The DEXS-1156S is a fast recovery diode of 600 V / 15 A. The maximum trr of 30 ns is realized by optimizing a life-time control. The low thermal resistance package achieves high performance in terms of heat dissipation.

Features
- \( V_{RSM} = 600 \text{ V} \)
- \( I_{F(AV)} = 15 \text{ A} \)
- \( V_F = 1.6 \text{ V} \)
- \( t_{rr} (I_f = I_{RP}) = 30 \text{ ns} \)
- Bare Lead Frame: Pb-free (RoHS Compliant)

Applications
- PFC Circuit
- Freewheel Diode
  (Offline Buck and Buck-boost Converter)

Package
- TO220-2L
Absolute Maximum Ratings

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

<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>15</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>$1 , ms \leq t \leq 10 , ms$</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>°C</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>$T_{STG}$</td>
<td></td>
<td>-40 to 150</td>
<td>°C</td>
</tr>
</tbody>
</table>

Electrical Characteristics

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

<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>$T_J = 25 , ^\circ C, I_F = 15 , A$</td>
<td>—</td>
<td>1.4</td>
<td>1.6</td>
<td>V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$T_J = 100 , ^\circ C, I_F = 15 , A$</td>
<td>—</td>
<td>1.3</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>—</td>
<td>75</td>
<td>$\mu A$</td>
</tr>
<tr>
<td>Reverse Leakage Current Under High Temperature</td>
<td>$I_{HR}$</td>
<td>$V_R = V_{RM}, T_J = 150 , ^\circ C$</td>
<td>—</td>
<td>—</td>
<td>20</td>
<td>$mA$</td>
</tr>
<tr>
<td>Reverse Recovery Time</td>
<td>$t_{rr1}$</td>
<td>$I_F = I_{RP} = 500 , mA$, 90% recovery point, $T_J = 25 , ^\circ C$</td>
<td>—</td>
<td>24</td>
<td>30</td>
<td>ns</td>
</tr>
<tr>
<td></td>
<td>$t_{rr2}$</td>
<td>$I_F = 500 , mA$, $I_{RP} = 1000 , mA$, 75% recovery point, $T_J = 25 , ^\circ C$</td>
<td>—</td>
<td>19</td>
<td>25</td>
<td>ns</td>
</tr>
<tr>
<td>Thermal Resistance$^{(1)}$</td>
<td>$R_{th(J-C)}$</td>
<td></td>
<td>—</td>
<td>—</td>
<td>3.0</td>
<td>°C/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

![Diagram of TO220-2L dimensions]

**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**

![Marking Diagram]

**Table 1. Specific Device Code**

<table>
<thead>
<tr>
<th>Specific Device Code</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>XS1156</td>
<td>DEXS-1156S</td>
</tr>
</tbody>
</table>
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