

$V_{RM} = 600\text{ V}$, $I_{F(AV)} = 60\text{ A}$, $t_{rr} = 80\text{ ns}$
Fast Recovery Diode
CTXR-5606S-SP

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

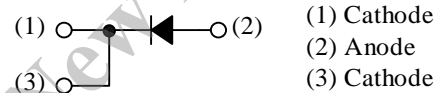
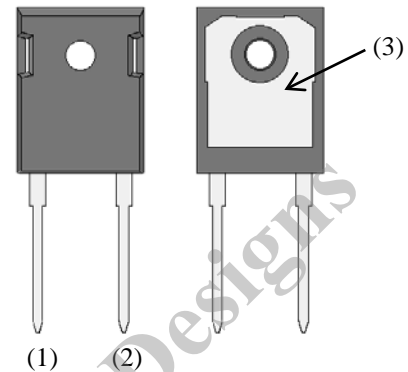
- V_{RM} ----- 600 V
- $I_{F(AV)}$ ----- 60 A
- V_F ----- 2.5 V
- t_{rr} ----- 80 ns
- Bare lead frame: Pb-free (RoHS compliant)

Applications

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

Package

TO247-2L

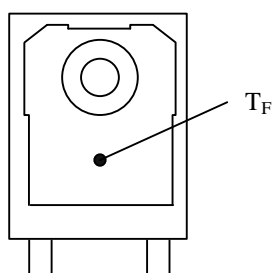


Absolute Maximum RatingsUnless otherwise specified, $T_A = 25\text{ }^{\circ}\text{C}$

| 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 | $1\text{ ms} \leq t \leq 10\text{ ms}$ |
| Junction Temperature | T_J | -40 to 150 | $^{\circ}\text{C}$ | |
| Storage Temperature | T_{STG} | -40 to 150 | $^{\circ}\text{C}$ | |

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

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

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 ($^{\circ}\text{C}$), measured at the point defined in Figure 1

Rating and Characteristic Curves

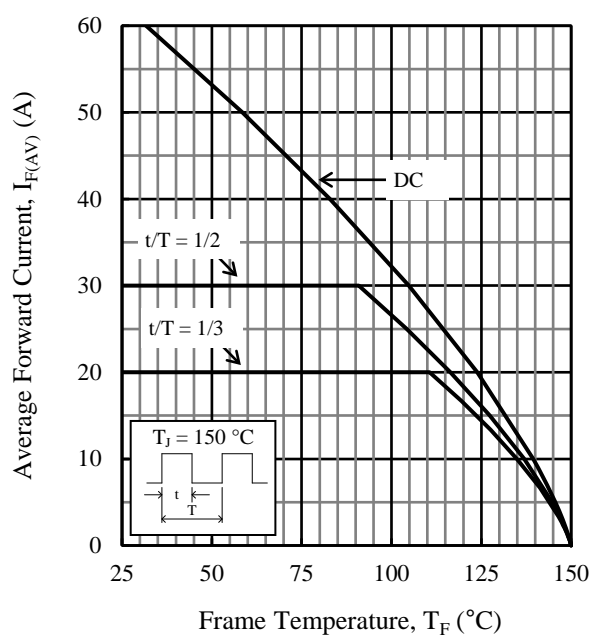


Figure 2. $I_{F(AV)}$ vs. T_F Typical Characteristics ($V_R = 0$ V)

