**Description**

The CTXS-5306S is a fast recovery diode of 600 V / 30 A. The maximum $t_{tr}$ of 35 ns is realized by optimizing a life-time control. The low thermal resistance package achieves high performance in terms of heat dissipation.

**Features**

- RoHS Compliant
- $V_{RM} = 600$ V
- $I_{F(AV)} = 30$ A
- $V_F = 1.7$ V
- $t_{tr} = 35$ ns

**Applications**

- White Goods
- Audiovisual Equipment
- Lightning Equipment
- Industrial Electronic Equipment (Communication Equipment and Factory Automation)
- For CCM PFC Circuit
Absolute Maximum Ratings

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

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Rating</th>
<th>Unit</th>
<th>Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peak Repetitive Reverse Voltage</td>
<td>$V_{RSM}$</td>
<td>600</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>Repetitive Reverse Voltage</td>
<td>$V_{RM}$</td>
<td>600</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>Average Forward Current</td>
<td>$I_{F(AV)}$</td>
<td>30</td>
<td>A</td>
<td>See Figure 1 and Figure 2</td>
</tr>
<tr>
<td>Surge Forward Current</td>
<td>$I_{FSM}$</td>
<td>160</td>
<td>A</td>
<td>Half cycle sine-wave, positive side, 10 ms, one shot.</td>
</tr>
<tr>
<td>$I^t$ Limiting Value</td>
<td>$I^t$</td>
<td>128</td>
<td>$A^2$s</td>
<td>$1 , ms \leq t \leq 10 , ms$</td>
</tr>
<tr>
<td>Junction Temperature</td>
<td>$T_J$</td>
<td>$-40$ to $150$</td>
<td>$^\circ C$</td>
<td></td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>$T_{STG}$</td>
<td>$-40$ to $150$</td>
<td>$^\circ C$</td>
<td></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>$T_J = 25 , ^\circ C, I_F = 30 , A$</td>
<td>—</td>
<td>—</td>
<td>1.7</td>
<td>V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$T_J = 100 , ^\circ C, I_F = 30 , A$</td>
<td>—</td>
<td>1.35</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>100</td>
<td>$\mu A$</td>
</tr>
<tr>
<td>Reverse Leakage Current Under High Temperature</td>
<td>$I_R^H$</td>
<td>$V_R = V_{RM}, T_J = 150 , ^\circ C$</td>
<td>—</td>
<td>—</td>
<td>30</td>
<td>mA</td>
</tr>
<tr>
<td>Reverse Recovery Time</td>
<td>$t_{rr}$</td>
<td>$I_F = I_{RG} = 500 , mA$</td>
<td>—</td>
<td>—</td>
<td>35</td>
<td>ns</td>
</tr>
<tr>
<td>Thermal Resistance$^{(1)}$</td>
<td>$R_{th(J-L)}$</td>
<td>—</td>
<td>—</td>
<td>1.5</td>
<td>$^\circ C/W$</td>
<td></td>
</tr>
</tbody>
</table>

$^{(1)} R_{th(J-L)}$ is thermal resistance between junction and lead.
Rating and Characteristic Curves

Figure 1. \( T_C \) vs. \( I_F \) Typical Characteristics
\( (V_R = 0 \text{ V}) \)

Figure 2. \( T_C \) vs. \( I_F \) Typical Characteristics
\( (V_R = 600 \text{ V}) \)

Figure 3. \( V_F \) vs. \( I_F \) Typical Characteristics

Figure 4. \( V_R \) vs. \( I_R \) Typical Characteristics
Physical Dimensions

- TO247-2L

### NOTES:

- Dimensions in millimeters
- Bare lead frame: Pb-free (RoHS compliant)
- When soldering the products, make sure 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 products.)
- The recommended screw torque for TO-247: 0.686 to 0.882 N·m (7 to 9 kgf·cm)
Marking Diagram

Specific Device Code (See Table 1)
Lot Number:
Y is the last digit of the year of manufacture (0 to 9)
M is the month of the year (1 to 9, O, N or D)
DD is the day of the month (01 to 31)
X is the control number

Table 1. Specific Device Code

<table>
<thead>
<tr>
<th>Specific Device Code</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>XS5306</td>
<td>CTXS-5306S</td>
</tr>
</tbody>
</table>
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