

PMEG3002TV

0.2 A very low V_F MEGA Schottky barrier dual rectifier in SOT666 package

Rev. 02 — 15 January 2010

Product data sheet

1. Product profile

1.1 General description

Planar Maximum Efficiency General Application (MEGA) Schottky barrier dual rectifier with an integrated guard ring for stress protection, encapsulated in a SOT666 ultra small and flat lead Surface Mounted Device (SMD) plastic package.

Table 1. Product overview

| Type number | Package | | Configuration |
|-------------|---------|-------|---------------|
| | NXP | JEITA | |
| PMEG3002TV | SOT666 | - | dual isolated |

1.2 Features

- Forward current: ≤ 0.2 A
- Reverse voltage: ≤ 30 V
- Very low forward voltage
- Ultra small and flat lead SMD plastic package

1.3 Applications

- Low voltage rectification
- High efficiency DC-to-DC conversion
- Switch mode power supply
- Inverse polarity protection
- Low power consumption applications

1.4 Quick reference data

Table 2. Quick reference data

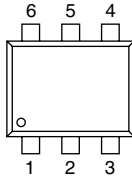
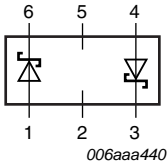
| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|------------------|-----------------|----------------------|-------|-----|-----|------|
| Per diode | | | | | | |
| I_F | forward current | $T_{amb} \leq 25$ °C | [1] - | - | 0.2 | A |
| V_R | reverse voltage | | - | - | 30 | V |
| V_F | forward voltage | $I_F = 200$ mA | [2] - | 420 | 480 | mV |

[1] Device mounted on an FR4 Printed-Circuit Board (PCB), single-sided copper, tin-plated and standard footprint.

[2] Pulse test: $t_p \leq 300$ μ s; $\delta \leq 0.02$.

2. Pinning information

Table 3. Pinning

| Pin | Description | Simplified outline | Symbol |
|-----|-------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 1 | anode (diode 1) |  |  |
| 2 | not connected | | |
| 3 | cathode (diode 2) | | |
| 4 | anode (diode 2) | | |
| 5 | not connected | | |
| 6 | cathode (diode 1) | | |

3. Ordering information

Table 4. Ordering information

| Type number | Package | | |
|-------------|---------|------------------------------------------|---------|
| | Name | Description | Version |
| PMEG3002TV | - | plastic surface mounted package; 6 leads | SOT666 |

4. Marking

Table 5. Marking codes

| Type number | Marking code |
|-------------|--------------|
| PMEG3002TV | 2M |

5. Limiting values

Table 6. Limiting values

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

| Symbol | Parameter | Conditions | Min | Max | Unit |
|-------------------|-------------------------------------|------------------------------------------|-------|------|------|
| Per diode | | | | | |
| V_R | reverse voltage | | - | 30 | V |
| I_F | forward current | $T_{amb} \leq 25\text{ °C}$ | [1] - | 0.2 | A |
| I_{FRM} | repetitive peak forward current | $t_p \leq 1\text{ ms}; \delta \leq 0.25$ | - | 1 | A |
| I_{FSM} | non-repetitive peak forward current | square wave; $t_p = 8\text{ ms}$ | [1] - | 2.5 | A |
| P_{tot} | total power dissipation | $T_{amb} \leq 25\text{ °C}$ | [1] - | 200 | mW |
| | | | [2] - | 300 | mW |
| Per device | | | | | |
| P_{tot} | total power dissipation | $T_{amb} \leq 25\text{ °C}$ | [1] - | 300 | mW |
| | | | [2] - | 400 | 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 cm².

6. Thermal characteristics

Table 7. Thermal characteristics

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|-------------------|--------------------------------------------------|-------------|----------|-----|-----|------|
| Per device | | | | | | |
| $R_{th(j-a)}$ | thermal resistance from junction to ambient | in free air | [1][2] - | - | 416 | K/W |
| | | | [1][3] - | - | 318 | K/W |
| $R_{th(j-sp)}$ | thermal resistance from junction to solder point | | [4] - | - | 195 | 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. Nomograms for determining the reverse power losses P_R and $I_{F(AV)}$ rating are available on request.

