



PMEG10050ELP

100 V, 5 A low leakage current 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

- Extremely low leakage current
- High power capability due to clip-bonding technology
- High temperature $T_j \leq 175\text{ °C}$
- Small and flat lead SMD plastic package

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 |
|-------------|-------------------------|---|-----|-----|-----|------|
| $I_{F(AV)}$ | average forward current | $\delta = 0.5$; $f = 20\text{ kHz}$; square wave; $T_{sp} \leq 148\text{ °C}$ | - | - | 5 | A |
| V_R | reverse voltage | $T_j = 25\text{ °C}$ | - | - | 100 | V |
| V_F | forward voltage | $I_F = 5\text{ A}$; pulsed; $T_j = 25\text{ °C}$ | [1] | 780 | 880 | mV |
| I_R | reverse current | $V_R = 100\text{ V}$; pulsed; $T_j = 25\text{ °C}$ | [1] | 110 | 450 | nA |

[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 |
| PMEG10050ELP | CFP5 | plastic, surface mounted package; 2 terminals; 4 mm pitch; 3.8 mm x 2.6 mm x 1 mm body | SOD128 |

7. Marking

Table 4. Marking codes

| Type number | Marking code |
|--------------|--------------|
| PMEG10050ELP | GM |

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 °C | | - | 100 | V |
| I _{F(AV)} | average forward current | δ = 0.5; f = 20 kHz; square wave; T _{sp} ≤ 148 °C | | - | 5 | A |
| I _{FSM} | non-repetitive peak forward current | t _p = 8.3 ms; half-sine wave; T _{j(init)} = 25 °C | | - | 70 | A |
| P _{tot} | total power dissipation | T _{amb} ≤ 25 °C | [1] | - | 750 | mW |
| | | | [2] | - | 1250 | mW |
| 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 cm².

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 cm².
- [4] Soldering point of cathode tab.

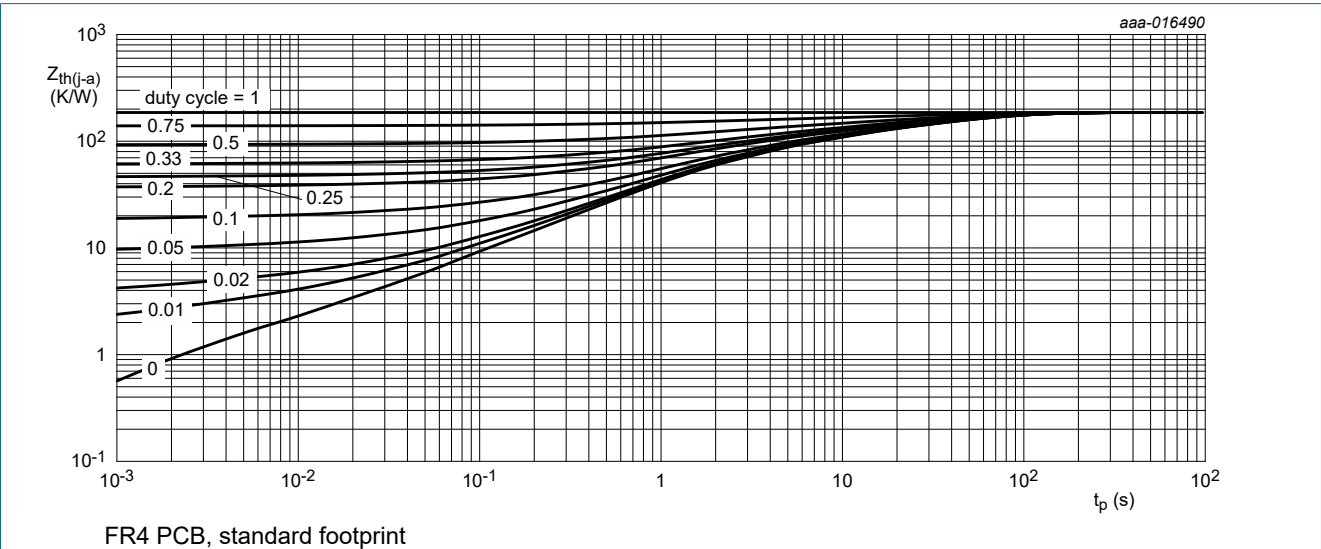


Fig. 1. Transient thermal impedance from junction to ambient as a function of pulse duration; typical values

