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: $I_{F(AV)} \leq 1 \text{ A}$
- Reverse voltage: $V_R \leq 60 \text{ V}$
- 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>
<thead>
<tr>
<th>Symbol</th>
<th>Parameter</th>
<th>Conditions</th>
<th>Min</th>
<th>Typ</th>
<th>Max</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>$I_{F(AV)}$</td>
<td>average forward current</td>
<td>$\delta = 0.5; f = 20 \text{ kHz}; \text{ square wave}; T_{sp} \leq 145 \degree \text{C}$</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>A</td>
</tr>
<tr>
<td>$V_R$</td>
<td>reverse voltage</td>
<td>$T_j = 25 \degree \text{C}$</td>
<td>-</td>
<td>-</td>
<td>60</td>
<td>V</td>
</tr>
<tr>
<td>$V_F$</td>
<td>forward voltage</td>
<td>$I_F = 1 \text{ A}; T_j = 25 \degree \text{C}$</td>
<td>-</td>
<td>460</td>
<td>530</td>
<td>mV</td>
</tr>
<tr>
<td>$I_R$</td>
<td>reverse current</td>
<td>$V_R = 60 \text{ V}; T_j = 25 \degree \text{C}$</td>
<td>-</td>
<td>30</td>
<td>60</td>
<td>$\mu$A</td>
</tr>
</tbody>
</table>

5. Pinning information

<table>
<thead>
<tr>
<th>Pin</th>
<th>Symbol</th>
<th>Description</th>
<th>Simplified outline</th>
<th>Graphic symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>K</td>
<td>cathode[1]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>A</td>
<td>anode</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

[1] The marking bar indicates the cathode.
6. Ordering information

Table 3. Ordering information

<table>
<thead>
<tr>
<th>Type number</th>
<th>Package Name</th>
<th>Description</th>
<th>Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>PMEG6010EP</td>
<td>CFP5</td>
<td>plastic, surface mounted package; 2 terminals; 4 mm pitch; 3.8 mm x 2.6 mm x 1 mm body</td>
<td>SOD128</td>
</tr>
</tbody>
</table>

7. Marking

Table 4. Marking codes

<table>
<thead>
<tr>
<th>Type number</th>
<th>Marking code</th>
</tr>
</thead>
<tbody>
<tr>
<td>PMEG6010EP</td>
<td>A9</td>
</tr>
</tbody>
</table>

8. Limiting values

Table 5. Limiting values

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

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Parameter</th>
<th>Conditions</th>
<th>Min</th>
<th>Max</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>V_R</td>
<td>reverse voltage</td>
<td>T_j = 25 °C</td>
<td>-</td>
<td>60</td>
<td>V</td>
</tr>
<tr>
<td>I_(F(AV))</td>
<td>average forward current</td>
<td>δ = 0.5; f = 20 kHz; square wave; T_amb ≤ 115 °C</td>
<td>[1]</td>
<td>1</td>
<td>A</td>
</tr>
<tr>
<td>I_FSM</td>
<td>non-repetitive peak forward current</td>
<td>T_p = 8.3 ms; half sine wave; T_(jinit) = 25 °C</td>
<td>-</td>
<td>50</td>
<td>A</td>
</tr>
<tr>
<td>P_tot</td>
<td>total power dissipation</td>
<td>T_amb ≤ 25 °C</td>
<td>[2]</td>
<td>625</td>
<td>mW</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>[3]</td>
<td>1.05</td>
<td>W</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>[1]</td>
<td>2.1</td>
<td>W</td>
</tr>
<tr>
<td>T_j</td>
<td>junction temperature</td>
<td></td>
<td>-</td>
<td>150</td>
<td>°C</td>
</tr>
<tr>
<td>T_amb</td>
<td>ambient temperature</td>
<td></td>
<td>-55</td>
<td>150</td>
<td>°C</td>
</tr>
<tr>
<td>T_stg</td>
<td>storage temperature</td>
<td></td>
<td>-65</td>
<td>150</td>
<td>°C</td>
</tr>
</tbody>
</table>

# 9. Thermal characteristics

## Table 6. Thermal characteristics

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Parameter</th>
<th>Conditions</th>
<th>Min</th>
<th>Typ</th>
<th>Max</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>$R_{\text{th(j-a)}}$</td>
<td>thermal resistance from junction to ambient</td>
<td>in free air</td>
<td>[1]</td>
<td>[2]</td>
<td>200</td>
<td>K/W</td>
</tr>
<tr>
<td>$R_{\text{th(j-sp)}}$</td>
<td>thermal resistance from junction to solder point</td>
<td>[5]</td>
<td>-</td>
<td>-</td>
<td>12</td>
<td>K/W</td>
</tr>
</tbody>
</table>

[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.