[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.

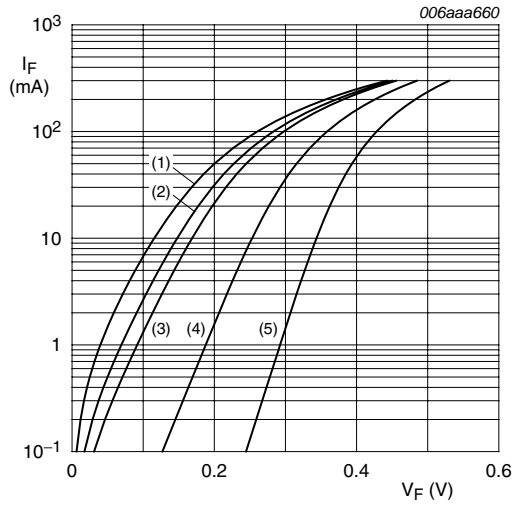
7. Characteristics

Table 8. Characteristics

$T_{amb} = 25\text{ }^\circ\text{C}$ unless otherwise specified.

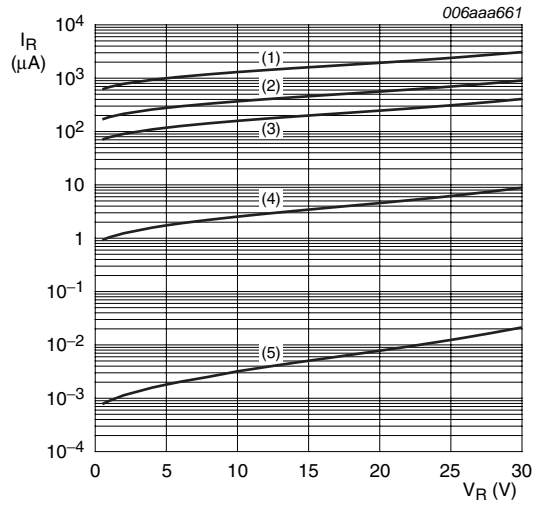
| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|------------------|-------------------|----------------------------------------------------------|-----|-----|-----|---------------|
| Per diode | | | | | | |
| V_F | forward voltage | | [1] | | | |
| | | $I_F = 0.1\text{ mA}$ | - | 130 | 190 | mV |
| | | $I_F = 1\text{ mA}$ | - | 190 | 250 | mV |
| | | $I_F = 10\text{ mA}$ | - | 255 | 300 | mV |
| | | $I_F = 100\text{ mA}$ | - | 355 | 400 | mV |
| | | $I_F = 200\text{ mA}$ | - | 420 | 480 | mV |
| I_R | reverse current | $V_R = 10\text{ V}$ | - | 3 | 10 | μA |
| | | $V_R = 30\text{ V}$ | - | 10 | 30 | μA |
| | | $V_R = 10\text{ V}; T_{amb} = 100\text{ }^\circ\text{C}$ | - | 400 | - | μA |
| C_d | diode capacitance | $V_R = 1\text{ V}; f = 1\text{ MHz}$ | - | 20 | 25 | pF |

[1] Pulse test: $t_p \leq 300\text{ }\mu\text{s}; \delta \leq 0.02$.



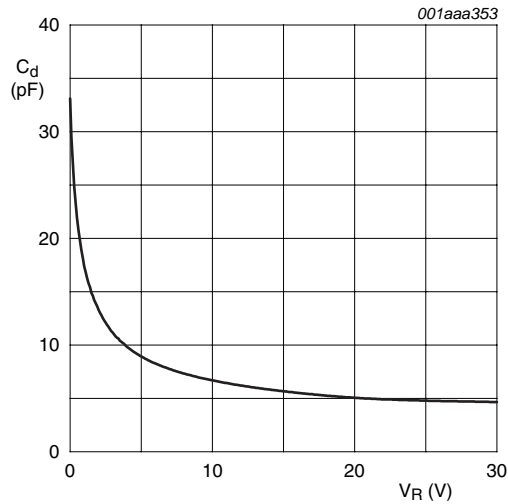
- (1) $T_{amb} = 125\text{ °C}$
- (2) $T_{amb} = 100\text{ °C}$
- (3) $T_{amb} = 85\text{ °C}$
- (4) $T_{amb} = 25\text{ °C}$
- (5) $T_{amb} = -40\text{ °C}$

