**$V_{RM}$ = 600 V, $I_{F(AV)}$ = 60 A, $t_{rr}$ = 80 ns**
**Fast Recovery Diode**

# CTXR-5606S-SP

**Data Sheet**

## Description

The CTXR-5606S-SP is a fast recovery diode of 600 V / 60 A. The low $Q_{rr}$ characteristic allows the product to have almost no ringing at turn-off, leading to the realization of low-noise systems. The maximum $t_{rr}$ of 80 ns is realized by optimizing a life-time control. The low thermal resistance package achieves high performance in terms of heat dissipation.

## Features

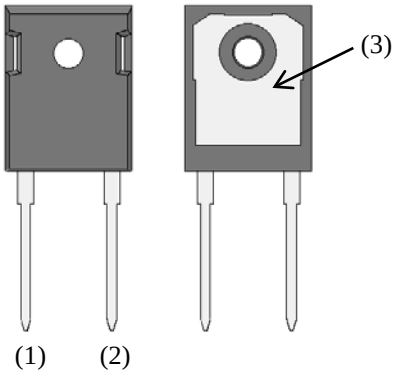
- $V_{RM}$ ---------- 600 V
- $I_{F(AV)}$ ---------- 60 A
- $V_F$ ---------- 2.5 V
- $t_{rr}$ ---------- 80 ns
- Bare lead frame: Pb-free (RoHS compliant)

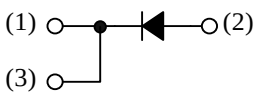
## Applications

- CCM PFC Circuit
- Secondary Side Rectifier Diode
- Boost Diode

## Package

TO247-2L




(1) Cathode
(2) Anode
(3) Cathode

## Absolute Maximum Ratings

Unless otherwise specified, $T_A$ = 25 °C

| Parameter | Symbol | Rating | Unit | Conditions |
|---|---|---|---|---|
| Peak Repetitive Reverse Voltage | $V_{RSM}$ | 600 | V | |
| Repetitive Reverse Voltage | $V_{RM}$ | 600 | V | |
| Average Forward Current | $I_{F(AV)}$ | 60 | A | See Figure 2 and Figure 3 |
| Surge Forward Current | $I_{FSM}$ | 240 | A | Half cycle sine wave, positive side, 10 ms, 1 shot |
| $I^2t$ Limiting Value | $I^2t$ | 288 | $A^2s$ | 1 ms ≤ t ≤ 10 ms |
| Junction Temperature | $T_J$ | −40 to 150 | °C | |
| Storage Temperature | $T_{STG}$ | −40 to 150 | °C | |

## Electrical Characteristics

Unless otherwise specified, $T_A$ = 25 °C

| Parameter | Symbol | Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| Forward Voltage Drop | $V_F$ | $T_J$ = 25 °C, $I_F$ = 60 A | — | — | 2.5 | V |
| | | $T_J$ = 100 °C, $I_F$ = 60 A | — | 2.0 | — | V |
| Reverse Leakage Current | $I_R$ | $V_R = V_{RM}$, | — | — | 10 | μA |
| Reverse Leakage Current Under High Temperature | $H \cdot I_R$ | $V_R = V_{RM}$, $T_J$ = 150 °C | — | — | 3 | mA |
| Reverse Recovery Time | $t_{rr}$ | $I_F$ = 60 A, $V_R$ = 400 V, di/dt = −200 A/μs, 100% recovery point | — | — | 80 | ns |
| Reverse Recovery Charge | $Q_{rr}$ | $I_F$ = 60 A, $V_R$ = 400 V, di/dt = −200 A/μs, 100% recovery point | — | — | 210 | nC |
| Thermal Resistance[1] | $R_{th(J-F)}$ | | — | — | 0.9 | °C/W |

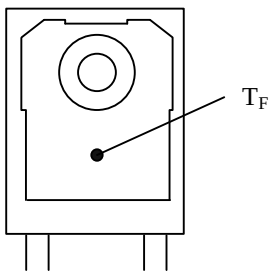



Figure 1. $T_F$ Measurement Point

[1] $R_{th\ (J-F)}$ is thermal resistance between junction and the flame. $T_F$ is the flame temperature (°C), measured at the point defined in Figure 1

## Rating and Characteristic Curves

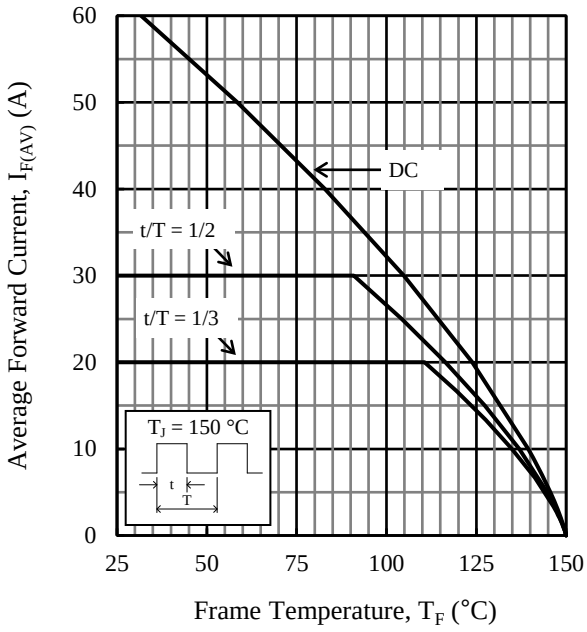



Figure 2. $I_{F(AV)}$ vs. $T_F$ Typical Characteristics ($V_R$ = 0 V)

