



November 2009



# FFAF60UA60DN Ultrafast Rectifier

## Features

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

## 60A, 600V Ultrafast Rectifier

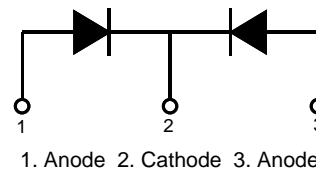
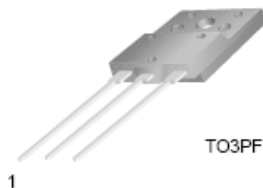
The FFAF60UA60DN is ultrafast rectifier with low forward voltage drop and rugged UIS capability. This device is intended for use as freewheeling and clamping rectifiers in a variety of switching power supplies and other power switching applications. It is specially suited for use in switching power supplies and industrial applications as welder and UPS application.

## Applications

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



## Pin Assignments



## Absolute Maximum Ratings

Per leg at  $T_C=25^\circ C$  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 @ $T_C = 45^\circ C$	30	A
$I_{FSM}$	Non-repetitive Peak Surge Current 60Hz Single Half-Sine Wave	180	A
$T_J, T_{STG}$	Operating and Storage Temperature Range	-65 to +150	$^\circ C$

## Thermal Characteristics

Per leg at  $T_C=25^\circ C$  unless otherwise noted

Symbol	Parameter	Ratings	Units
$R_{\theta JC}$	Maximum Thermal Resistance, Junction to Case	2.4	$^\circ C/W$

## Package Marking and Ordering Information

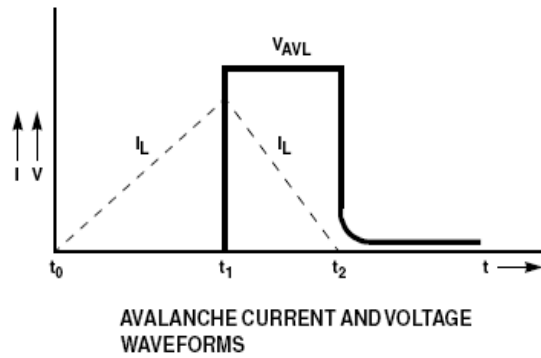
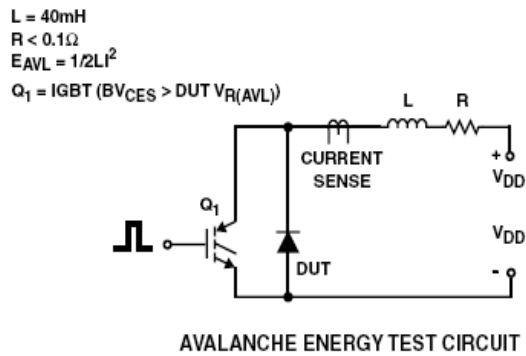
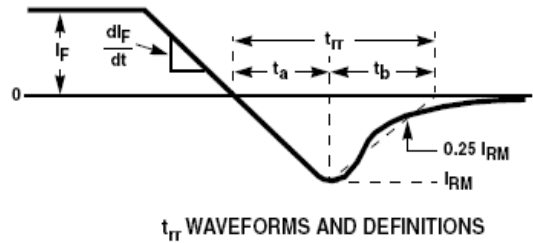
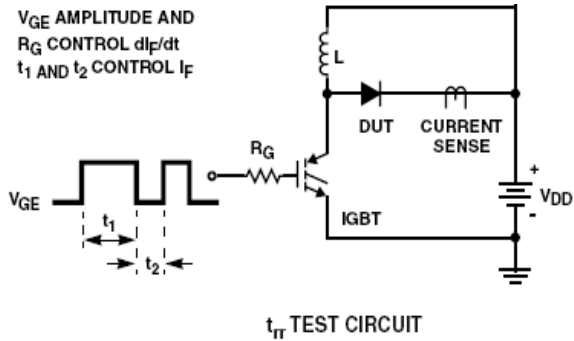
Device Marking	Device	Package	Reel Size	Tape Width	Quantity
F60UA60DN	FFAF60UA60DN	TO3PF	-	-	30

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

Symbol	Parameter	Min.	Typ.	Max.	Units
$V_{FM1}$	$I_F = 30\text{A}$ $I_F = 30\text{A}$	-	-	2.2 2.0	V
$I_{RM1}$	$V_R = 600\text{V}$ $V_R = 600\text{V}$	-	-	100 150	$\mu\text{A}$
$t_{rr}$	$I_F = 30\text{A}, di/dt = 200\text{A}/\mu\text{s}$	-	-	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

