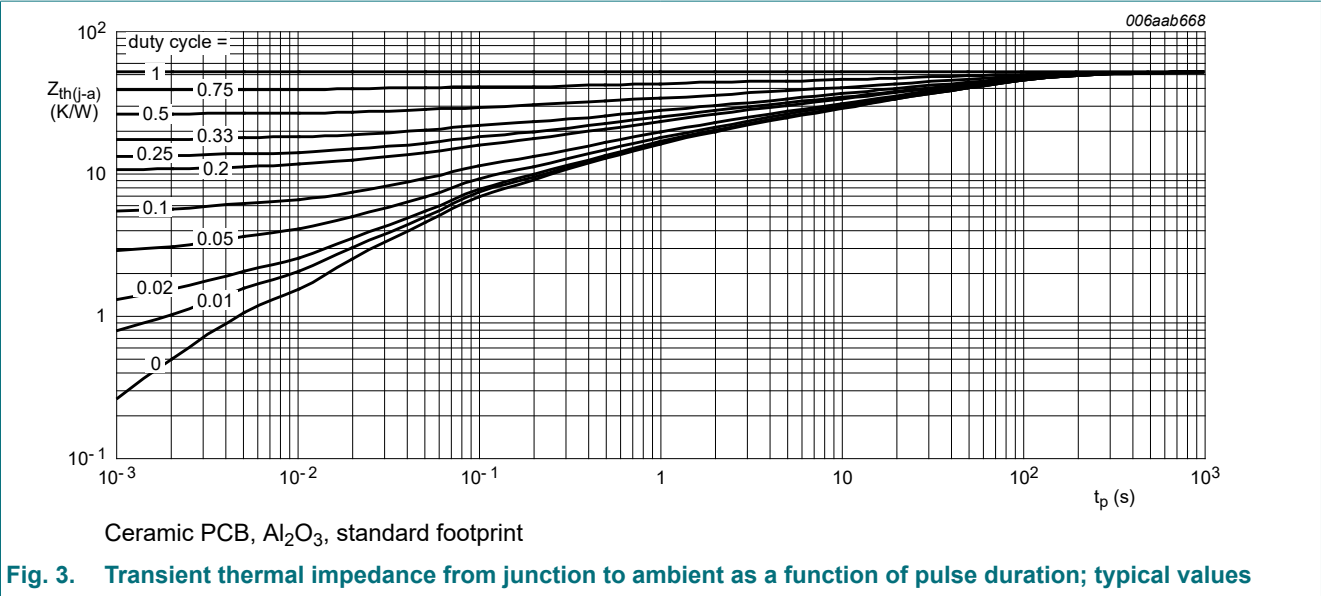


Fig. 2. Transient thermal impedance from junction to ambient as a function of pulse duration; typical values



10. Characteristics

Table 8. Characteristics

| Symbol | Parameter         | Conditions                                                | Min | Typ | Max | Unit |
|--------|-------------------|-----------------------------------------------------------|-----|-----|-----|------|
| $V_F$  | forward voltage   | $I_F = 0.1\text{ A}; T_j = 25\text{ °C}$                  | -   | 290 | 330 | mV   |
|        |                   | $I_F = 0.5\text{ A}; T_j = 25\text{ °C}$                  | -   | 340 | 400 | mV   |
|        |                   | $I_F = 1\text{ A}; T_j = 25\text{ °C}$                    | -   | 380 | 440 | mV   |
|        |                   | $I_F = 1.5\text{ A}; T_j = 25\text{ °C}$                  | -   | 400 | 470 | mV   |
|        |                   | $I_F = 2\text{ A}; T_j = 25\text{ °C}$                    | -   | 430 | 500 | mV   |
|        |                   | $I_F = 3\text{ A}; T_j = 25\text{ °C}$                    | -   | 460 | 530 | mV   |
| $I_R$  | reverse current   | $V_R = 5\text{ V}; T_j = 25\text{ °C}$                    | -   | 4   | -   | μA   |
|        |                   | $V_R = 10\text{ V}; T_j = 25\text{ °C}$                   | -   | 5   | -   | μA   |
|        |                   | $V_R = 60\text{ V}; T_j = 25\text{ °C}$                   | -   | 80  | 200 | μA   |
| $C_d$  | diode capacitance | $V_R = 1\text{ V}; f = 1\text{ MHz}; T_j = 25\text{ °C}$  | -   | 360 | -   | pF   |
|        |                   | $V_R = 10\text{ V}; f = 1\text{ MHz}; T_j = 25\text{ °C}$ | -   | 120 | -   | pF   |