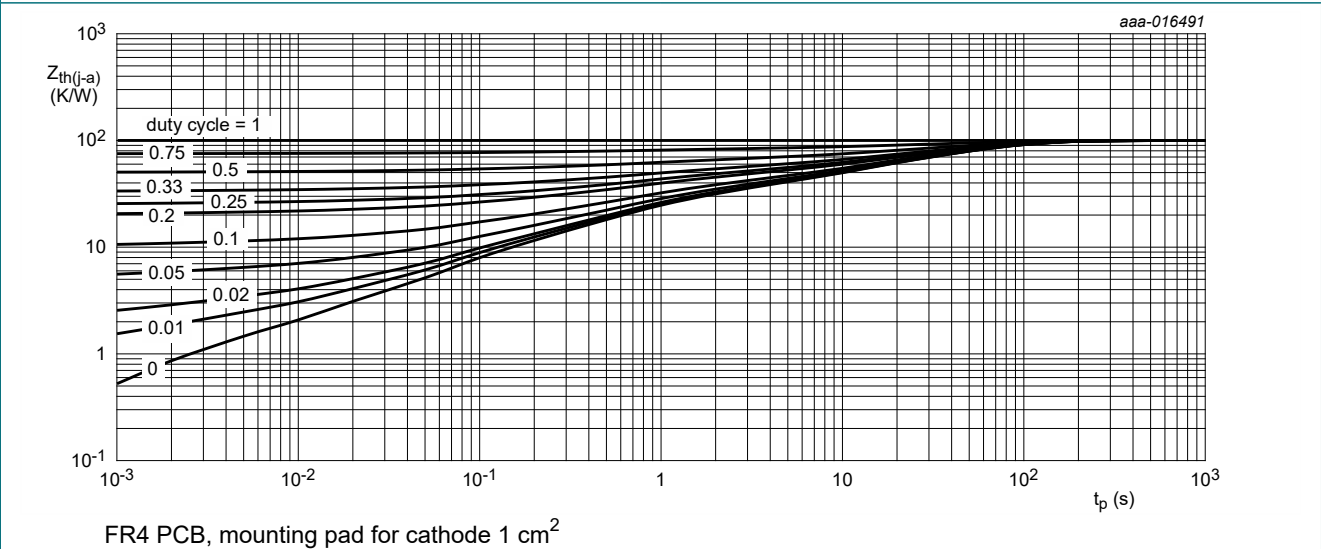


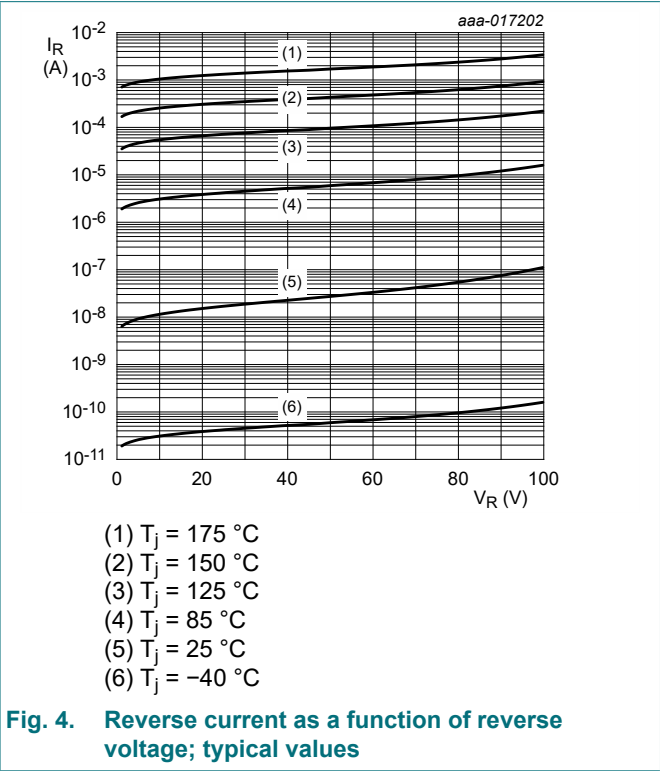
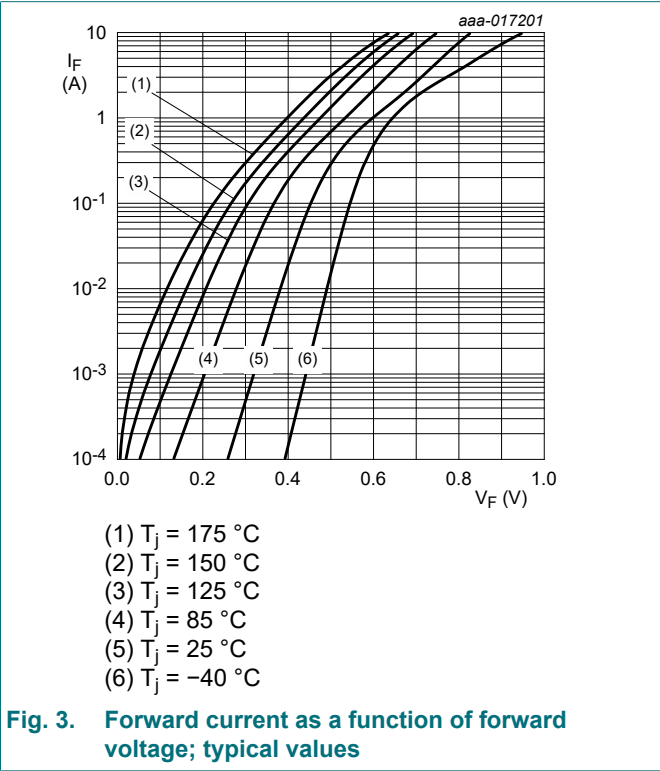
Fig. 2. Transient thermal impedance from junction to ambient as a function of pulse duration; typical values

10. Characteristics

Table 7. Characteristics

| Symbol | Parameter | Conditions | | Min | Typ | Max | Unit |
|-------------|-------------------------------------|--|-----|-----|------|------|---------------|
| $V_{(BR)R}$ | reverse breakdown voltage | $I_R = 1\text{ mA}$; pulsed; $T_j = 25\text{ °C}$ | [1] | 100 | - | - | V |
| V_F | forward voltage | $I_F = 1\text{ A}$; pulsed; $T_j = 25\text{ °C}$ | [1] | - | 600 | 670 | mV |
| | | $I_F = 5\text{ A}$; pulsed; $T_j = 25\text{ °C}$ | [1] | - | 780 | 880 | mV |
| | | $I_F = 5\text{ A}$; pulsed; $T_j = -40\text{ °C}$ | [1] | - | 860 | - | mV |
| | | $I_F = 5\text{ A}$; pulsed; $T_j = 125\text{ °C}$ | [1] | - | 650 | - | mV |
