FAIRCHILD SEMICONDUCTOR®

November 2009

FFAF60UA60DN
Ultrafast Rectifier

Features

- Ultrafast switching, Trr < 90ns
- High Reverse Voltage and High Reliability
- Avalanche Energy Rated
- Max Forward Voltage, V_F < 2.2V
- RoHS Compliant

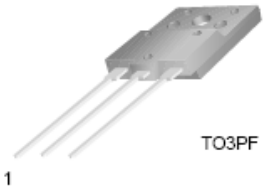
Applications

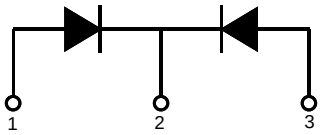
- Boost Diode in PFC and Switching Mode Power Supply
- Welding, UPS and motor control application

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 applicationa as welder and UPS application.

Pin Assignments





1. Anode 2. Cathode 3. Anode

Absolute Maximum Ratings Per leg at T_C=25°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°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	°C

Thermal Characteristics Per leg at T_C=25°C unless otherwise noted

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

Package Marking and Ordering Information

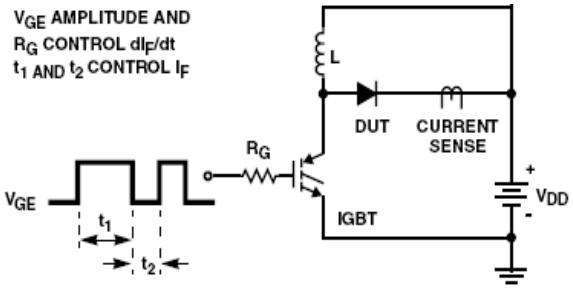
Device Marking	Device	Package	Reel Size	Tape Width	Quantity
F60UA60DN	FFAF60UA60DN	TO3PF	-	-	30

Electrical Characteristics Per leg at T_C=25°C unless otherwise noted

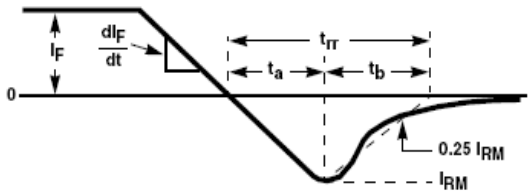
Symbol	Parameter		Min.	Typ.	Max.	Units
V_{FM}1	I_F = 30A I_F = 30A	T_C = 25°C T_C = 125°C	- -	- -	2.2 2.0	V
I_{RM}1	V_R = 600V V_R = 600V	T_C = 25°C T_C = 125°C	- -	- -	100 150	μA
t_{rr} I_{rr} Q_{rr}	I_F = 30A, di/dt = 200A/μs	T_C = 25°C	- - -	- - -	90 8 360	ns A nC
W_{AVL}	Avalanche Energy (L = 40mH)		20	-	-	mJ

