



PMEG3002AEB

30 V, 200 mA low VF Schottky barrier diode

12 June 2023

Product data sheet

1. General description

Planar Schottky barrier diode with an integrated guard ring for stress protection, encapsulated in a SOD523 (SC-79) ultra small Surface-Mounted Device (SMD) plastic package.

2. Features and benefits

- Forward current: 200 mA
- Reverse voltage: 30 V
- Very low forward voltage
- Ultra small SMD package
- AEC-Q101 qualified

3. Applications

- Ultra high-speed switching
- High efficiency DC/DC conversion
- Voltage clamping
- Inverse-polarity protection
- Low voltage rectification
- Low power consumption applications



4. Quick reference data

Table 1. Quick reference data

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|--------|-----------------|---|-----|-----|-----|------|
| V_R | reverse voltage | | - | - | 30 | V |
| I_F | forward current | | - | - | 200 | mA |
| V_F | forward voltage | $I_F = 200 \text{ mA}$; pulsed; $t_p \leq 300 \text{ } \mu\text{s}$; $\delta \leq 0.02$; $T_{\text{amb}} = 25 \text{ } ^\circ\text{C}$ | - | 420 | 480 | mV |

5. Pinning information

Table 2. Pinning information

| Pin | Symbol | Description | Simplified outline | Graphic symbol |
|-----|--------|-------------|---|---|
| 1 | K | cathode[1] |  SC-79 (SOD523) |  sym001 |
| 2 | A | anode | | |

[1] The marking bar indicates the cathode.

6. Ordering information

Table 3. Ordering information

| Type number | Package | | |
|-----------------------------|---------|--|------------------------|
| | Name | Description | Version |
| PMEG3002AEB | SC-79 | plastic, surface-mounted package; 2 leads; 1.2 mm x 0.8 mm x 0.6 mm body | SOD523 |

7. Marking

Table 4. Marking codes

| Type number | Marking code |
|-------------|--------------|
| PMEG3002AEB | B1 |

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 | | - | 30 | V |
| I_F | forward current | | - | 200 | mA |
| I_{FRM} | repetitive peak forward current | $t_p \leq 1$ ms; $\delta \leq 0.5$ | - | 300 | mA |
| I_{FSM} | non-repetitive peak forward current | $t_p = 8.3$ ms; half sinewave; JEDEC method | - | 1 | A |
| T_j | junction temperature | | - | 125 | °C |
| T_{amb} | ambient temperature | | -65 | 125 | °C |
| T_{stg} | storage temperature | | -65 | 150 | °C |

9. Thermal characteristics

Table 6. Thermal characteristics

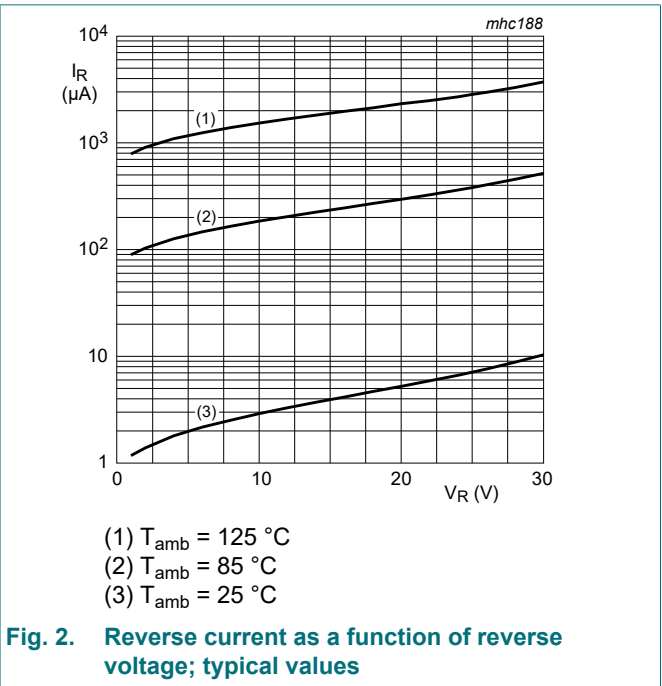
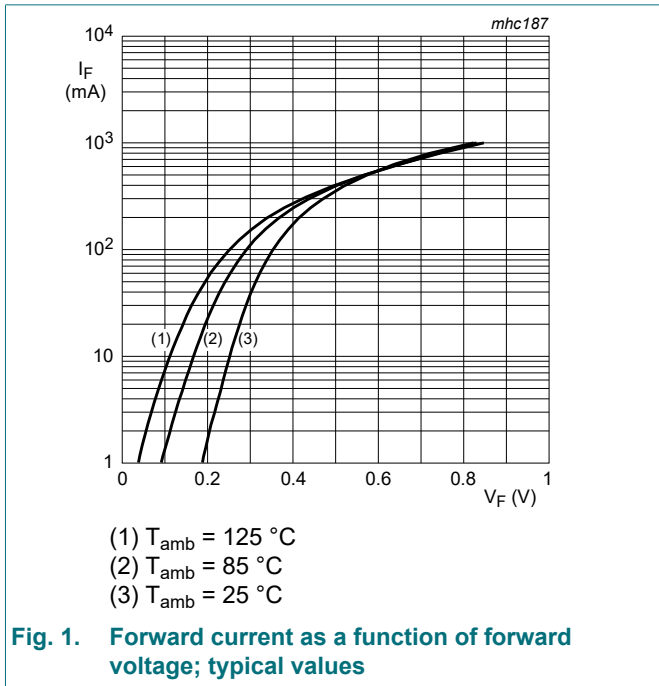
| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|---------------|---|-------------|---------|-----|-----|------|
| $R_{th(j-a)}$ | thermal resistance from junction to ambient | in free air | [1] [2] | - | 450 | K/W |