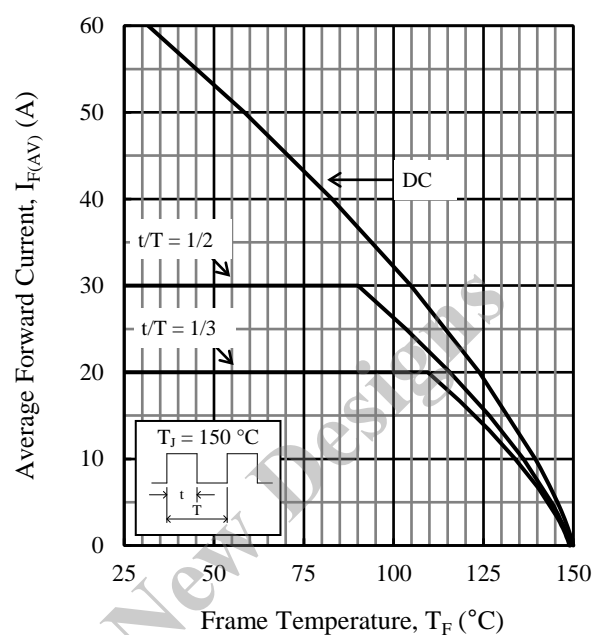


Figure 3. $I_{F(AV)}$ vs. T_F Typical Characteristics ($V_R = 600$ V)