Notes:
1: Pulse: Test Pulse width = 300μs, Duty Cycle = 2%

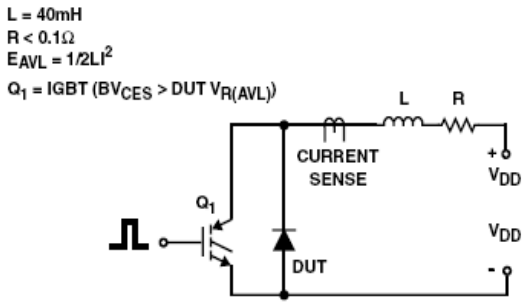
Test Circuit and Waveforms



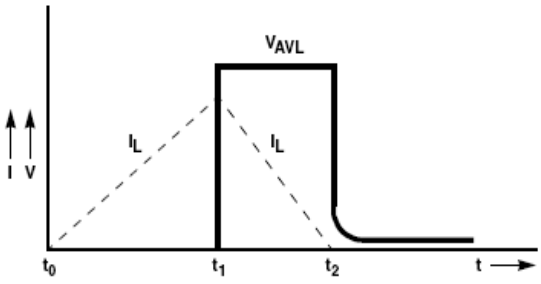
t_{rr} TEST CIRCUIT



t_{rr} WAVEFORMS AND DEFINITIONS



AVALANCHE ENERGY TEST CIRCUIT



AVALANCHE CURRENT AND VOLTAGE WAVEFORMS

Typical Performance Characteristics

Figure 1. Typical Forward Voltage Drop vs. Forward Current

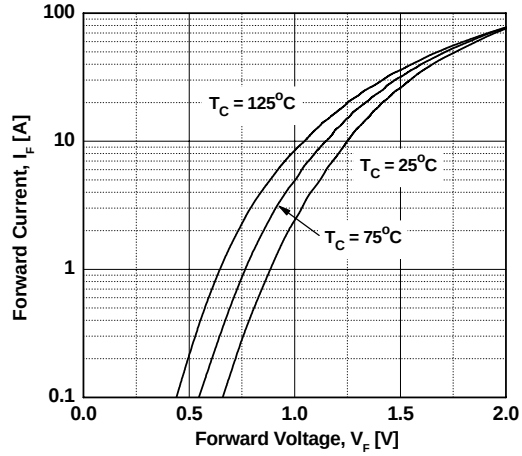


Figure 2. Typical Reverse Current vs. Reverse Voltage

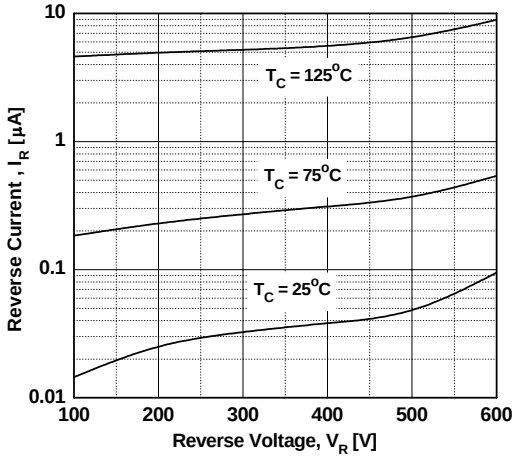


