



# FFPF30UA60S Ultrafast Rectifier

## Features

- Ultrafast switching,  $T_{rr} < 90\text{ns}$
- High Reverse Voltage and High Reliability
- Avalanche Energy Rated
- Max Forward Voltage,  $V_F < 2.2\text{V}$
- RoHS Compliant

## Applications

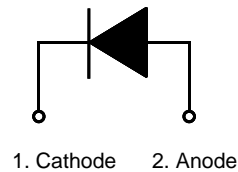
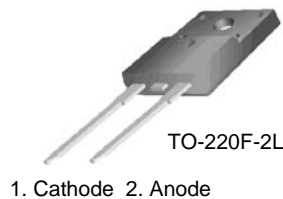
- Boost Diode in PFC and Switching Mode Power Supply
- Welding, UPS and motor control application

## 30A, 600V Ultrafast Rectifier

The FFPF30UA60S is ultrafast rectifier with low forward voltage drop and rugged UIS capability. This device is intended for use as freewheeling and clamping rectifiers in a variety of switching power supplies and other power switching applications. It is specially suited for use in switching power supplies and industrial applications as welder and UPS application.



## Pin Assignments



## Absolute Maximum Ratings $T_C=25^\circ\text{C}$ unless otherwise noted

| Symbol         | Parameter   | Ratings     | Units            |
|----------------|---|-------------|------------------|
| $V_{RRM}$      | Peak Repetitive Reverse Voltage                                 | 600         | V                |
| $V_{RWM}$      | Working Peak Reverse Voltage                                    | 600         | V                |
| $V_R$          | DC Blocking Voltage   | 600         | V                |
| $I_{F(AV)}$    | Average Rectified Forward Current @ $T_C = 43^\circ\text{C}$    | 30          | A                |
| $I_{FSM}$      | Non-repetitive Peak Surge Current<br>60Hz Single Half-Sine Wave | 180         | A                |
| $T_J, T_{STG}$ | Operating and Storage Temperature Range                         | -65 to +150 | $^\circ\text{C}$ |

## Thermal Characteristics $T_C=25^\circ\text{C}$ unless otherwise noted

| Symbol          | Parameter                                    | Ratings | Units              |
|-----------------|--|---------|--------------------|
| $R_{\theta JC}$ | Maximum Thermal Resistance, Junction to Case | 2.5     | $^\circ\text{C/W}$ |

## Package Marking and Ordering Information

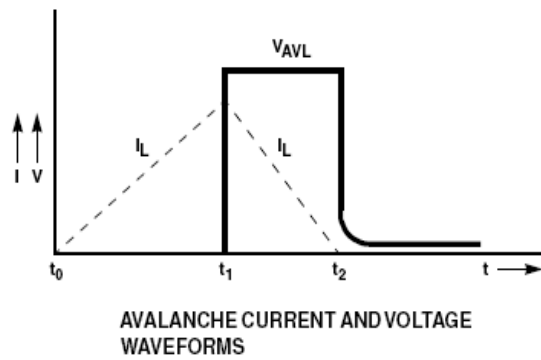
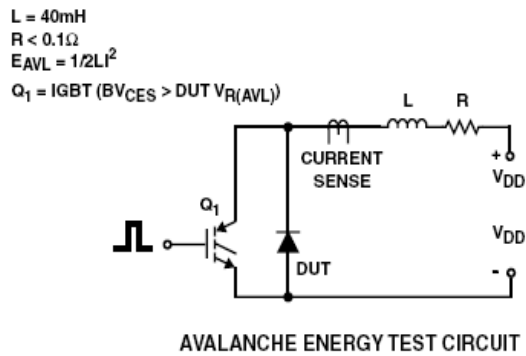
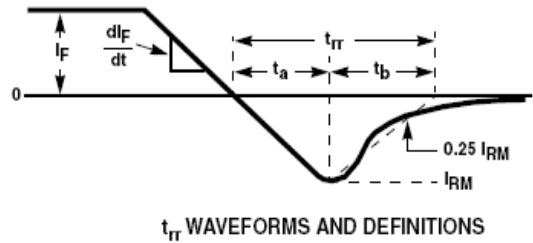
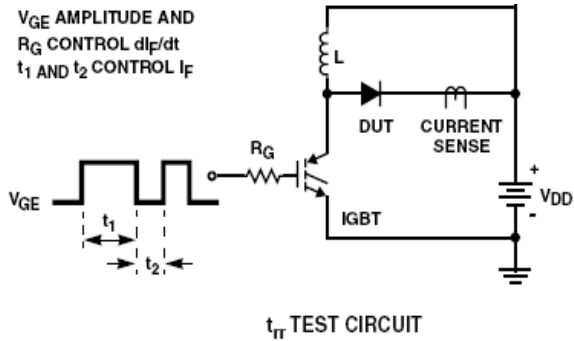
| Device Marking | Device      | Package | Reel Size | Tape Width | Quantity |
|----------------|-------------|---------|-----------|------------|----------|
| F30UA60S       | FFPF30UA60S | TO220F  | -         | -          | 50       |