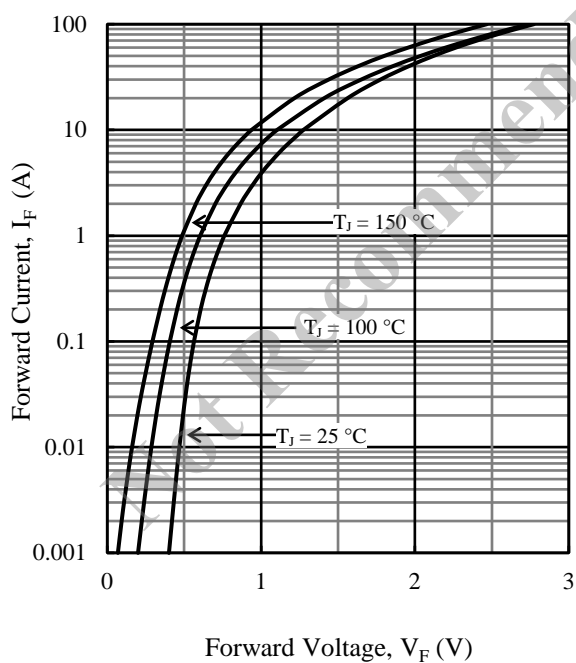


Figure 4. V_F vs. I_F Typical Characteristics

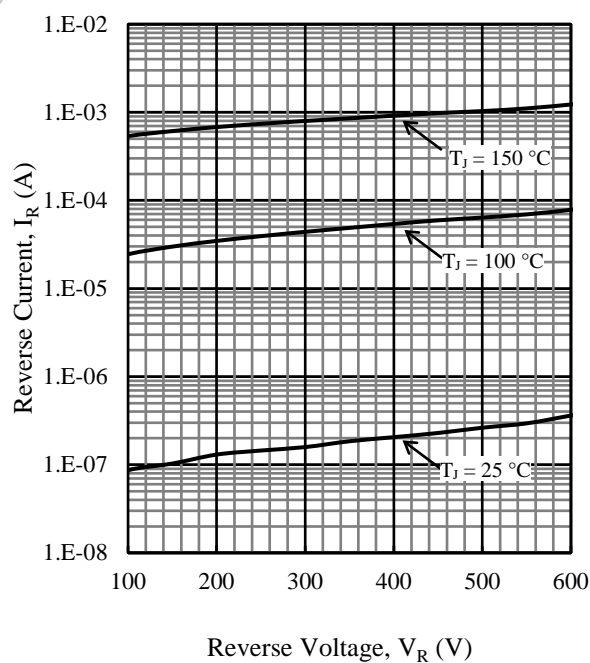


Figure 5. V_R vs. I_R Typical Characteristics

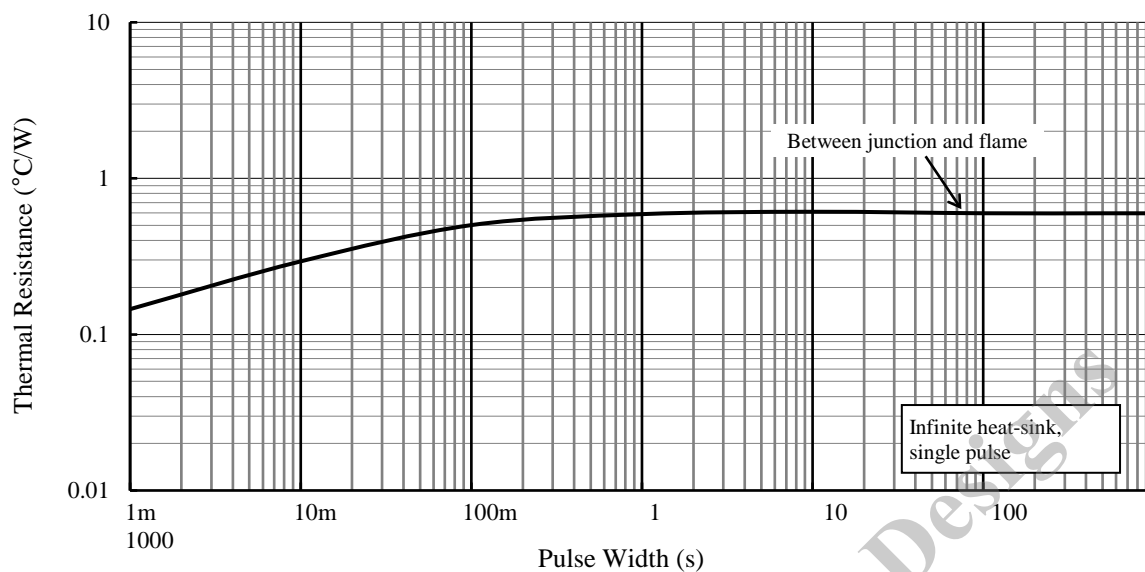
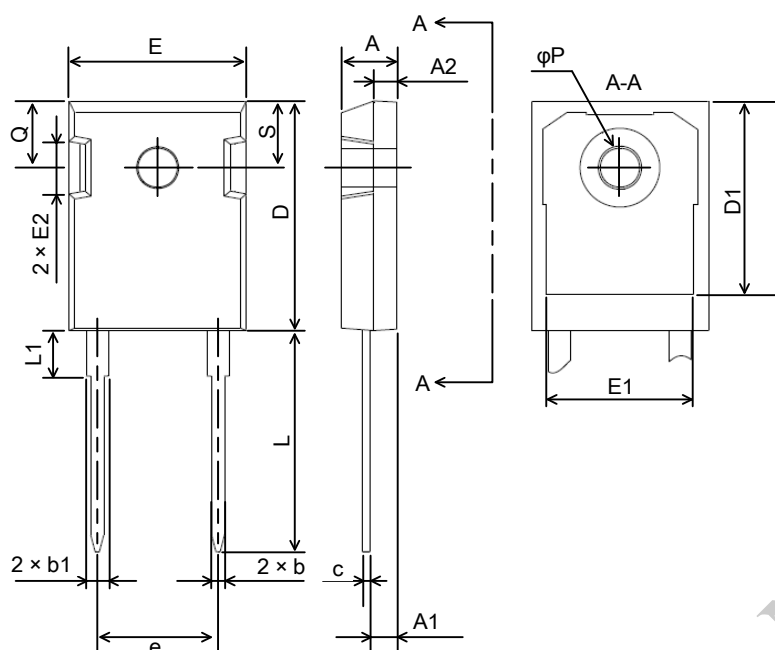


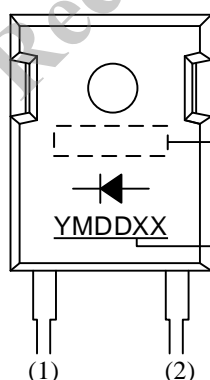
Figure 6. Typical Transient Thermal Resistance

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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