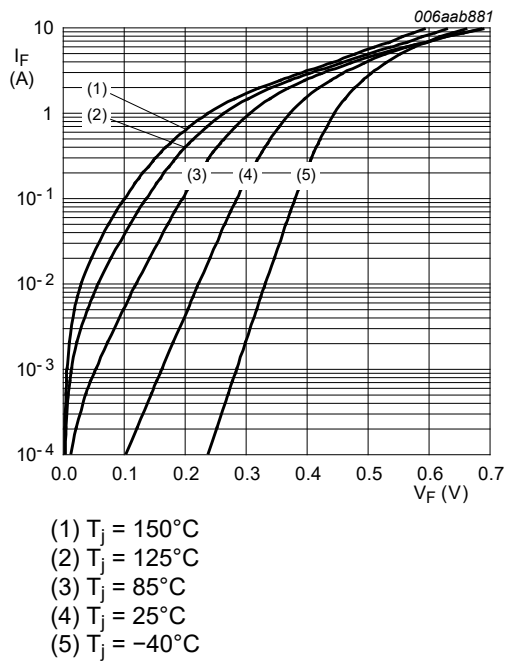


Fig. 4. Forward current as a function of forward voltage; typical values

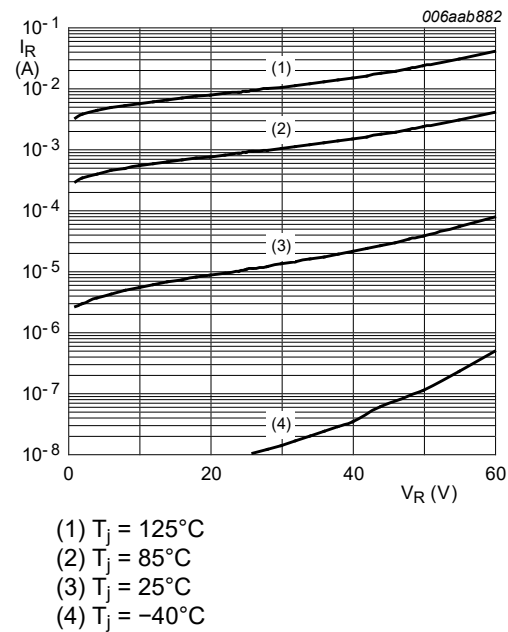


Fig. 5. Reverse current as a function of reverse voltage; typical values

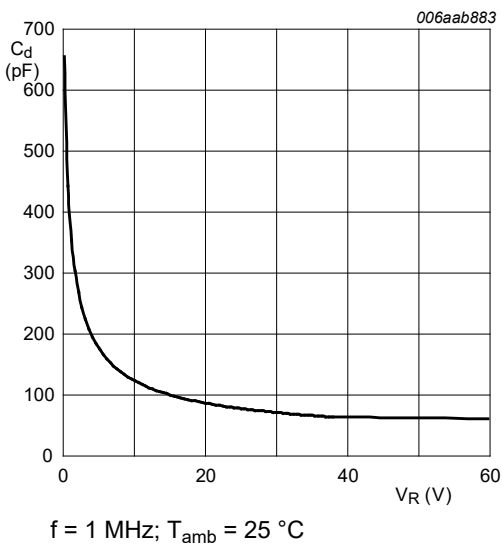