| I_R | reverse current | $V_R = 60\text{ V}$; pulsed; $T_j = 25\text{ °C}$ | [1] | - | 35 | - | nA |
| | | $V_R = 100\text{ V}$; pulsed; $T_j = 25\text{ °C}$ | [1] | - | 110 | 450 | nA |
| | | $V_R = 100\text{ V}$; pulsed; $T_j = 125\text{ °C}$ | [1] | - | 220 | 1500 | μA |
| C_d | diode capacitance | $V_R = 1\text{ V}$; $f = 1\text{ MHz}$; $T_j = 25\text{ °C}$ | | - | 200 | - | pF |
| | | $V_R = 4\text{ V}$; $f = 1\text{ MHz}$; $T_j = 25\text{ °C}$ | | - | 120 | - | pF |
| | | $V_R = 10\text{ V}$; $f = 1\text{ MHz}$; $T_j = 25\text{ °C}$ | | - | 78 | - | pF |
| t_{rr} | reverse recovery time ramp recovery | $di_F/dt = 200\text{ A}/\mu\text{s}$; $I_F = 6\text{ A}$; $V_R = 26\text{ V}$; $T_j = 25\text{ °C}$ | | - | 13.4 | - | ns |
| I_{RM} | peak reverse recovery current | | | - | 1.35 | - | A |
| Q_{rr} | reverse recovery charge | | | - | 10.2 | - | nC |