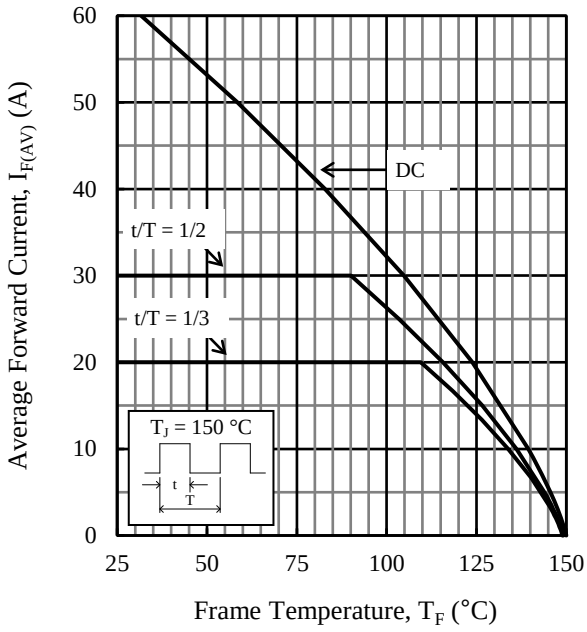



Figure 3. $I_{F(AV)}$ vs. $T_F$ Typical Characteristics ($V_R$ = 600 V)