---

[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

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Parameter</th>
<th>Conditions</th>
<th>Min</th>
<th>Typ</th>
<th>Max</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>V_F</td>
<td>forward voltage</td>
<td>I_F = 0.1 A; T_j = 25 °C</td>
<td>-</td>
<td>320</td>
<td>370</td>
<td>mV</td>
</tr>
<tr>
<td></td>
<td></td>
<td>I_F = 0.7 A; T_j = 25 °C</td>
<td>-</td>
<td>430</td>
<td>490</td>
<td>mV</td>
</tr>
<tr>
<td></td>
<td></td>
<td>I_F = 1 A; T_j = 25 °C</td>
<td>-</td>
<td>460</td>
<td>530</td>
<td>mV</td>
</tr>
<tr>
<td>I_R</td>
<td>reverse current</td>
<td>V_R = 5 V; T_j = 25 °C</td>
<td>-</td>
<td>1.2</td>
<td>-</td>
<td>µA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>V_R = 10 V; T_j = 25 °C</td>
<td>-</td>
<td>1.7</td>
<td>-</td>
<td>µA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>V_R = 60 V; T_j = 25 °C</td>
<td>-</td>
<td>30</td>
<td>60</td>
<td>µA</td>
</tr>
<tr>
<td>C_d</td>
<td>diode capacitance</td>
<td>V_R = 1 V; f = 1 MHz; T_j = 25 °C</td>
<td>-</td>
<td>120</td>
<td>-</td>
<td>pF</td>
</tr>
<tr>
<td></td>
<td></td>
<td>V_R = 10 V; f = 1 MHz; T_j = 25 °C</td>
<td>-</td>
<td>40</td>
<td>-</td>
<td>pF</td>
</tr>
</tbody>
</table>
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

FR4 PCB, standard footprint
$T_j = 150 \, ^\circ C$
(1) $\delta = 1$; DC
(2) $\delta = 0.5$; $f = 20 \, kHz$
(3) $\delta = 0.2$; $f = 20 \, kHz$
(4) $\delta = 0.1$; $f = 20 \, kHz$

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

FR4 PCB, mounting pad for cathode 1 cm$^2$
$T_j = 150 \, ^\circ C$
(1) $\delta = 1$; DC
(2) $\delta = 0.5$; $f = 20 \, kHz$
(3) $\delta = 0.2$; $f = 20 \, kHz$
(4) $\delta = 0.1$; $f = 20 \, kHz$

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

Ceramic PCB, Al$_2$O$_3$, standard footprint
$T_j = 150 \, ^\circ C$
(1) $\delta = 1$; DC
(2) $\delta = 0.5$; $f = 20 \, kHz$
(3) $\delta = 0.2$; $f = 20 \, kHz$
(4) $\delta = 0.1$; $f = 20 \, kHz$

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

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

\[ I_{F(\text{AV})} = I_M \times \delta \]

with \( I_M \) defined as peak current

\[ I_{\text{RMS}} = I_{F(\text{AV})} \]

at DC

\[ I_{\text{RMS}} = I_M \times \sqrt{\delta} \]

with \( I_{\text{RMS}} \) defined as RMS current
12. Package outline

![Package outline CFP5 (SOD128)]

Fig. 14. Package outline CFP5 (SOD128)

13. Soldering

![Reflow soldering footprint for CFP5 (SOD128)]

Fig. 15. Reflow soldering footprint for CFP5 (SOD128)
Wave soldering footprint information

---

**Fig. 16. Wave soldering footprint for CFP5 (SOD128)**
## 14. Revision history

<table>
<thead>
<tr>
<th>Data sheet ID</th>
<th>Release date</th>
<th>Data sheet status</th>
<th>Change notice</th>
<th>Supersedes</th>
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<td>Product data sheet</td>
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<td>Modifications:</td>
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<td>• Limiting values:</td>
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<td></td>
</tr>
<tr>
<td>• Measurement</td>
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<td></td>
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</tr>
<tr>
<td>• Conditions for $I_{FSM}$ changed from square wave to half-sine wave.</td>
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<td>PMEG6010EP v.3</td>
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</table>
15. Legal information

Data sheet status

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<th>Document status</th>
<th>Product status</th>
<th>Definition</th>
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<tbody>
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<td>Development</td>
<td>This document contains data from the respective specification for product development.</td>
</tr>
<tr>
<td>Preliminary [short] data sheet</td>
<td>Qualification</td>
<td>This document contains data from the preliminary specification.</td>
</tr>
<tr>
<td>Product [short] data sheet</td>
<td>Production</td>
<td>This document contains the product specification.</td>
</tr>
</tbody>
</table>

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