FAIRCHILD SEMICONDUCTOR®

November 2013

FFAF60UA60DN

60 A, 600 V, Ultrafast II Dual Diode

Features

- Ultrafast Recovery, T_{rr} < 90ns (@ I_F = 30 A)
- Max Forward Voltage, V_F = 2.2 V (@ T_C = 25°C)
- 600V Reverse Voltage and High Reliability
- Avalanche Energy Rated
- RoHS Compliant

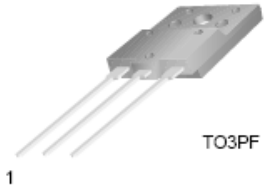
Applications

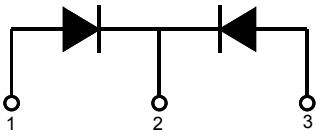
- Boost Diode in PFC and SMPS
- Welder, UPS and Motor Control Application

Description

The FFAF60UA60DN is an ultrafast II dual diode with low forward voltage drop and rugged UIS capability. This device is intended for use as freewheeling and clamping diodes in a variety of switching power supplies and other power switching applications. It is specially suited for use in switching power supplies and industrial application 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	Unit
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	Unit
$R_{\theta JC}$	Maximum Thermal Resistance, Junction to Case	2.4	°C/W

Package Marking and Ordering Information

Part Number	Top Mark	Package	Packing Method	Reel Size	Tape Width	Quantity
FFAF60UA60DN	F60UA60DN	TO-3PF	Tube	N/A	N/A	30

