FAIRCHILD SEMICONDUCTOR TM

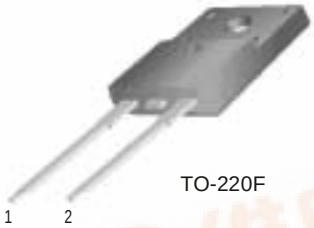
# FFPF40U60S

## Features

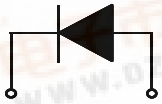
- High voltage and high reliability
- High speed switching
- Low forward voltage

## Applications

- General purpose
- Switching mode power supply
- Free-wheeling diode for motor application
- Power switching circuits




TO-220F



1. Cathode 2. Anode

# ULTRA FAST RECOVERY POWER RECTIFIER

## Absolute Maximum Ratings $T_C$=25°C unless otherwise noted

| Symbol | Parameter | Value | Units |
|---|---|---|---|
| $V_{RRM}$ | Peak Repetitive Reverse Voltage | 600 | V |
| $I_{F(AV)}$ | Average Rectified Forward Current @ $T_C$ = 100°C | 40 | A |
| $I_{FSM}$ | Non-repetitive Peak Surge Current 60Hz Single Half-Sine Wave | 240 | A |
| $T_J$, $T_{STG}$ | Operating Junction and Storage Temperature | - 65 to +150 | °C |

## Thermal Characteristics

| Symbol | Parameter | Value | Units |
|---|---|---|---|
| $R_{\theta JC}$ | Maximum Thermal Resistance, Junction to Case | 0.7 | °C/W |

## Electrical Characteristics $T_C$=25 °C unless otherwise noted

| Symbol | Parameter | | Min. | Typ. | Max. | Units |
|---|---|---|---|---|---|---|
| $V_{FM}$ * | Maximum Instantaneous Forward Voltage | | | | | V |
| | $I_F$ = 40A | $T_C$ = 25 °C | | | 2.1 | |
| | $I_F$ = 40A | $T_C$ = 100 °C | | | 1.9 | |
| $I_{RM}$ * | Maximum Instantaneous Reverse Current @ rated $V_R$ | | | | | µA |
| | | $T_C$ = 25 °C | | | 20 | |
| | | $T_C$ = 100 °C | | | 200 | |
| $t_{rr}$ | Maximum Reverse Recovery Time | | | | 110 | ns |
| $I_{rr}$ | Maximum Reverse Recovery Current | | | | 10 | A |
| $Q_{rr}$ | Maximum Reverse Recovery Charge ($I_F$ =40A, di/dt = 200A/µs) | | | | 550 | nC |
| $W_{AVL}$ | Avalanche Energy | | 1.0 | | | mJ |

