1. General description

2. Features and benefits
- Average forward current $I_{F(AV)} \leq 0.5$ A
- Reverse voltage $V_R \leq 30$ V
- Low forward voltage typ. $V_F = 250$ mV
- Low reverse current typ. $I_R = 4$ µA
- Package height typ. 0.3 mm

3. Applications
- Low voltage rectification
- High efficiency DC-to-DC conversion
- Switch mode power supply
- Ultra high speed switching
- LED backlight for mobile application

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>$I_F$</td>
<td>forward current</td>
<td>$T_{sp} \leq 135 , ^\circ C; ; \delta = 1$</td>
<td>-</td>
<td>-</td>
<td>0.7</td>
<td>A</td>
</tr>
<tr>
<td>$V_R$</td>
<td>reverse voltage</td>
<td>$T_j = 25 , ^\circ C$</td>
<td>-</td>
<td>-</td>
<td>30</td>
<td>V</td>
</tr>
<tr>
<td>$V_F$</td>
<td>forward voltage</td>
<td>$I_F = 200 , mA; ; t_p \leq 300 , \mu s; ; \delta \leq 0.02 ; ; ; T_j = 25 , ^\circ C$</td>
<td>-</td>
<td>405</td>
<td>470</td>
<td>mV</td>
</tr>
<tr>
<td>$I_R$</td>
<td>reverse current</td>
<td>$V_R = 30 , V; ; T_j = 25 , ^\circ C; ; pulsed$</td>
<td>-</td>
<td>20</td>
<td>80</td>
<td>µA</td>
</tr>
</tbody>
</table>
5. Pinning information

Table 2. 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>1 R 2</td>
</tr>
<tr>
<td>2</td>
<td>A</td>
<td>anode</td>
<td>Transparent top view</td>
<td>sym001</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</th>
<th>Description</th>
<th>Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>PMEG3005AESF</td>
<td>DSN0603-2</td>
<td>Leadless ultra small package; 2 terminals; body 0.6 x 0.3 x 0.3 mm</td>
<td>SOD962-2</td>
</tr>
</tbody>
</table>

7. Marking

Table 4. Marking codes

<table>
<thead>
<tr>
<th>Type number</th>
<th>Marking code</th>
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</thead>
<tbody>
<tr>
<td>PMEG3005AESF</td>
<td>8</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>$T_j = 25 , ^\circ C$</td>
<td>-</td>
<td>30</td>
<td>V</td>
</tr>
<tr>
<td>$I_F$</td>
<td>forward current</td>
<td>$T_{sp} \leq 135 , ^\circ C; \delta = 1$</td>
<td>-</td>
<td>0.7</td>
<td>A</td>
</tr>
<tr>
<td>$I_{F(AV)}$</td>
<td>average forward current</td>
<td>$\delta = 0.5; f = 20 , kHz; T_{amb} \leq 105 , ^\circ C; square wave$</td>
<td>[1]</td>
<td>0.5</td>
<td>A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$\delta = 0.5; f = 20 , kHz; T_{sp} \leq 140 , ^\circ C; square wave$</td>
<td>-</td>
<td>0.5</td>
<td>A</td>
</tr>
<tr>
<td>$I_{FRM}$</td>
<td>repetitive peak forward current</td>
<td>$t_p \leq 1 , ms; \delta \leq 0.25$</td>
<td>-</td>
<td>1.5</td>
<td>A</td>
</tr>
<tr>
<td>$I_{FSM}$</td>
<td>non-repetitive peak forward current</td>
<td>$t_p = 8 , ms; T_{j(init)} = 25 , ^\circ C; square wave$</td>
<td>-</td>
<td>4</td>
<td>A</td>
</tr>
<tr>
<td>$P_{tot}$</td>
<td>total power dissipation</td>
<td>$T_{amb} \leq 25 , ^\circ C$</td>
<td>[2]</td>
<td>405</td>
<td>mW</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>[3]</td>
<td>660</td>
<td>mW</td>
</tr>
</tbody>
</table>
30 V, 0.5 A low VF MEGA Schottky barrier rectifier

### 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>$R_{th(j-a)}$</td>
<td>thermal resistance from junction to ambient</td>
<td>in free air</td>
<td>[1] [2]</td>
<td>-</td>
<td>-</td>
<td>310 K/W</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>[1] [3]</td>
<td>-</td>
<td>-</td>
<td>190 K/W</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>[1] [4]</td>
<td>-</td>
<td>-</td>
<td>105 K/W</td>
</tr>
<tr>
<td>$R_{th(j-sp)}$</td>
<td>thermal resistance from junction to solder point</td>
<td></td>
<td>[5]</td>
<td>-</td>
<td>-</td>
<td>40 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.