Figure 3.Typical Junction Capacitance

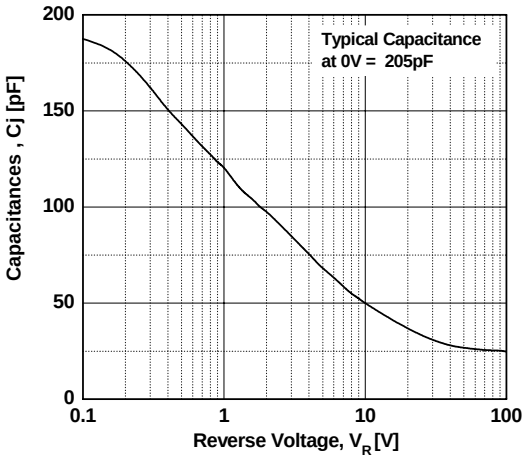


Figure 4. Typical Reverse Recovery Time vs. di/dt

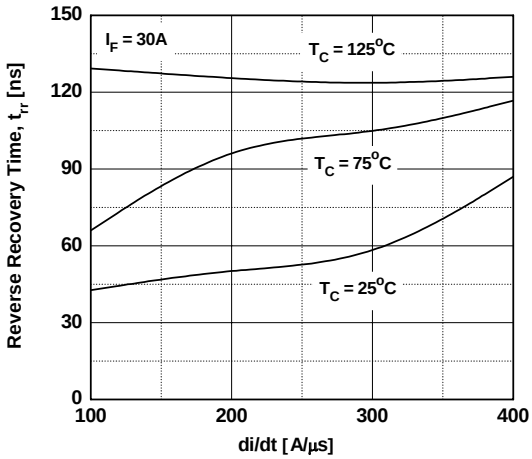


Figure 5. Typical Reverse Recovery Current vs. di/dt

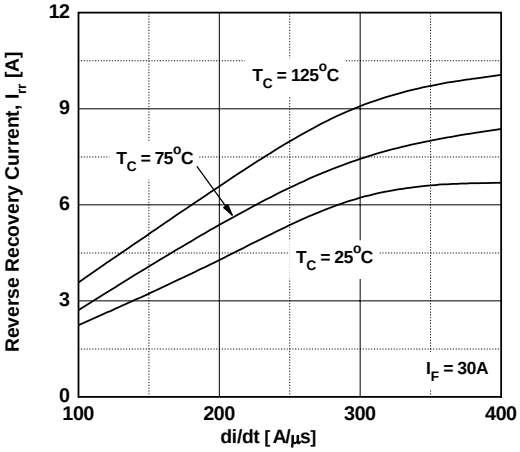
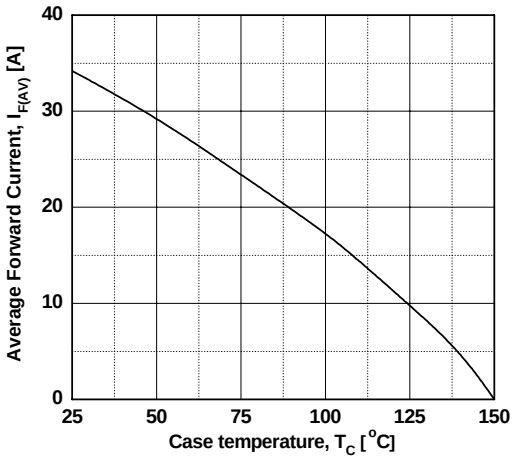
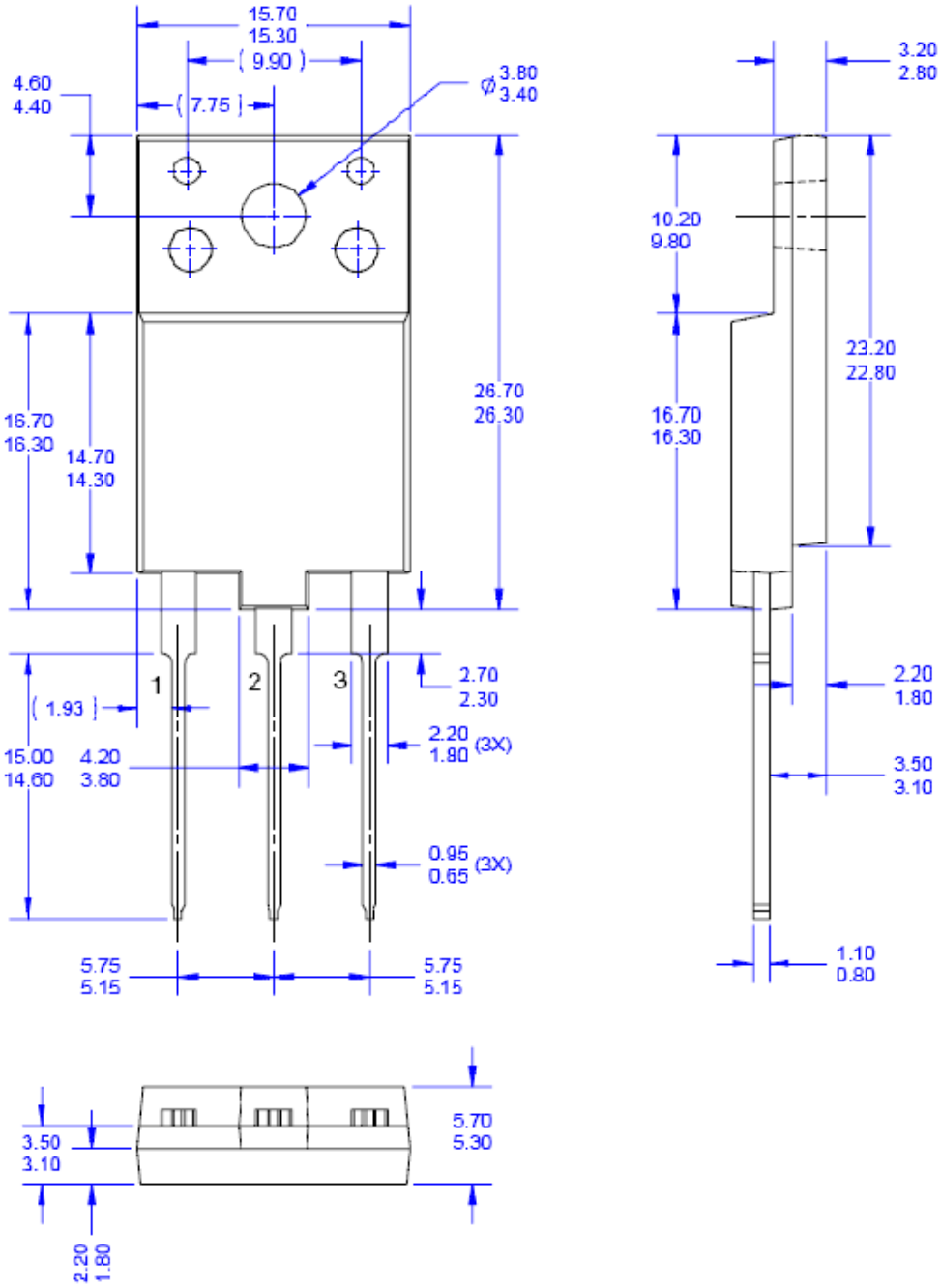


Figure 6. Forward Current Derating Curve



Mechanical Dimensions

TO-3PF



Dimensions in Millimeters

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