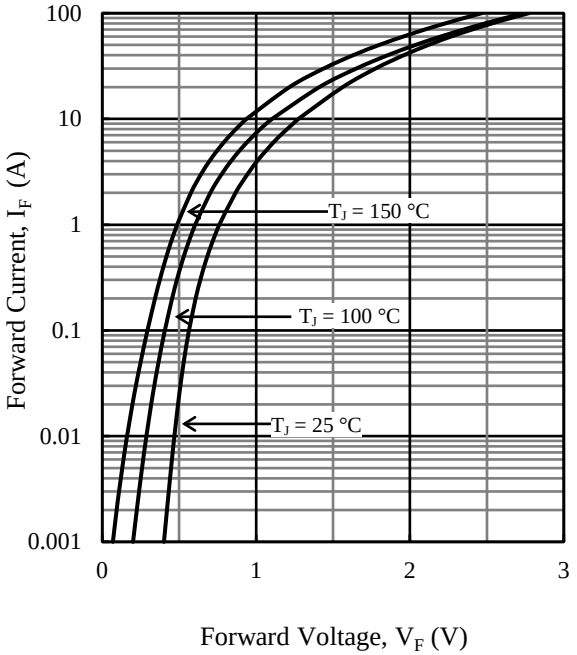



Figure 4. $V_F$ vs. $I_F$ Typical Characteristics

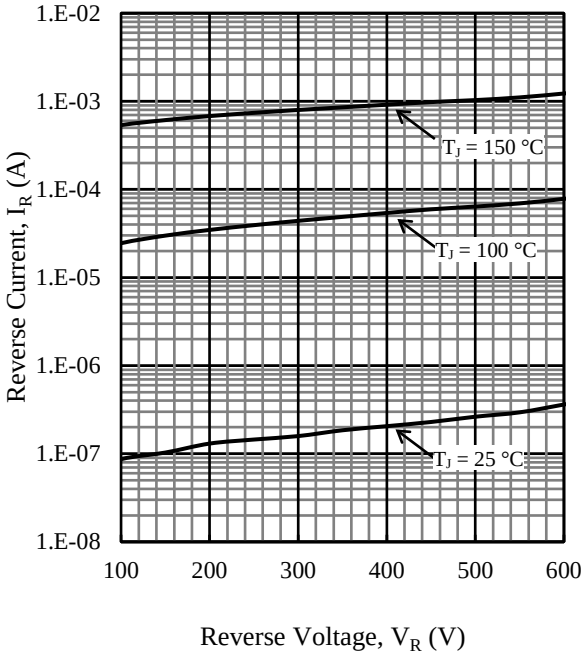



Figure 5. $V_R$ vs. $I_R$ Typical Characteristics

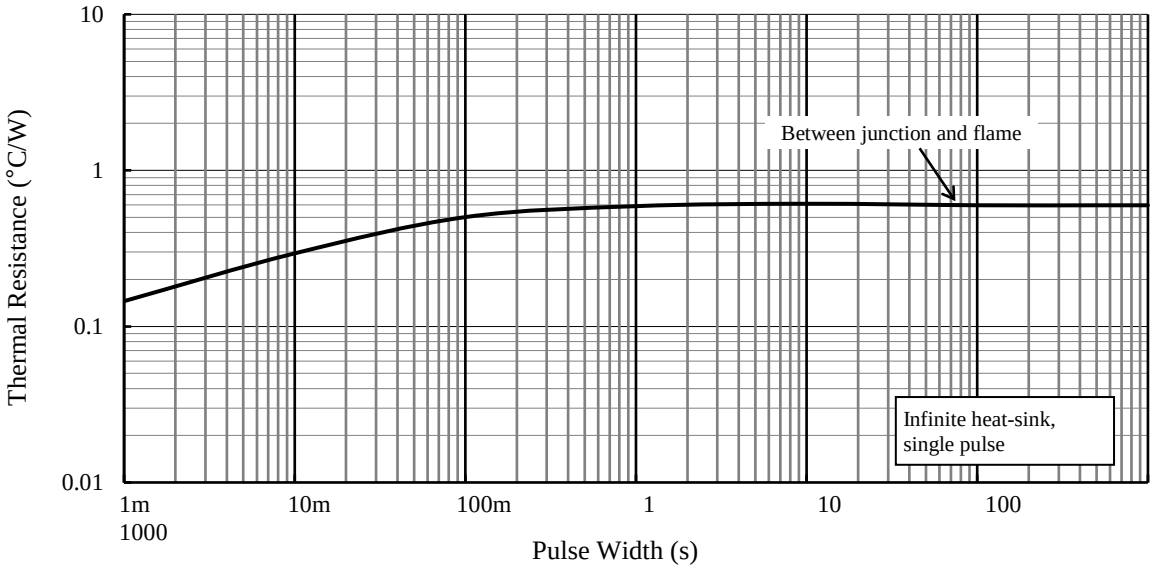
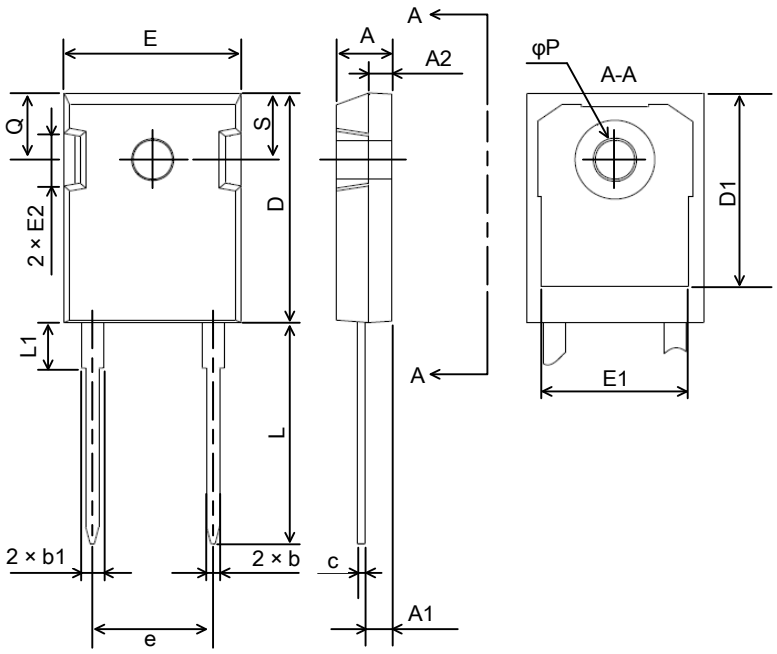



Figure 6. Typical Transient Thermal Resistance

## Physical Dimensions

● **TO247-2L**

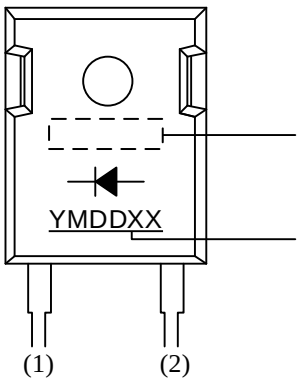



| Symbol | Min. | Nom. | Max. |
|---|---|---|---|
| A | 4.83 | 5.02 | 5.21 |
| A1 | 2.29 | 2.41 | 2.54 |
| A2 | 1.91 | 2.04 | 2.16 |
| b | 1.14 | 1.27 | 1.40 |
| b1 | 1.91 | 2.10 | 2.20 |
| c | 0.61 | 0.71 | 0.80 |
| D | 20.80 | 21.07 | 21.34 |
| D1 | 17.43 | 17.63 | 17.83 |
| E | 15.75 | 15.94 | 16.13 |
| E1 | 13.06 | 13.26 | 13.46 |
| E2 | 4.32 | 4.58 | 4.83 |
| e | 10.90 BSC | | |
| L | 19.81 | 20.19 | 20.57 |
| L1 | 3.81 | 4.07 | 4.32 |
| φP | 3.55 | 3.60 | 3.65 |
| Q | 5.59 | 5.90 | 6.20 |
| S | 6.15 BSC | | |

**NOTES:**

- Dimensions in millimeters
- These dimensions do not include mold protrusion
- 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.
- The recommended screw torque for TO247: 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)
XX is the control number

Table 1. Specific Device Code

| Specific Device Code | Part Number |
|---|---|
| XR5606 | CTXR-5606S-SP |

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