**V_{RM} = 600 V, I_{F(AV)} = 60 A, t_{rr} = 50 ns**

**Fast Recovery Diode**

**CTXS-5606S**

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### Description

The CTXS-5606S is a fast recovery diode of 600 V, 60 A. The maximum $t_{rr}$ of 50 ns is realized by optimizing a life-time control. The low thermal resistance package achieves high performance in terms of heat dissipation.

### Features

- Bare Lead Frame: Pb-free (RoHS Compliant)
- $V_{RM}$ --- 600 V
- $I_{F(AV)}$ --- 60 A
- $V_F$ --- 1.7 V
- $t_{rr}$ --- 50 ns

### Applications

- CCM PFC Circuit
- Secondary Side Rectifier Diode (Flyback Converter, LLC Converter, etc.)
- Freewheel Diode (Bridge Circuit, Offline Buck and Buck-boost Converter, etc.)

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### Package

TO247-2L

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Not to scale
### 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>60</td>
<td>A</td>
<td>See Figure 1 and Figure 2</td>
</tr>
<tr>
<td>Surge Forward Current</td>
<td>$I_{FSM}$</td>
<td>320</td>
<td>A</td>
<td>Half cycle sine wave, positive side, 10 ms, 1 shot</td>
</tr>
<tr>
<td>$t^2$ Limiting Value</td>
<td>$I^2t$</td>
<td>512</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>°C</td>
<td></td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>$T_{STG}$</td>
<td>-40 to 150</td>
<td>°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>$T_J = 25 , ^\circ C, I_F = 60 , A$</td>
<td>—</td>
<td>—</td>
<td>1.7</td>
<td>V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$T_J = 100 , ^\circ C, I_F = 60 , A$</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>200</td>
<td>µA</td>
</tr>
<tr>
<td>Reverse Leakage Current</td>
<td>$I_{H_R}$</td>
<td>$V_R = V_{RM}, T_J = 150 , ^\circ C$</td>
<td>—</td>
<td>—</td>
<td>60</td>
<td>mA</td>
</tr>
<tr>
<td>Under High Temperature</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reverse Recovery Time</td>
<td>$t_{rr}$</td>
<td>$I_F = I_{RP} = 100 , mA$</td>
<td>—</td>
<td>—</td>
<td>50</td>
<td>ns</td>
</tr>
<tr>
<td></td>
<td></td>
<td>90% recovery point, $T_J = 25 , ^\circ C$</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thermal Resistance$^{(1)}$</td>
<td>$R_{th(J-C)}$</td>
<td>—</td>
<td>—</td>
<td>1.5</td>
<td>°C/W</td>
<td></td>
</tr>
</tbody>
</table>

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

Figure 1.  $T_C$ vs. $I_F$ Typical Characteristics  
($V_R = 0$ V)

Figure 2.  $T_C$ vs. $I_F$ 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 Dimension

- **TO252-2L**

**NOTES:**
- Dimensions in millimeters
- These dimensions do not include protrusions of the mold.
- Bare lead frame: Pb-free (RoHS compliant)
- Recommended screw torque for TO247: 0.686 N·m to 0.882 N·m (7 kgf·cm to 9 kgf·cm)
- 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
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)
  XX 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>XS5606</td>
<td>CTXS-5606S</td>
</tr>
</tbody>
</table>
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