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



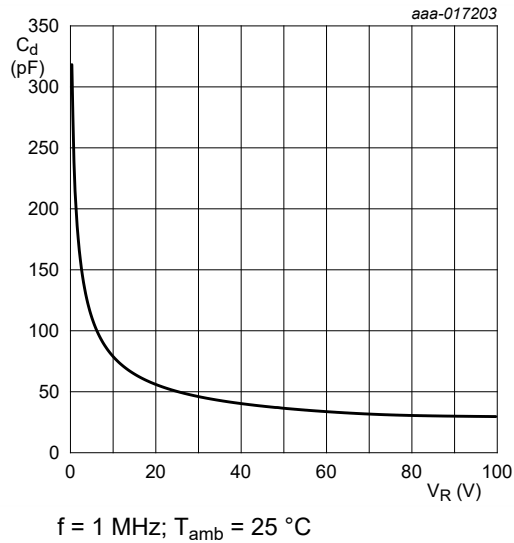


Fig. 5. Diode capacitance as a function of reverse voltage; typical values

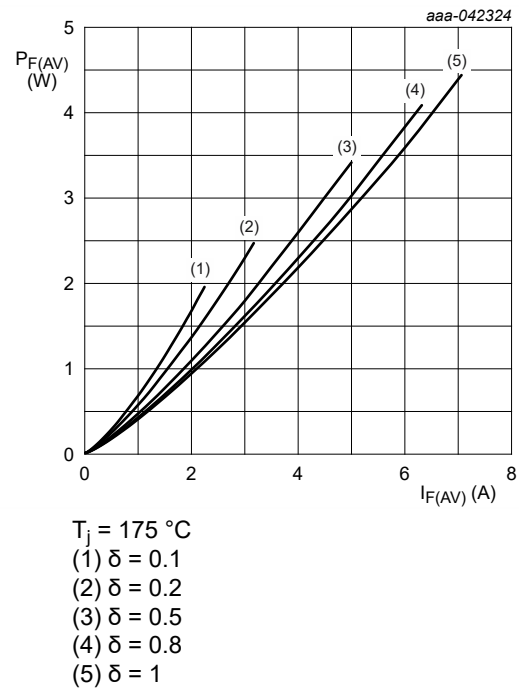


Fig. 6. Average forward power dissipation as a function of average forward current; typical values

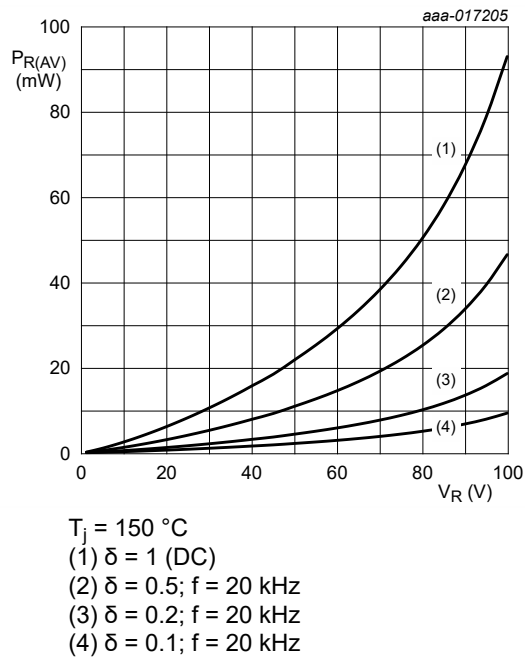


Fig. 7. Average reverse power dissipation as a function of reverse voltage; typical values