Fig. 6. Diode capacitance as a function of reverse voltage; typical values

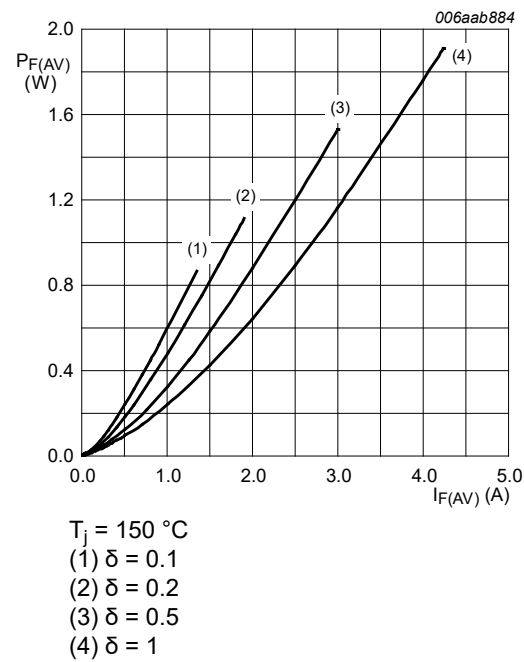
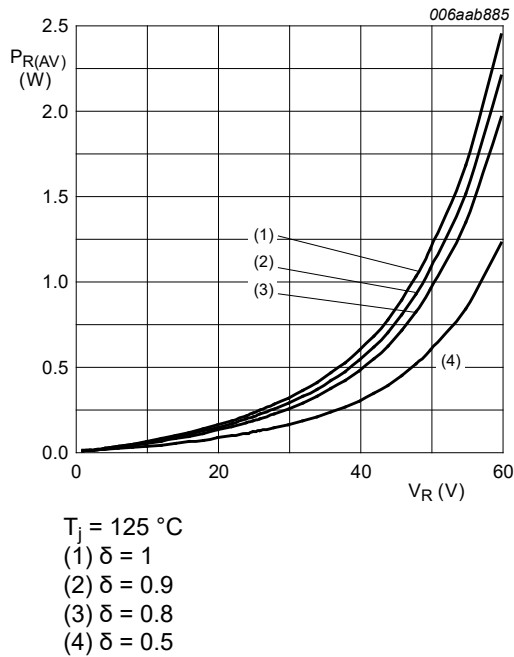
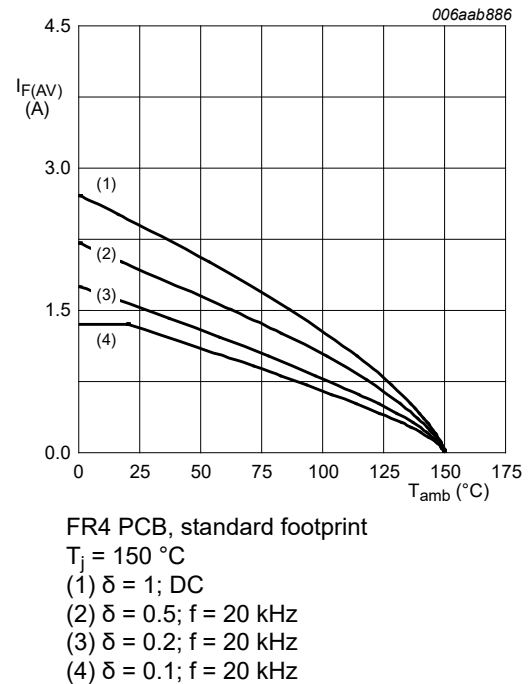


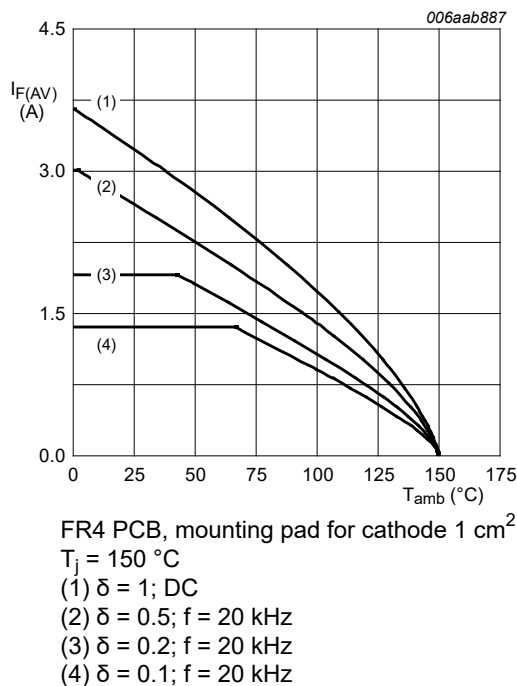
Fig. 7. Average forward power dissipation as a function of average forward current; typical values