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

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

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

Test Circuit and Waveforms

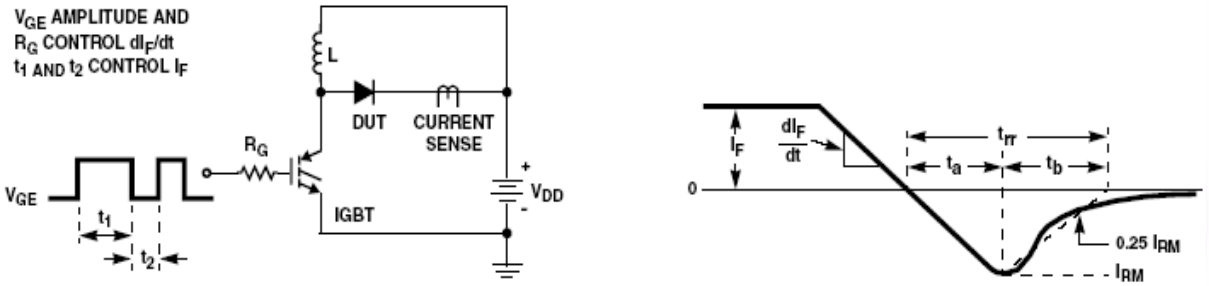


Figure 1. Diode Reverse Recovery Test Circuit & Waveform

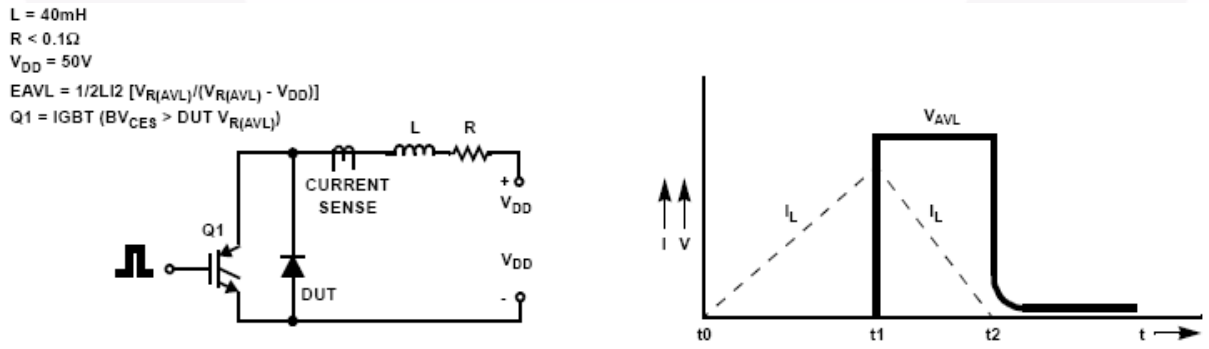


Figure 2. Unclamped Inductive Switching Test Circuit & Waveform

Typical Performance Characteristics

Figure 3. Typical Forward Voltage Drop vs. Forward Current

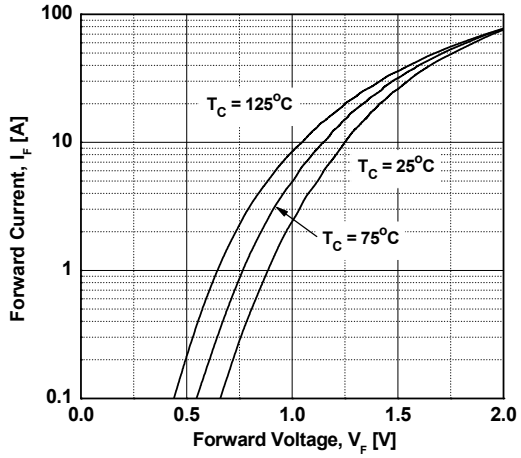


Figure 4. Typical Reverse Current vs. Reverse Voltage

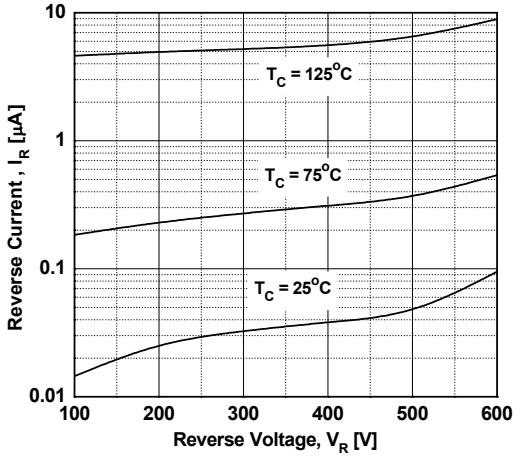


Figure 5.Typical Junction Capacitance

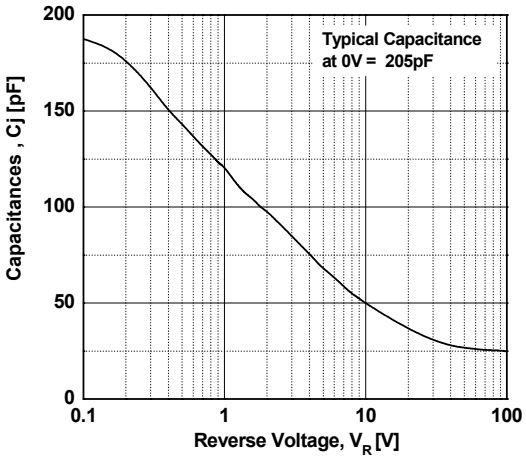


Figure 6. Typical Reverse Recovery Time vs. di_F/dt

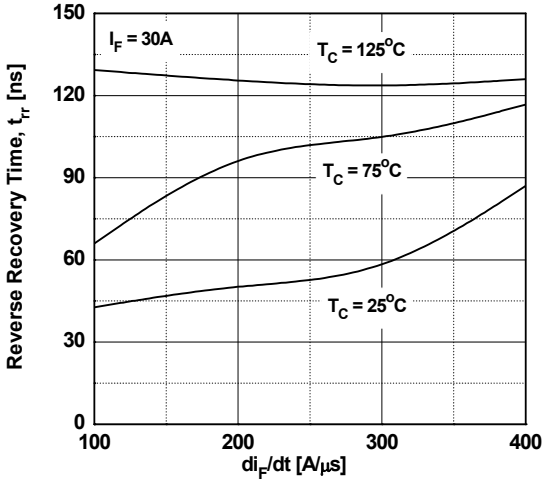


Figure 7. Typical Reverse Recovery Current vs. di_F/dt

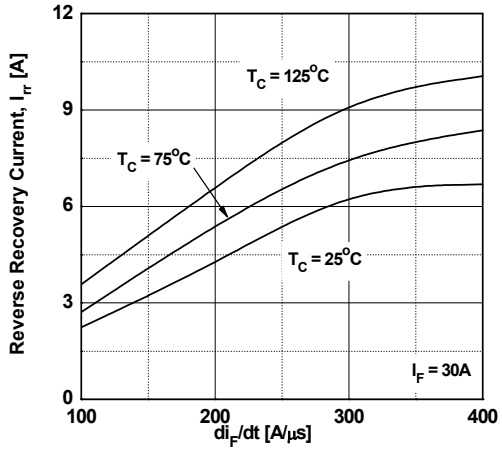
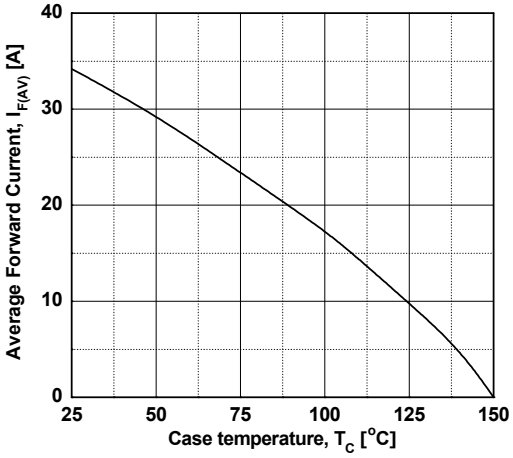