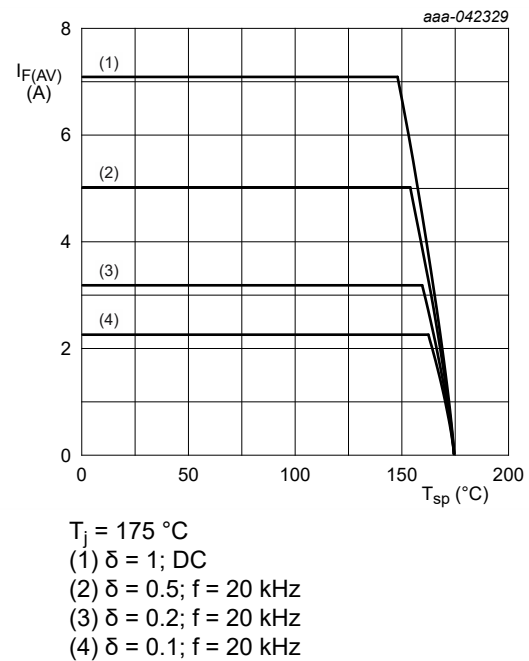


Fig. 8. Average forward current as a function of solder point temperature; typical values

11. Test information

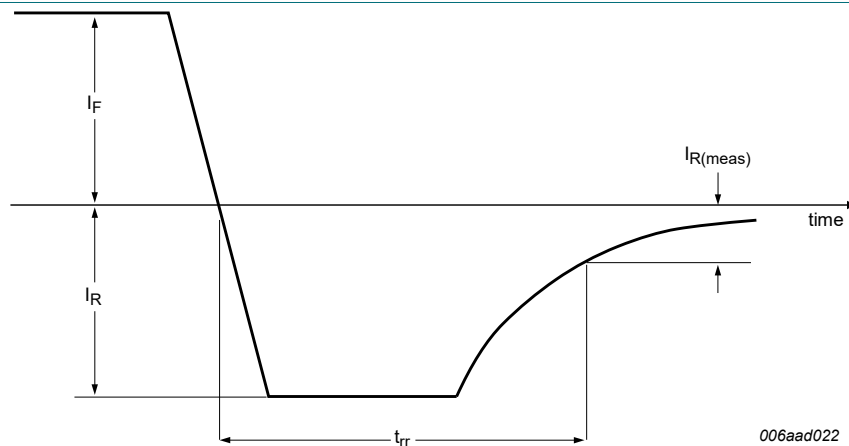


Fig. 9. Reverse recovery definition

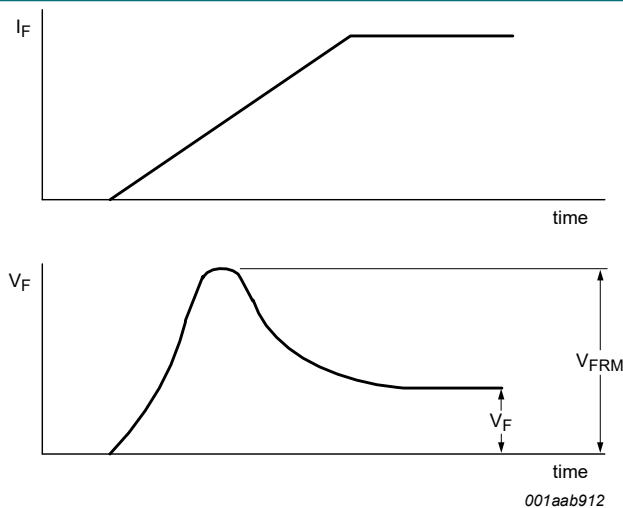


Fig. 10. Forward recovery definition

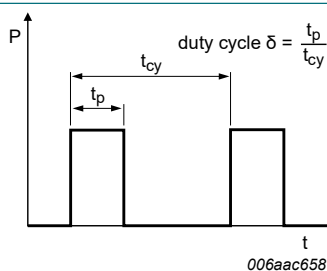


Fig. 11. Duty cycle definition

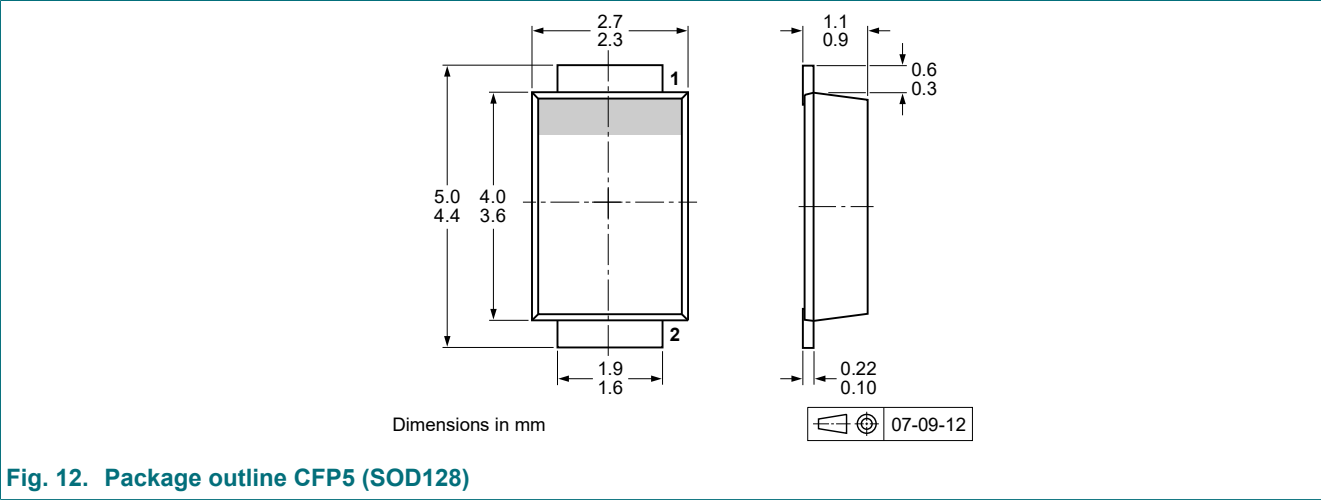
The current ratings for the typical waveforms are calculated according to the equations:

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

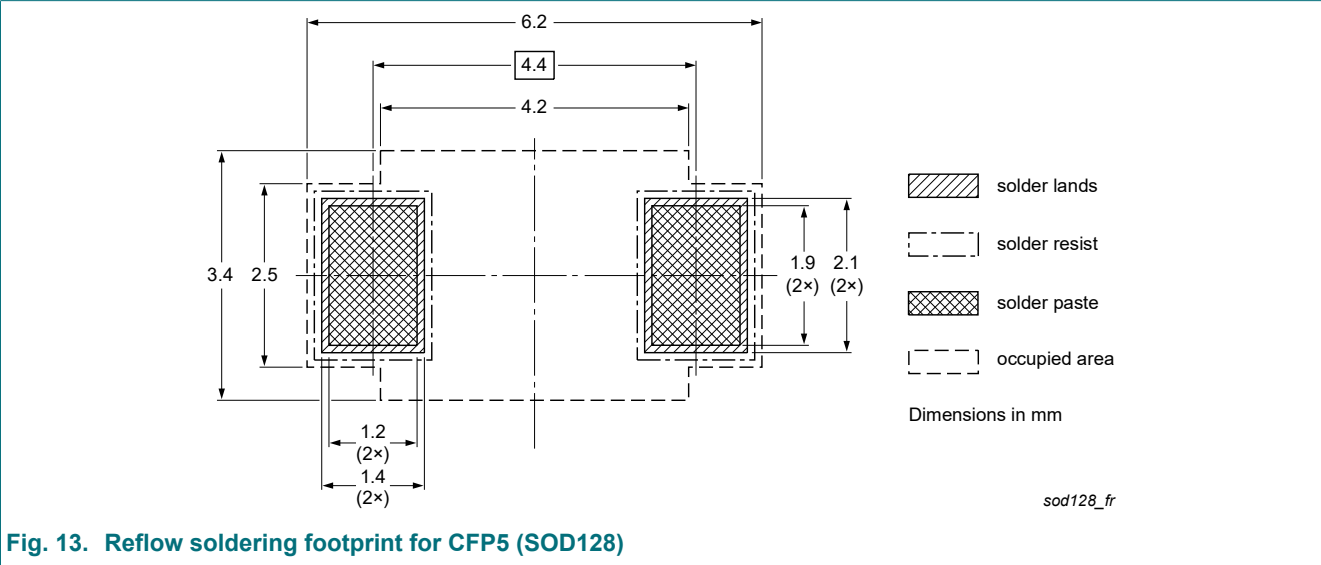
$$I_{RMS} = I_{F(AV)} \text{ at DC,}$$

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

12. Package outline



13. Soldering



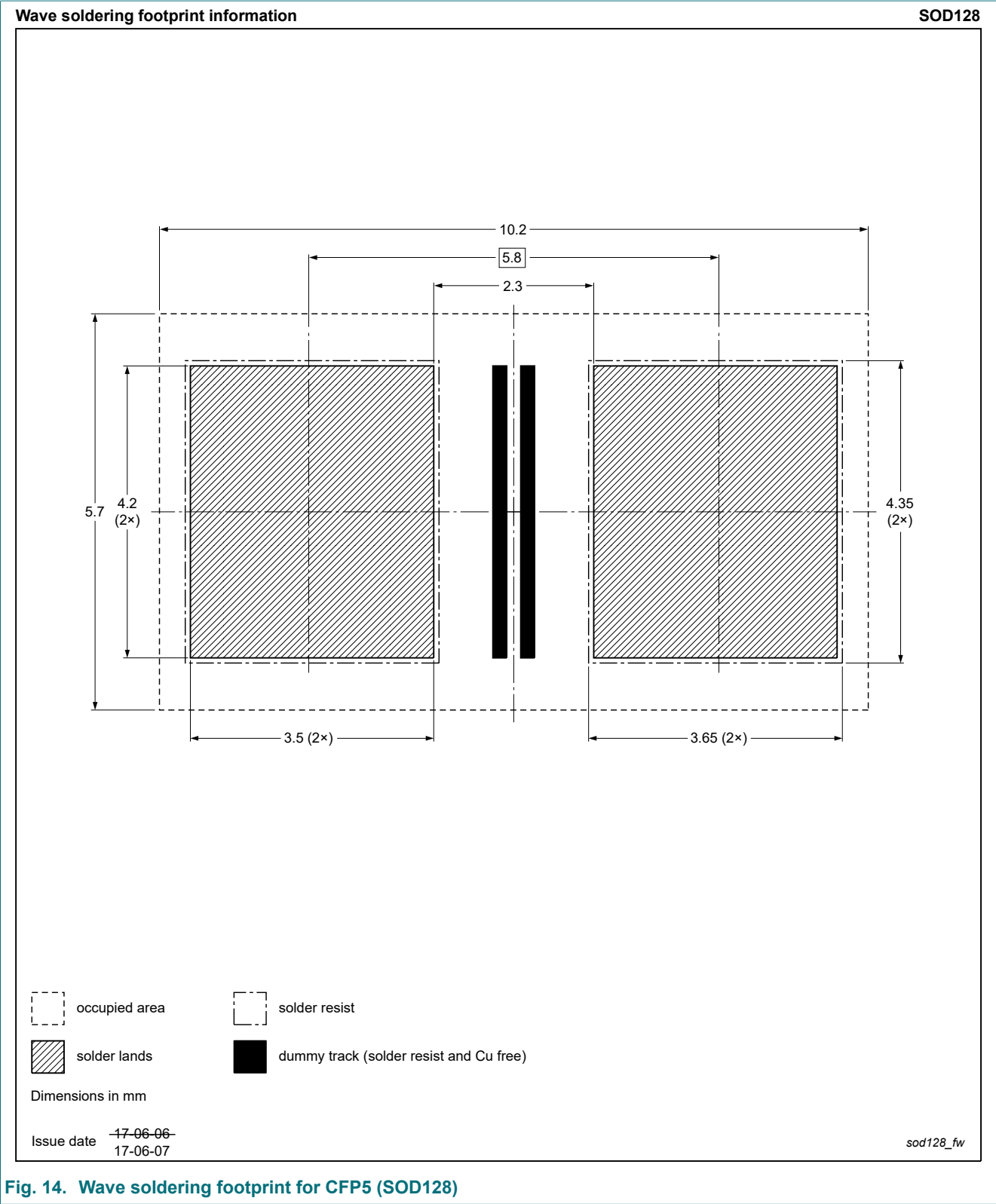


Fig. 14. Wave soldering footprint for CFP5 (SOD128)

14. Revision history

Table 8. Revision history

| Data sheet ID | Release date | Data sheet status | Change notice | Supersedes |
|------------------|--------------|--------------------|---------------|------------|
| PMEG10050ELP 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. |
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