**Electrical Characteristics**  $T_C=25^\circ\text{C}$  unless otherwise noted

| Symbol    | Parameter   | Min. | Typ. | Max.       | Units         |
|-----------|---|------|------|------------|---------------|
| $V_{FM1}$ | $I_F = 30\text{A}$<br>$I_F = 30\text{A}$            | -    | -    | 2.2<br>2.0 | V             |
| $I_{RM1}$ | $V_R = 600\text{V}$<br>$V_R = 600\text{V}$          | -    | -    | 100<br>150 | $\mu\text{A}$ |
| $t_{rr}$  | $I_F = 30\text{A}, di/dt = 200\text{A}/\mu\text{s}$ | -    | -    | 90         | ns            |
| $I_{rr}$  |   | -    | -    | 8          | A             |
| $Q_{rr}$  |   | -    | -    | 360        | nC            |
| $W_{AVL}$ | Avalanche Energy ( $L = 40\text{mH}$ )              | 20   | -    | -          | mJ            |

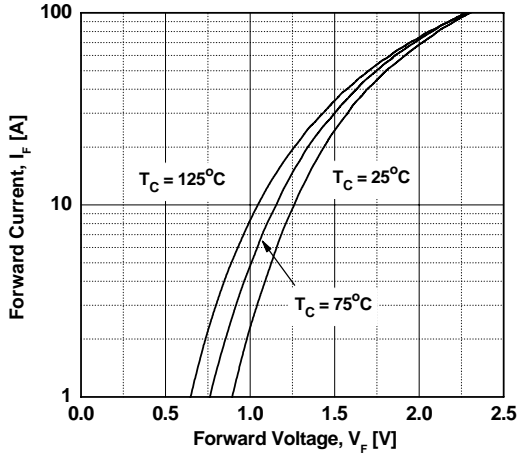
**Notes:**  
1: Pulse: Test Pulse width = 300 $\mu\text{s}$ , Duty Cycle = 2%

**Test Circuit and Waveforms**

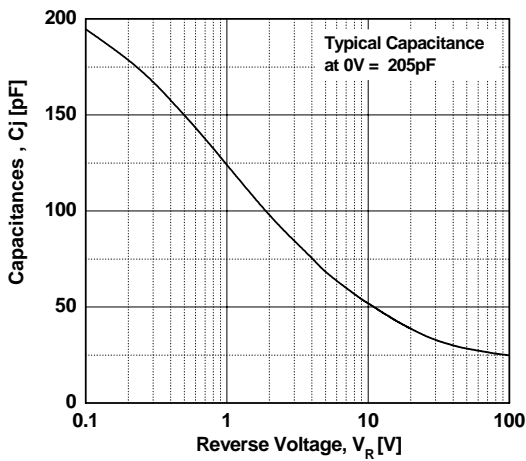


## Typical Performance Characteristics

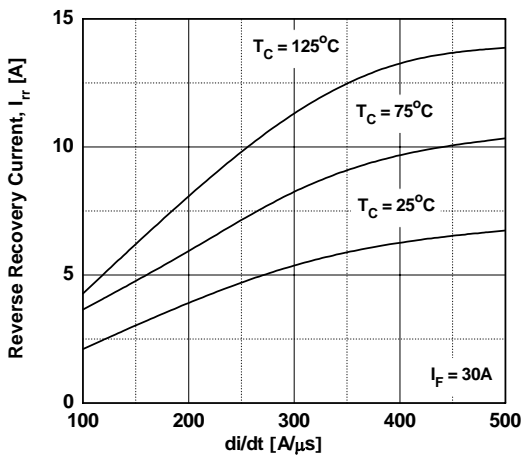
**Figure 1. Typical Forward Voltage Drop vs. Forward Current**



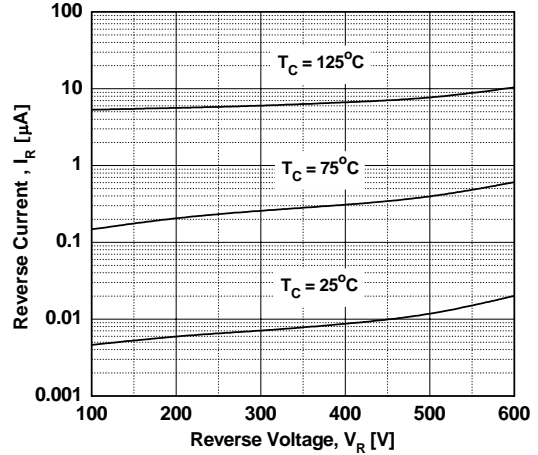
**Figure 3. Typical Junction Capacitance**



