Dual High Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low $V_F = 0.50\text{ V}$ at $I_F = 5\text{ A}$

**FEATURES**
- Trench MOS Schottky technology
- Low forward voltage drop, low power losses
- High efficiency operation
- Meets MSL level 1, per J-STD-020, LF maximum peak of 245 °C
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

**TYPICAL APPLICATIONS**
For use in high frequency DC/DC converters, switching power supplies, freewheeling diodes, OR-ing diode, and reverse battery protection.

**MECHANICAL DATA**
- Case: D²PAK (TO-263AB)
- Molding compound meets UL 94 V-0 flammability rating
- Base P/N-E3 - RoHS-compliant, commercial grade
- Terminals: matte tin plated leads, solderable per J-STD-002 and JESD 22-B102
- E3 suffix meets JESD 201 class 1A whisker test
- Polarity: as marked
- Mounting Torque: 10 in-lbs maximum

**PRIMARY CHARACTERISTICS**

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>SYMBOL</th>
<th>TEST CONDITIONS</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>$I_{F(AV)}$</td>
<td>$I_{F(AV)}$</td>
<td>$I_F = 5\text{ A}$, $T_A = 25\text{ °C}$</td>
<td>$0.65$</td>
</tr>
<tr>
<td>$I_{F(AV)}$</td>
<td>$I_{F(AV)}$</td>
<td>$I_F = 15\text{ A}$, $T_A = 25\text{ °C}$</td>
<td>$0.78$</td>
</tr>
<tr>
<td>$I_{F(AV)}$</td>
<td>$I_{F(AV)}$</td>
<td>$I_F = 30\text{ A}$, $T_A = 25\text{ °C}$</td>
<td>$0.87$</td>
</tr>
<tr>
<td>$I_{F(AV)}$</td>
<td>$I_{F(AV)}$</td>
<td>$I_F = 5\text{ A}$, $T_A = 125\text{ °C}$</td>
<td>$0.50$</td>
</tr>
<tr>
<td>$I_{F(AV)}$</td>
<td>$I_{F(AV)}$</td>
<td>$I_F = 15\text{ A}$, $T_A = 125\text{ °C}$</td>
<td>$0.62$</td>
</tr>
<tr>
<td>$I_{F(AV)}$</td>
<td>$I_{F(AV)}$</td>
<td>$I_F = 30\text{ A}$, $T_A = 125\text{ °C}$</td>
<td>$0.72$</td>
</tr>
</tbody>
</table>

**MAXIMUM RATINGS** ($T_A = 25\text{ °C}$ unless otherwise noted)

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>SYMBOL</th>
<th>TEST CONDITIONS</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum repetitive peak reverse voltage</td>
<td>$V_{RRM}$</td>
<td></td>
<td>$170$</td>
</tr>
<tr>
<td>Maximum average forward rectified current (fig. 1) per device</td>
<td>$I_{F(AV)}$</td>
<td></td>
<td>$60$</td>
</tr>
<tr>
<td>Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load</td>
<td>$I_{FSM}$</td>
<td></td>
<td>$210$</td>
</tr>
<tr>
<td>Voltage rate of change (rated $V_R$)</td>
<td>$dV/dt$</td>
<td></td>
<td>$10 000$</td>
</tr>
<tr>
<td>Operating junction and storage temperature range</td>
<td>$T_J, T_{STG}$</td>
<td></td>
<td>$-40$ to $+175$</td>
</tr>
</tbody>
</table>

**ELECTRICAL CHARACTERISTICS** ($T_A = 25\text{ °C}$ unless otherwise noted)

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>TEST CONDITIONS</th>
<th>SYMBOL</th>
<th>TYP.</th>
<th>MAX.</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instantaneous forward voltage per diode</td>
<td>$I_F = 5\text{ A}$, $T_A = 25\text{ °C}$</td>
<td>$V_F$</td>
<td>$0.65$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reverse current per diode</td>
<td>$V_R = 136\text{ V}$, $T_A = 25\text{ °C}$</td>
<td>$I_R$</td>
<td>$1.5$</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes**
(1) Pulse test: 300 µs pulse width, 1 % duty cycle
(2) Pulse test: Pulse width ≤ 20 ms

Revision: 20-Jun-2018

For technical questions within your region: DiodesAmericas@vishay.com, DiodesAsig@vishay.com, DiodesEurope@vishay.com

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Document Number: 89950
RATINGS AND CHARACTERISTICS CURVES (TA = 25 °C unless otherwise noted)

![Graph of Average Forward Rectified Current vs. Case Temperature](image1)

![Graph of Average Power Loss vs. Average Forward Current](image2)

![Graph of Instantaneous Forward Current vs. Instantaneous Forward Voltage](image3)

![Graph of Percent of Rated Peak Reverse Voltage vs. Instantaneous Reverse Current](image4)
Fig. 5 - Typical Junction Capacitance Per Diode

Fig. 6 - Typical Transient Thermal Impedance Per Diode

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

D²PAK (TO-263AB)

Mounting Pad Layout
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