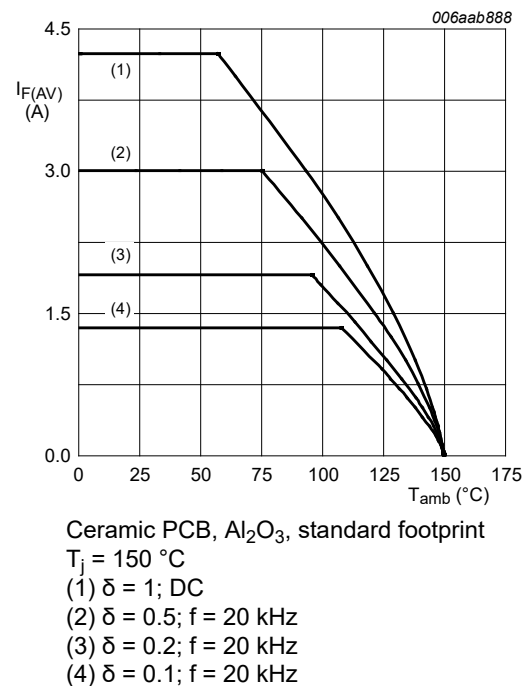
**Fig. 8.** Average reverse power dissipation as a function of reverse voltage; typical values



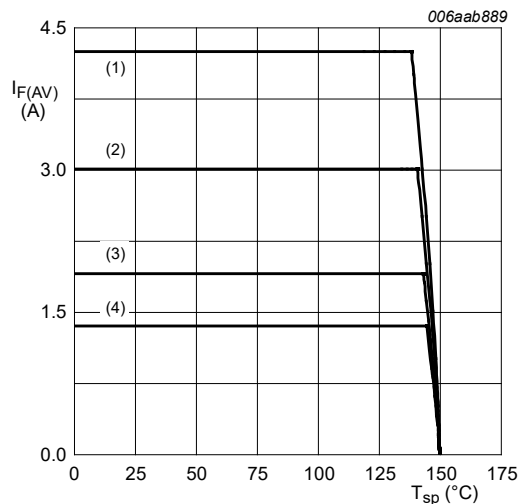
**Fig. 9.** Average forward current as a function of ambient temperature; typical values



**Fig. 10.** Average forward current as a function of ambient temperature; typical values



**Fig. 11.** Average forward current as a function of ambient temperature; typical values



$T_j = 150\text{ }^{\circ}\text{C}$   
 (1)  $\delta = 1$ ; 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. 12. Average forward current as a function of solder point temperature; typical values

## 11. Test information

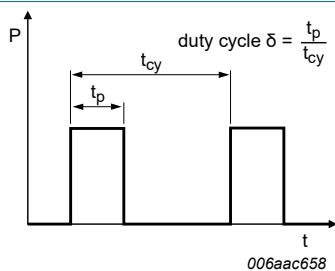


Fig. 13. Duty cycle definition

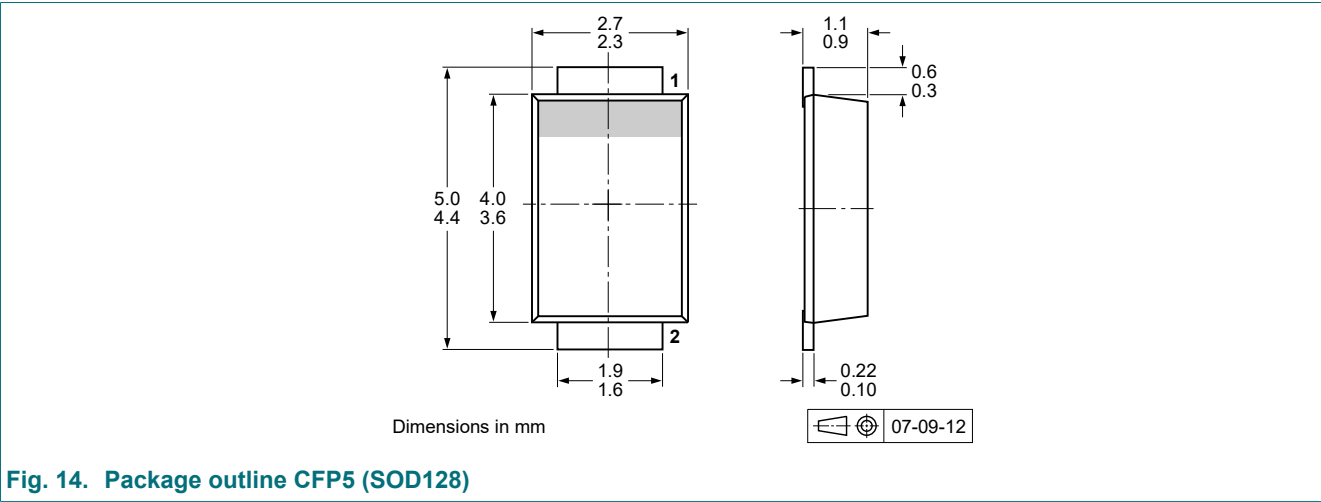
The current ratings for the typical waveforms are calculated according to the equations:

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

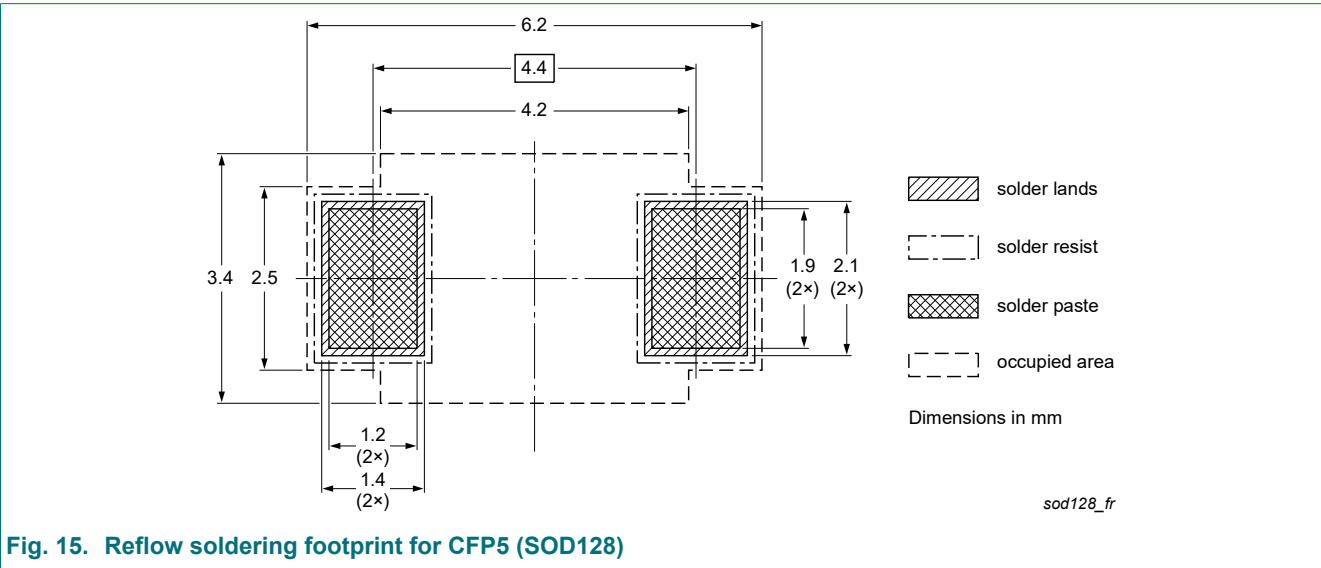
$$I_{RMS} = I_{F(AV)} \text{ at DC}$$

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

12. Package outline



13. Soldering



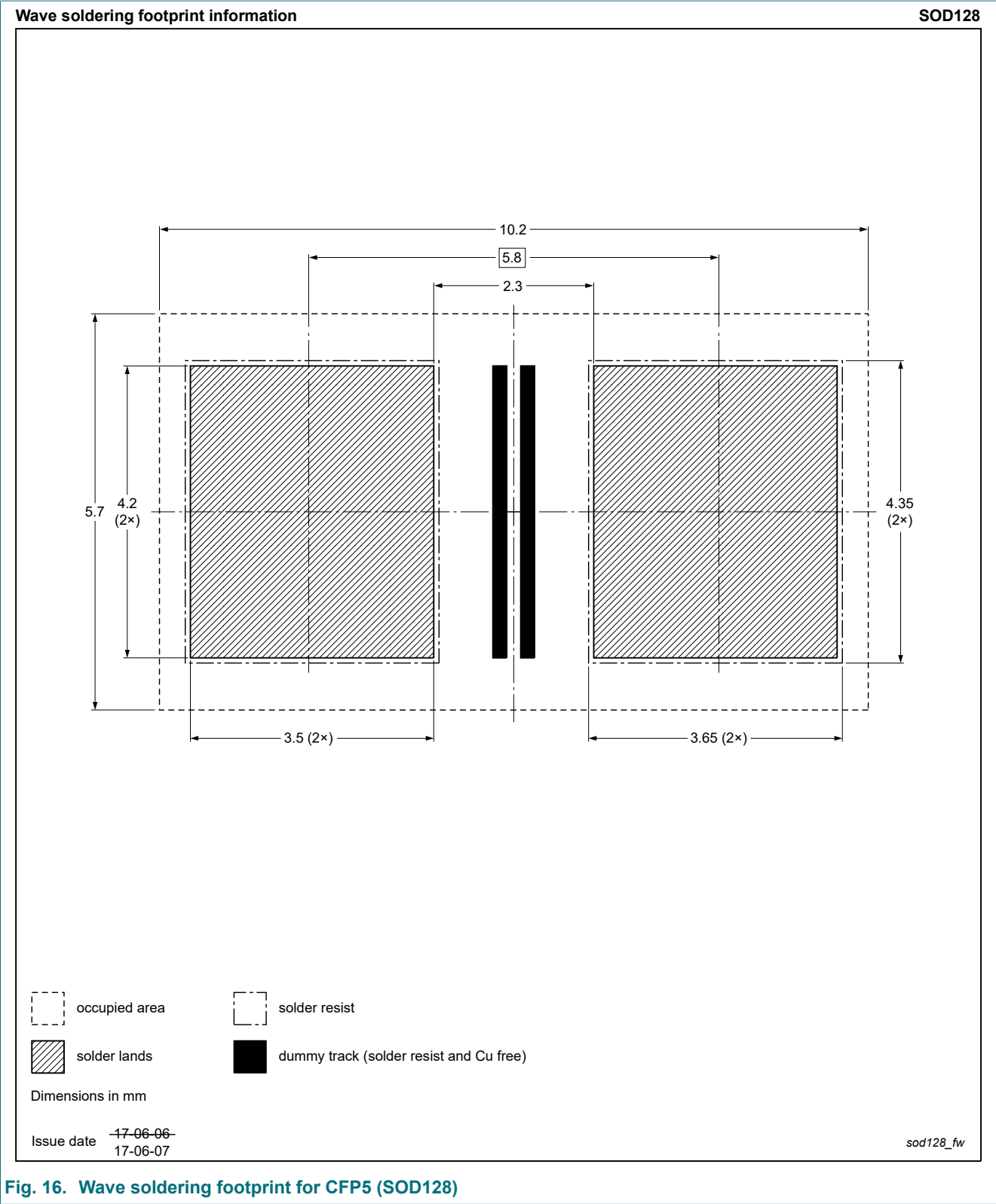


Fig. 16. Wave soldering footprint for CFP5 (SOD128)

14. Revision history

Table 9. Revision history

| Data sheet ID  | Release date                                                                                                                                                 | Data sheet status  | Change notice | Supersedes     |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|---------------|----------------|
| PMEG6030EP v.4 | 20230220                                                                                                                                                     | Product data sheet | -             | PMEG6030EP v.3 |
| Modifications: | <ul style="list-style-type: none"><li>Limiting values: Measurement conditions for <math>I_{FSM}</math> changed from square wave to half-sine wave.</li></ul> |                    |               |                |
| PMEG6030EP v.3 | 20230101                                                                                                                                                     | Product data sheet | -             | PMEG6030EP v.2 |
| PMEG6030EP v.2 | 20171107                                                                                                                                                     | 20171107           | -             | PMEG6030EP_1   |
| PMEG6030EP_1   | 20100120                                                                                                                                                     | 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. |
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| 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.
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