* Pulse Test: Pulse Width=300µs, Duty Cycle=2%

# Typical Characteristics

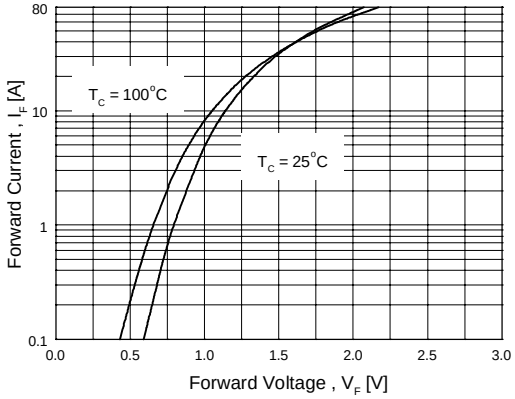



**Figure 1. Typical Forward Voltage Drop vs. Forward Current**

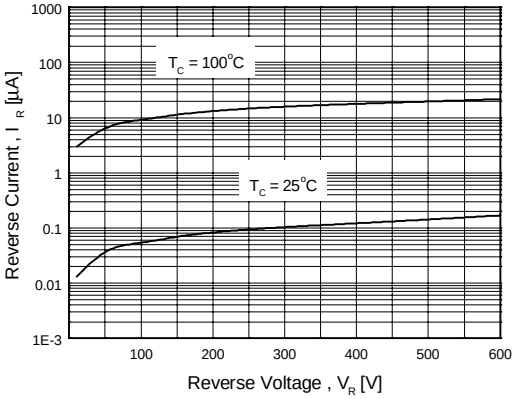



**Figure 2. Typical Reverse Current vs. Reverse Voltage**

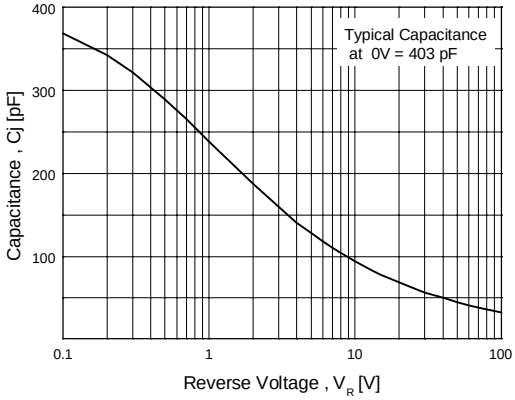



**Figure 3. Typical Junction Capacitance**

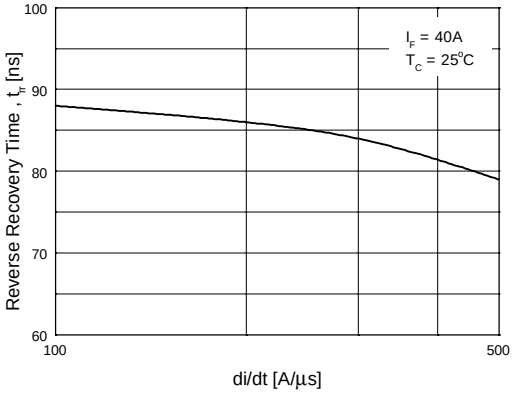



**Figure 4. Typical Reverse Recovery Time vs. di/dt**

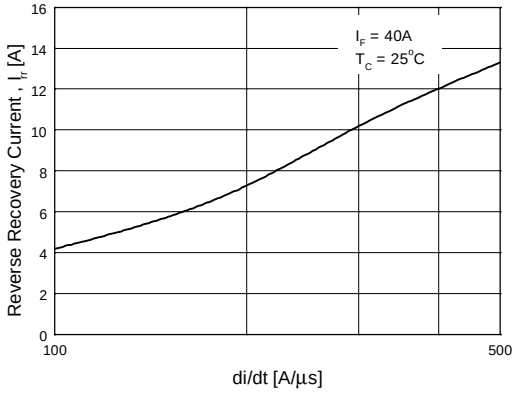



**Figure 5. Typical Reverse Recovery Current vs. di/dt**

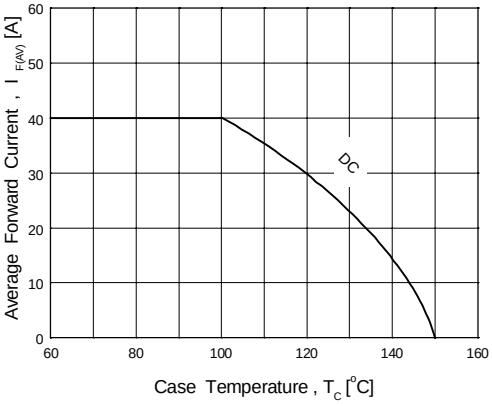
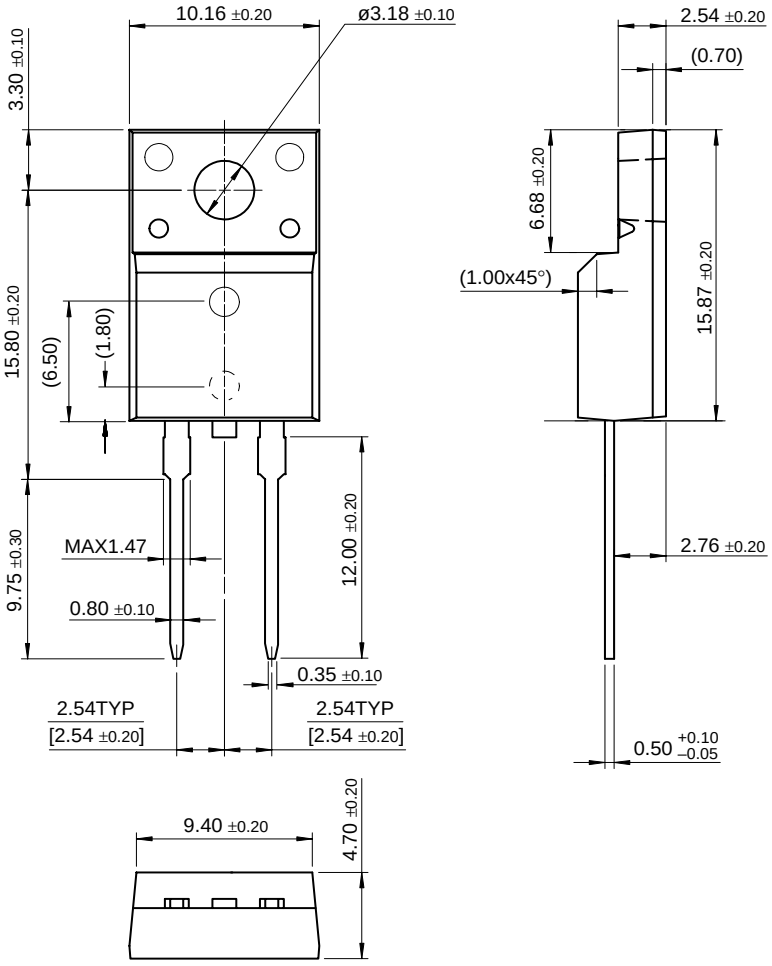



**Figure 6. Forward Current Derating Curve**

## Package Dimensions

# TO-220F 2L




Dimensions in Millimeters

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|---|---|---|
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