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



- (1) $T_{amb} = 125\text{ °C}$
- (2) $T_{amb} = 100\text{ °C}$
- (3) $T_{amb} = 85\text{ °C}$
- (4) $T_{amb} = 25\text{ °C}$
- (5) $T_{amb} = -40\text{ °C}$

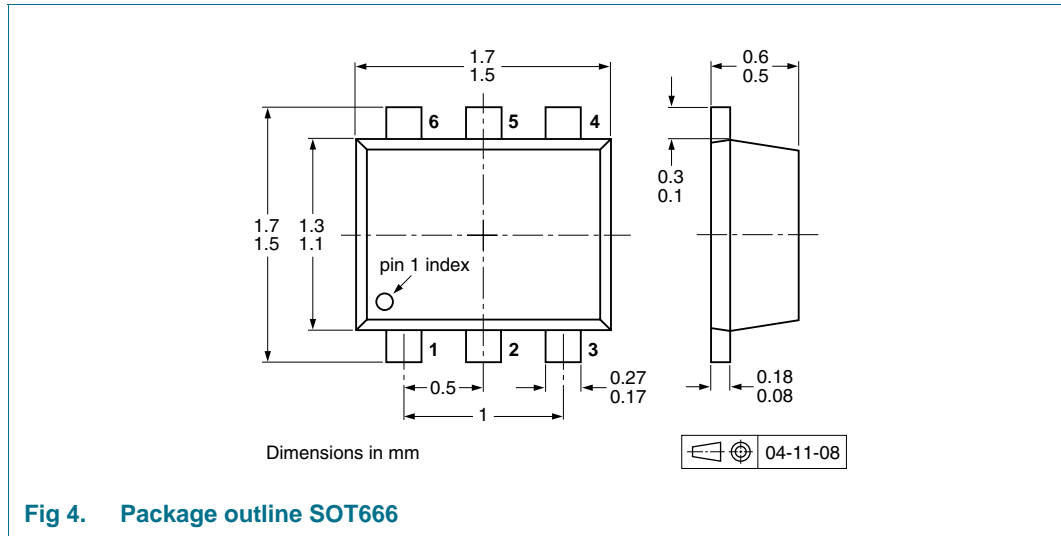
Fig 2. Reverse current as a function of reverse voltage; typical values