Figure 8. Forward Current Derating Curve



Package Dimensions

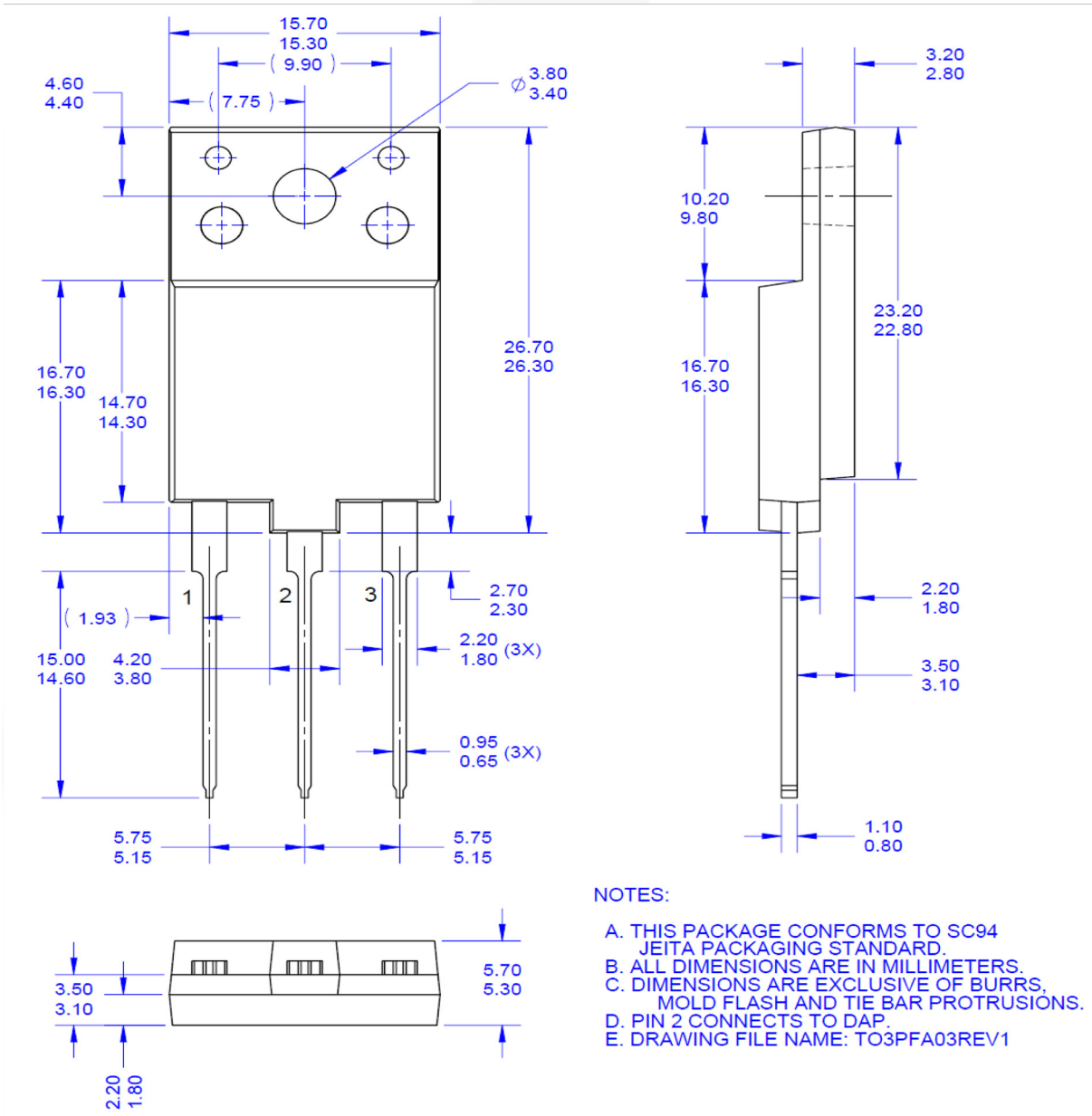


Figure 9. TO-3PF 3L - TO3PF, MOLDED, 3LD, FULL PACK, EIAJ SC91, STRAIGHT LEAD

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