Description

The DEXS-1106S is a 600 V, 10 A, fast recovery diode. The maximum $V_F$ of 1.6 V and the maximum $t_{rr}$ of 25 ns ($I_F : I_{RP} = 1 : 2$) are realized by optimizing the trade-off relationship between $V_F$ and $t_{rr}$. The low thermal resistance package achieves high performance in terms of heat dissipation.

Features

- $V_{RSM} = 600\ \text{V}$
- $I_{F(AV)} = 10\ \text{A}$
- $V_F = 1.6\ \text{V}$
- $t_{rr} (I_F = I_{RP}) = 30\ \text{ns}$
- Bare Lead Frame: Pb-free (RoHS Compliant)

Applications

- PFC Circuit (DCM and CRM)
- Freewheel Diode
  (Offline Buck and Buck-boost Converter)
### Absolute Maximum Ratings

Unless otherwise specified, $T_A = 25 \, ^\circ\text{C}$

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Conditions</th>
<th>Rating</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peak Repetitive Reverse Voltage</td>
<td>$V_{RSM}$</td>
<td></td>
<td>600</td>
<td>V</td>
</tr>
<tr>
<td>Repetitive Reverse Voltage</td>
<td>$V_{RM}$</td>
<td></td>
<td>600</td>
<td>V</td>
</tr>
<tr>
<td>Average Forward Current</td>
<td>$I_{F(AV)}$</td>
<td>See Figure 1 and Figure 2</td>
<td>10</td>
<td>A</td>
</tr>
<tr>
<td>Surge Forward Current</td>
<td>$I_{FSM}$</td>
<td>Half cycle sine wave, positive side, 10 ms, 1 shot</td>
<td>100</td>
<td>A</td>
</tr>
<tr>
<td>$I^2t$ Limiting Value</td>
<td>$I^2t$</td>
<td>$1 , \text{ms} \leq t \leq 10 , \text{ms}$</td>
<td>50</td>
<td>$A^2s$</td>
</tr>
<tr>
<td>Junction Temperature</td>
<td>$T_J$</td>
<td></td>
<td>$-40$ to $150$</td>
<td>$^\circ\text{C}$</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>$T_{STG}$</td>
<td></td>
<td>$-40$ to $150$</td>
<td>$^\circ\text{C}$</td>
</tr>
</tbody>
</table>

### Electrical Characteristics

Unless otherwise specified, $T_A = 25 \, ^\circ\text{C}$

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Conditions</th>
<th>Min.</th>
<th>Typ.</th>
<th>Max.</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forward Voltage Drop</td>
<td>$V_F$</td>
<td>$T_J = 25 , ^\circ\text{C}, I_F = 10 , A$</td>
<td>1.3</td>
<td>1.6</td>
<td></td>
<td>V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$T_J = 100 , ^\circ\text{C}, I_F = 10 , A$</td>
<td>1.2</td>
<td></td>
<td></td>
<td>V</td>
</tr>
<tr>
<td>Reverse Leakage Current</td>
<td>$I_R$</td>
<td>$V_R = V_{RM}$</td>
<td></td>
<td>50</td>
<td></td>
<td>$\mu\text{A}$</td>
</tr>
<tr>
<td>Reverse Leakage Current Under High Temperature</td>
<td>$I_{HR}$</td>
<td>$V_R = V_{RM}, T_J = 150 , ^\circ\text{C}$</td>
<td>15</td>
<td></td>
<td></td>
<td>mA</td>
</tr>
<tr>
<td>Reverse Recovery Time</td>
<td>$t_{r1}$</td>
<td>$I_F = I_{RP} = 100 , mA$, $75%$ recovery point, $T_J = 25 , ^\circ\text{C}$</td>
<td>24</td>
<td>30</td>
<td></td>
<td>ns</td>
</tr>
<tr>
<td></td>
<td>$t_{r2}$</td>
<td>$I_F = 100 , mA$, $I_{RP} = 200 , mA$, $75%$ recovery point, $T_J = 25 , ^\circ\text{C}$</td>
<td>19</td>
<td>25</td>
<td></td>
<td>ns</td>
</tr>
<tr>
<td>Thermal Resistance$^{(1)}$</td>
<td>$R_{th(J-C)}$</td>
<td></td>
<td></td>
<td>3.0</td>
<td></td>
<td>$^\circ\text{C}/\text{W}$</td>
</tr>
</tbody>
</table>

$^{(1)}$ $R_{th(J-C)}$ is thermal resistance between junction and the case
Rating and Characteristic Curves

Figure 1. $I_{F(AV)}$ vs. $T_C$ Typical Characteristics ($V_R = 0$ V)

Figure 2. $I_{F(AV)}$ vs. $T_C$ Typical Characteristics ($V_R = 600$ V)

Figure 3. $V_F$ vs. $I_F$ Typical Characteristics

Figure 4. $V_R$ vs. $I_R$ Typical Characteristics
Physical Dimensions

- TO220-2L

NOTES:
- Dimensions in millimeters
- Bare lead frame: Pb-free (RoHS compliant)
- When soldering the products, it is required to minimize the working time, within the following limits:
  Flow: 260 ± 5 °C / 10 ± 1 s, 2 times
  Soldering Iron: 380 ± 10 °C / 3.5 ± 0.5 s, 1 time (Soldering should be at a distance of at least 1.5 mm from the body of the product.)
- Recommended screw torque for TO220: 0.490 N·m to 0.686 N·m (5 kgf·cm to 7 kgf·cm)

Marking Diagram

Table 1. Specific Device Code

<table>
<thead>
<tr>
<th>Specific Device Code</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>XS1106</td>
<td>DEXS-1106S</td>
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</tbody>
</table>
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