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

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

8. Package outline



9. Packing information

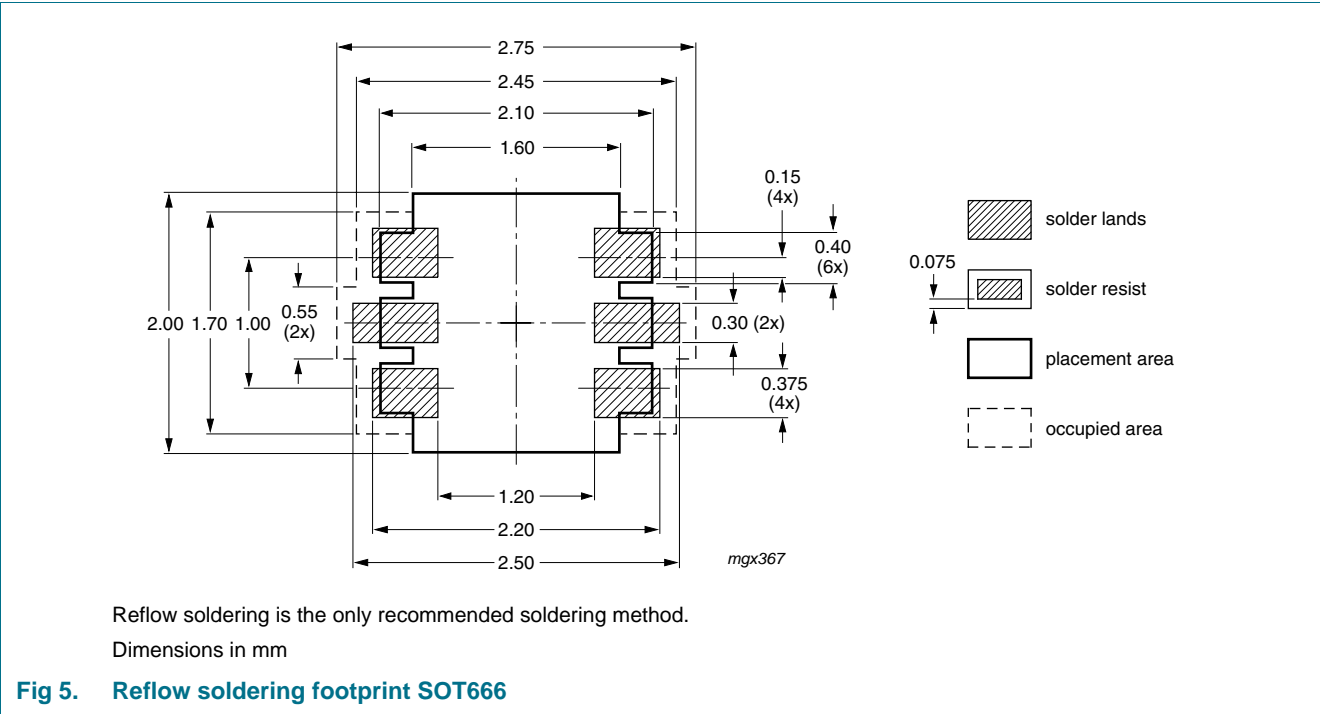
Table 9. Packing methods

The indicated -xxx are the last three digits of the 12NC ordering code.^[1]

| Type number | Package | Description | Packing quantity | |
|-------------|---------|--------------------------------|------------------|------|
| | | | 4000 | 8000 |
| PMEG3002TV | SOT666 | 2 mm pitch, 8 mm tape and reel | - | -315 |
| | | 4 mm pitch, 8 mm tape and reel | -115 | - |

[1] For further information and the availability of packing methods, see [Section 13](#).

10. Soldering



11. Revision history

Table 10. Revision history

| Document ID | Release date | Data sheet status | Change notice | Supersedes |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|---------------|--------------|
| PMEG3002TV_2 | 20100115 | Product data sheet | - | PMEG3002TV_1 |
| Modifications: | <ul style="list-style-type: none">This data sheet was changed to reflect the new company name NXP Semiconductors, including new legal definitions and disclaimers. No changes were made to the technical content. | | | |
| PMEG3002TV_1 | 20051021 | Product data sheet | - | - |

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12.1 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. |

[1] Please consult the most recently issued document before initiating or completing a design.

[2] The term 'short data sheet' is explained in section "Definitions".

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14. Contents

| | | |
|-----------|------------------------------------------|-----------|
| 1 | Product profile | 1 |
| 1.1 | General description | 1 |
| 1.2 | Features | 1 |
| 1.3 | Applications | 1 |
| 1.4 | Quick reference data | 1 |
| 2 | Pinning information | 2 |
| 3 | Ordering information | 2 |
| 4 | Marking | 2 |
| 5 | Limiting values | 3 |
| 6 | Thermal characteristics | 3 |
| 7 | Characteristics | 4 |
| 8 | Package outline | 6 |
| 9 | Packing information | 6 |
| 10 | Soldering | 7 |
| 11 | Revision history | 8 |
| 12 | Legal information | 9 |
| 12.1 | Data sheet status | 9 |
| 12.2 | Definitions | 9 |
| 12.3 | Disclaimers | 9 |
| 12.4 | Trademarks | 9 |
| 13 | Contact information | 9 |
| 14 | Contents | 10 |

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