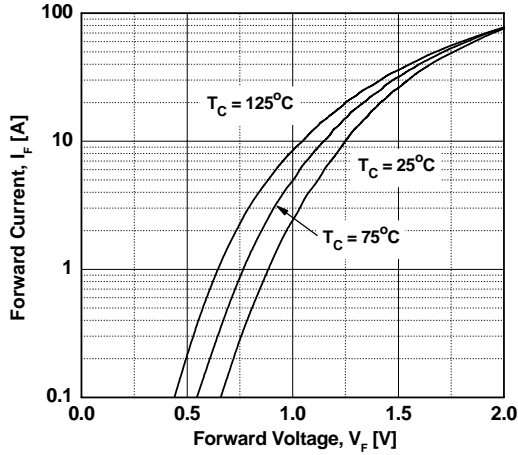


Figure 3. Typical Junction Capacitance

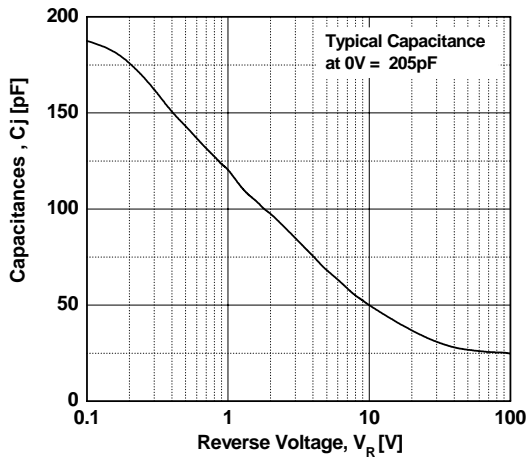


Figure 5. Typical Reverse Recovery Current vs. di/dt

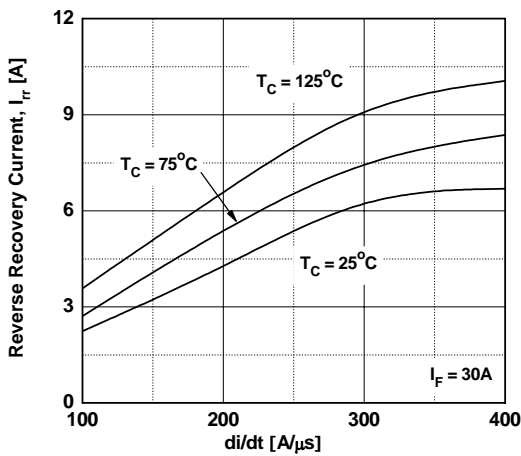


Figure 2. Typical Reverse Current vs. Reverse Voltage

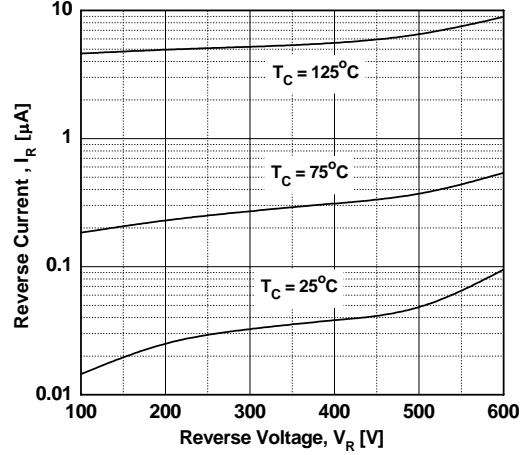