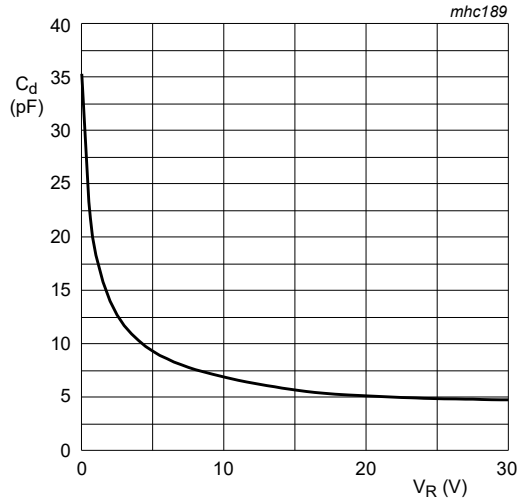
- [1] For Schottky barrier diodes thermal runaway has to be considered, as in some applications the reverse power losses P_R are a significant part of the total power losses.
 [2] Device mounted on an FR4 PCB, single-sided copper, tin-plated and standard footprint.

10. Characteristics

Table 7. Characteristics

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|----------------|-------------------|--|-----|-----|-----|------|
| V _F | forward voltage | I _F = 0.1 mA; pulsed; t _p ≤ 300 μs; δ ≤ 0.02; T _{amb} = 25 °C | - | 130 | 190 | mV |
| | | I _F = 1 mA; pulsed; t _p ≤ 300 μs; δ ≤ 0.02; T _{amb} = 25 °C | - | 190 | 250 | mV |
| | | I _F = 10 mA; pulsed; t _p ≤ 300 μs; δ ≤ 0.02; T _{amb} = 25 °C | - | 255 | 300 | mV |
| | | I _F = 100 mA; pulsed; t _p ≤ 300 μs; δ ≤ 0.02; T _{amb} = 25 °C | - | 355 | 400 | mV |
| | | I _F = 200 mA; pulsed; t _p ≤ 300 μs; δ ≤ 0.02; T _{amb} = 25 °C | - | 420 | 480 | mV |
| I _R | reverse current | V _R = 10 V; t _p ≤ 300 μs; δ ≤ 0.02; T _{amb} = 25 °C | - | 2.5 | 10 | μA |
| C _d | diode capacitance | V _R = 1 V; f = 1 MHz; T _{amb} = 25 °C | - | 20 | 25 | pF |