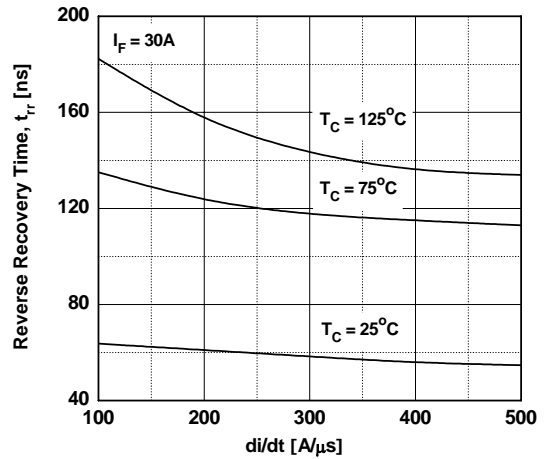
**Figure 5. Typical Reverse Recovery Current vs. di/dt**



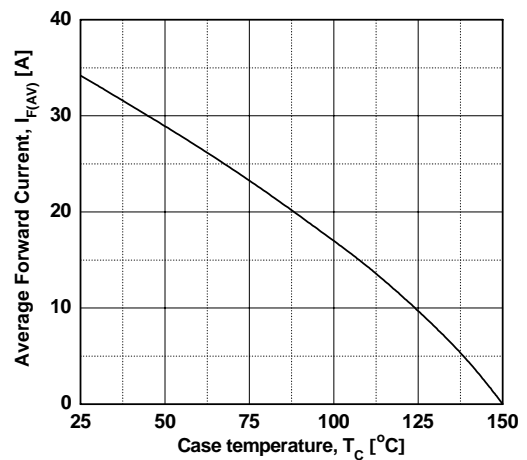
**Figure 2. Typical Reverse Current vs. Reverse Voltage**



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

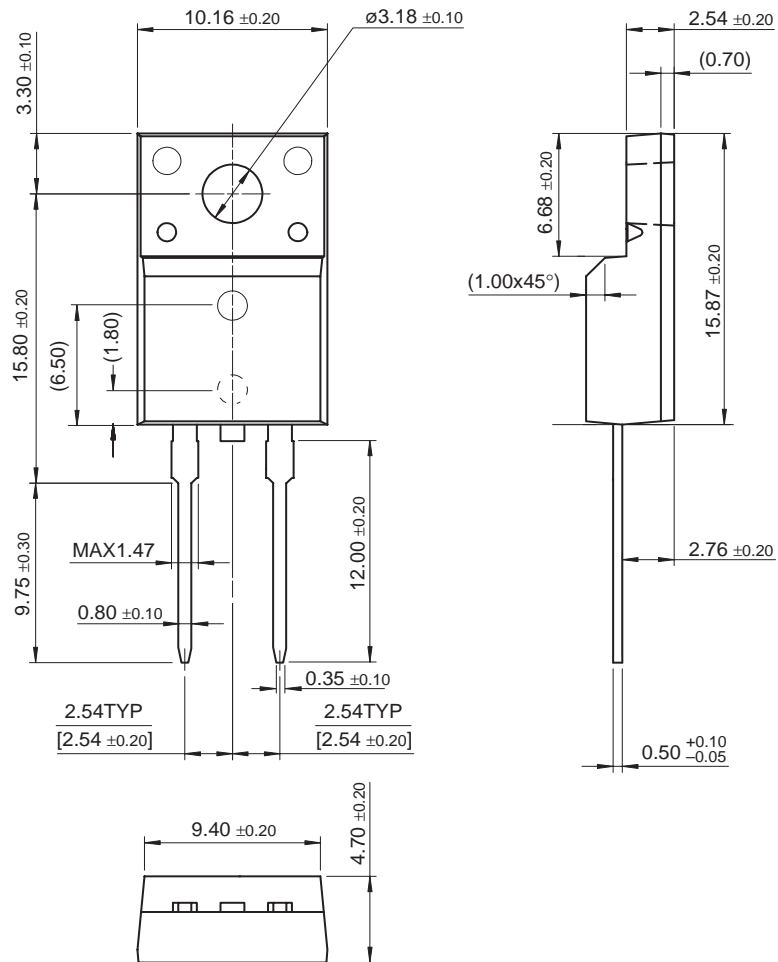


**Figure 6. Forward Current Derating Curve**



Mechanical Dimensions

TO-220F 2L



Dimensions in Millimeters





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