Figure 4. Typical Reverse Recovery Time vs. di/dt

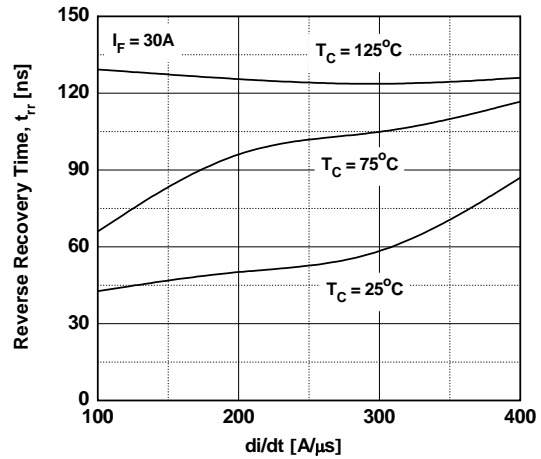
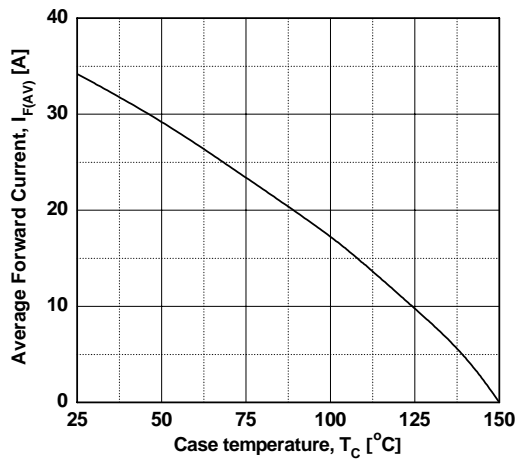
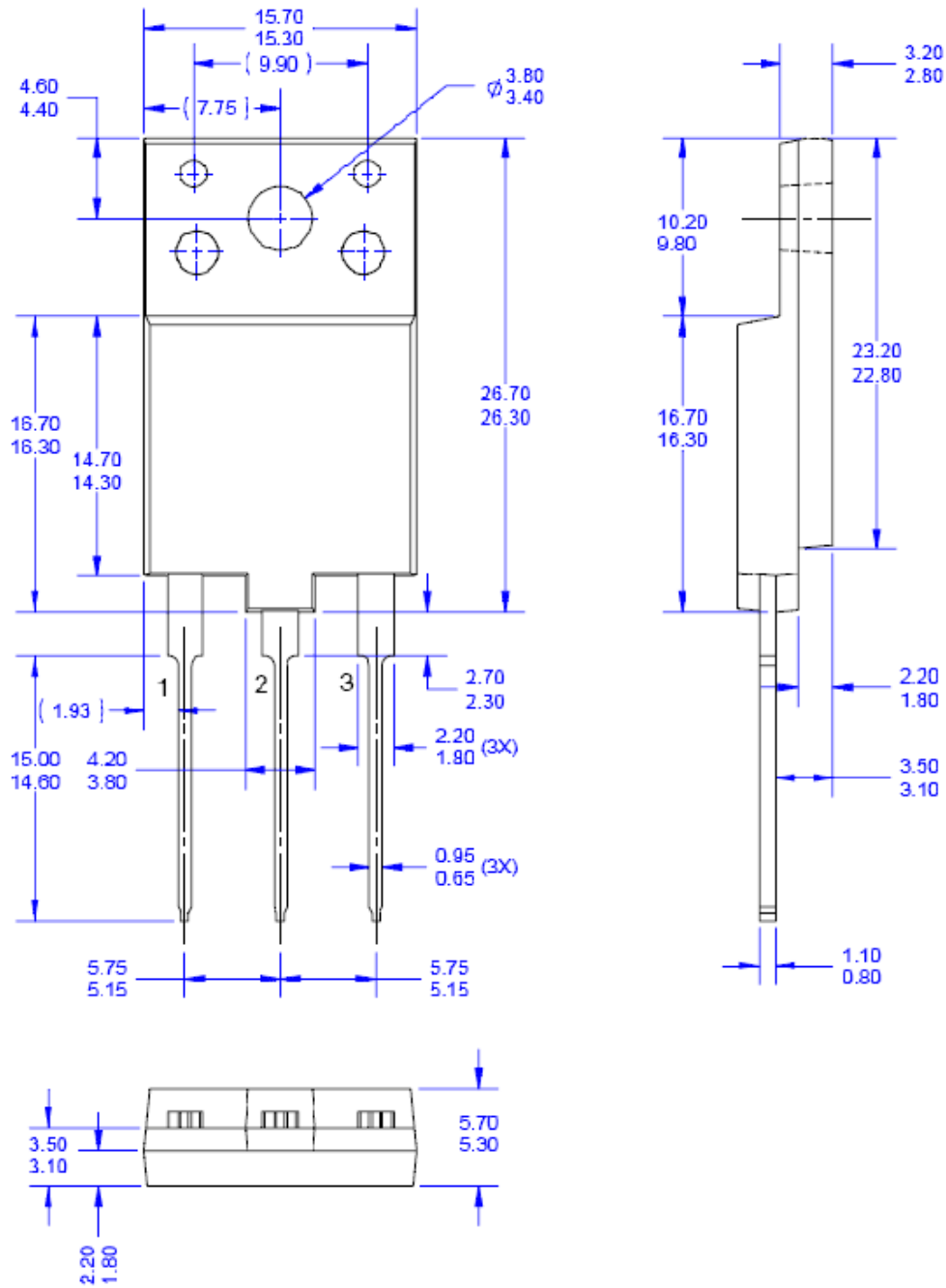


Figure 6. Forward Current Derating Curve



### Mechanical Dimensions

### TO-3PF









Dimensions in Millimeters



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