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

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

11. Test information

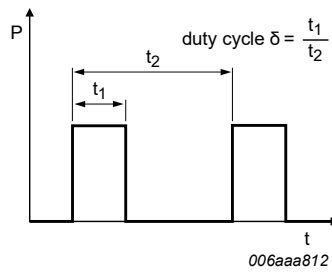


Fig. 4. Duty cycle definition

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

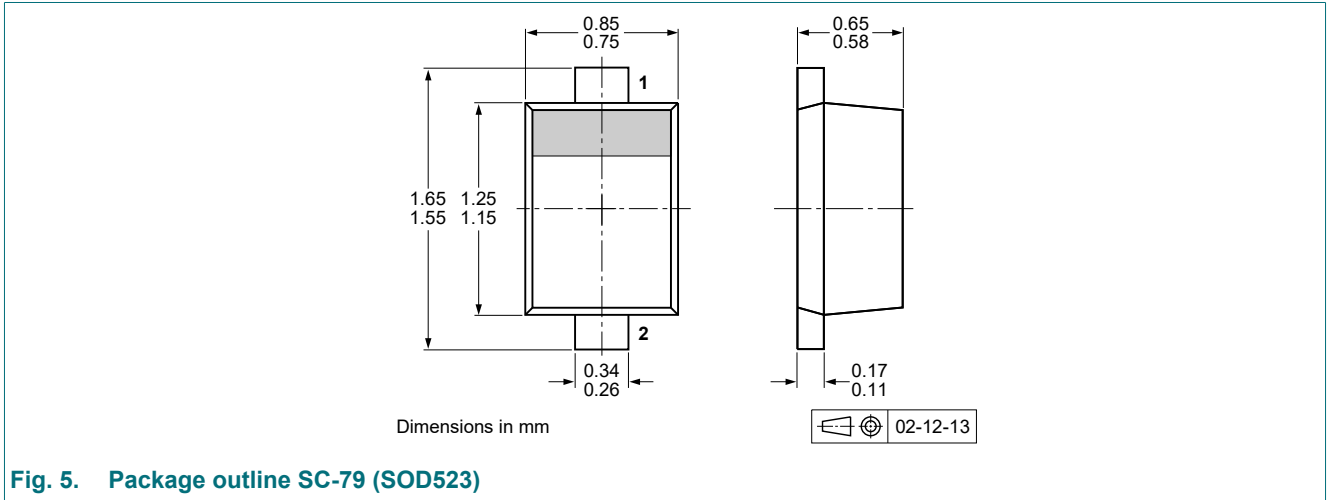


Fig. 5. Package outline SC-79 (SOD523)

13. Soldering

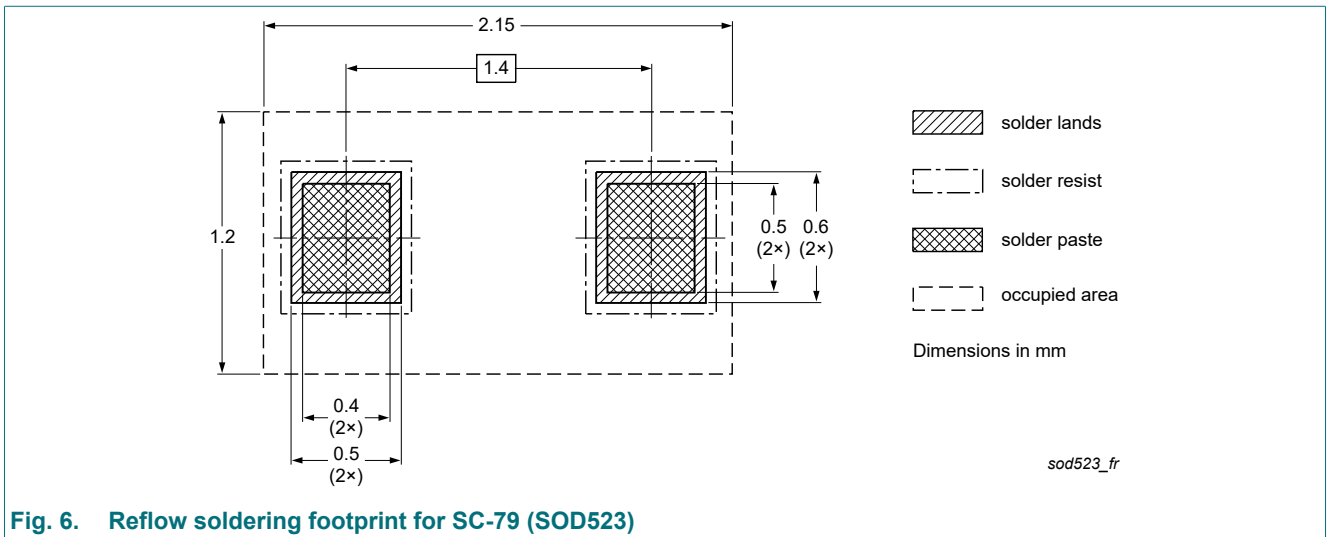


Fig. 6. Reflow soldering footprint for SC-79 (SOD523)

14. Revision history

Table 8. Revision history

| Data sheet ID | Release date | Data sheet status | Change notice | Supersedes |
|-----------------|--|--------------------|---------------|-----------------|
| PMEG3002AEB v.2 | 20230612 | Product data sheet | - | PMEG3002AEB v.1 |
| Modifications: | <ul style="list-style-type: none">The format of this data sheet has been redesigned to comply with the identity guidelines of Nexperia.Legal texts have been adapted to the new company name where appropriate. | | | |
| PMEG3002AEB v.1 | 20020506 | 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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- [2] The term 'short data sheet' is explained in section "Definitions".
- [3] The product status of device(s) described in this document may have changed since this document was published and may differ in case of multiple devices. The latest product status information is available on the internet at <https://www.nexperia.com>.

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