[3] Device mounted on an FR4 PCB, single-sided copper, tin-plated, mounting pad for anode and cathode 1 cm$^2$ each.


---

Fig. 1. 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>$V_{(BR)R}$</td>
<td>reverse breakdown voltage</td>
<td>$I_R = 100 \mu A; t_p = 300 \mu s; \delta = 0.02$ ; $T_j = 25^\circ C$</td>
<td>30</td>
<td>-</td>
<td>-</td>
<td>V</td>
</tr>
<tr>
<td>$V_F$</td>
<td>forward voltage</td>
<td>$I_F = 0.1 mA; t_p \leq 300 \mu s; \delta \leq 0.02$ ; $T_j = 25^\circ C$</td>
<td>-</td>
<td>120</td>
<td>185</td>
<td>mV</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$I_F = 1 mA; t_p \leq 300 \mu s; \delta \leq 0.02$ ; $T_j = 25^\circ C$</td>
<td>-</td>
<td>180</td>
<td>245</td>
<td>mV</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$I_F = 10 mA; t_p \leq 300 \mu s; \delta \leq 0.02$ ; $T_j = 25^\circ C$</td>
<td>-</td>
<td>250</td>
<td>320</td>
<td>mV</td>
</tr>
</tbody>
</table>
PMEG3005AESF
30 V, 0.5 A low VF MEGA Schottky barrier rectifier

<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>IF</td>
<td>reverse current</td>
<td>$V_R = 10 , V; , T_J = 25 , ^{\circ}C$; pulsed</td>
<td>-</td>
<td>4</td>
<td>30</td>
<td>µA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$V_R = 30 , V; , T_J = 25 , ^{\circ}C$; pulsed</td>
<td>-</td>
<td>20</td>
<td>80</td>
<td>µA</td>
</tr>
<tr>
<td>Cd</td>
<td>diode capacitance</td>
<td>$V_R = 1 , V; , f = 1 , MHz; , T_J = 25 , ^{\circ}C$</td>
<td>-</td>
<td>22</td>
<td>-</td>
<td>pF</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$V_R = 10 , V; , f = 1 , MHz; , T_J = 25 , ^{\circ}C$</td>
<td>-</td>
<td>8</td>
<td>-</td>
<td>pF</td>
</tr>
<tr>
<td>t_rr</td>
<td>reverse recovery time</td>
<td>$I_F = 500 , mA; , I_R = 500 , mA$; $I_R(meas) = 100 , mA; , T_J = 25 , ^{\circ}C$</td>
<td>-</td>
<td>1.37</td>
<td>-</td>
<td>ns</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

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

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

\( T_J = 150 ^\circ \text{C} \)

(1) \( \delta = 0.1 \)
(2) \( \delta = 0.2 \)
(3) \( \delta = 0.5 \)
(4) \( \delta = 1 \)

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

\( T_J = 125 ^\circ \text{C} \)

(1) \( \delta = 1 \)
(2) \( \delta = 0.9 \)
(3) \( \delta = 0.8 \)
(4) \( \delta = 0.5 \)

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

FR4 PCB, standard footprint

\( T_J = 150 ^\circ \text{C} \)

(1) \( \delta = 1; \ DC \)
(2) \( \delta = 0.5; f = 20 \text{ kHz} \)
(3) \( \delta = 0.2; f = 20 \text{ kHz} \)
(4) \( \delta = 0.1; f = 20 \text{ kHz} \)
**30 V, 0.5 A low VF MEGA Schottky barrier rectifier**

FR4 PCB, mounting pad for anode and cathode 1 cm² each

- **$T_j = 150 \, ^\circ C$**
- (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, Al₂O₃, 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**

- **$T_j = 150 \, ^\circ C$**
- (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. 12. Average forward current as a function of solder point temperature; typical values**
11. Test information

Fig. 13. Reverse recovery definition

Fig. 14. Duty cycle definition

The current ratings for the typical waveforms are calculated according to the equations: $I_{F(AV)} = I_M \times \delta$ with $I_M$ defined as peak current, $I_{RMS} = I_{F(AV)}$ at DC, and $I_{RMS} = I_M \times \sqrt{\delta}$ with $I_{RMS}$ defined as RMS current.
12. Package outline

Leadless ultra small package; 2 terminals; body 0.6 x 0.3 x 0.3 mm

Fig. 15. Package outline DSN0603-2 (SOD962-2)
13. Soldering

Footprint information for reflow soldering of leadless ultra small package; 2 terminals

Fig. 16. Reflow soldering footprint for DSN0603-2 (SOD962-2)

14. Revision history

Table 8. Revision history

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<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>PMEG3005AESF_S500 v.1</td>
<td>20150605</td>
<td>Product data sheet</td>
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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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- Qualification: This document contains data from the preliminary specification.

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