FAIRCHILD SEMICONDUCTOR®

September 2004

FFA60UP20DN

60 A, 200 V, Ultrafast Dual Diode

Features

- Ultrafast Recovery, Trr = 32 ns (@ IF = 30 A)
- Max. Forward Voltage, VF = 1.15 V (@ TC = 25°C)
- Reverse Voltage: V_{RRM} = 200 V
- Avalanche Energy Rated
- RoHS Compliant

The FFA60UP20DN is an ultrafast 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 applicationa as welder and UPS application.

Applications

- Power Switching Circuits
- Output Rectifiers
- Freewheeling Diodes
- Switching Mode Power Supply

TO-3PN

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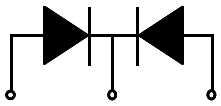


1. Anode 2.Cathode 3. Anode

Absolute Maximum Ratings (per diode) T_C=25°C unless otherwise noted

Symbol	Parameter	Value	Unit
V_{RRM}	Peak Repetitive Reverse Voltage	200	V
$I_{F(AV)}$	Average Rectified Forward Current @ T_C = 100°C	30	A
I_{FSM}	Non-repetitive Peak Surge Current 60Hz Single Half-Sine Wave	300	A
T_J, T_{STG}	Operating Junction and Storage Temperature	- 65 to +150	°C

Thermal Characteristics

Symbol	Parameter	Value	Unit
$R_{\theta JC}$	Maximum Thermal Resistance, Junction to Case	1.4	°C/W

Electrical Characteristics (per diode) T_C=25 °C unless otherwise noted

Symbol	Parameter		Min.	Typ.	Max.	Unit
V_F *	Maximum Instantaneous Forward Voltage					V
	I_F = 30 A	T_C = 25 °C	-	-	1.15	
	I_F = 30 A	T_C = 100 °C	-	-	1.0	
I_R *	Maximum Instantaneous Reverse Current					μA
	@ rated V_R	T_C = 25 °C	-	-	10	
		T_C = 100 °C	-	-	100	
t_{rr}	Reverse Recovery Time		-	32	-	ns
I_{rr}	Reverse Recovery Current		-	2.4	-	A
Q_{rr}	Reverse Recovery Charge (I_F = 30 A, di/dt = 200 A/μs)		-	38.4	-	nC
t_{rr}	Maximum Reverse Recovery Time (I_F =1 A, di/dt = 100 A/μs)		-	-	40	ns
W_{AVL}	Avalanche Energy (L = 40 mH)		2	-	-	mJ

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

Typical Characteristics

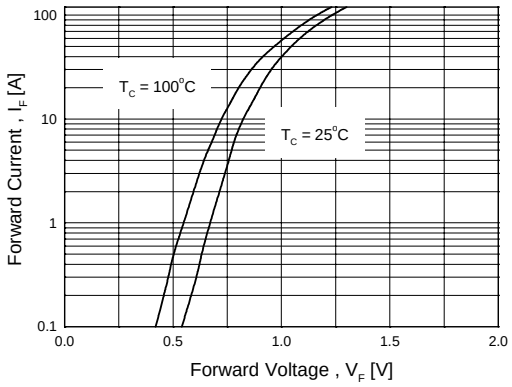


Figure 1. Typical Forward Voltage Drop vs. Forward Current

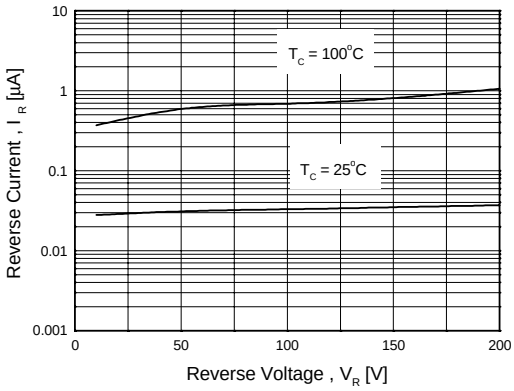


Figure 2. Typical Reverse Current vs. Reverse Voltage

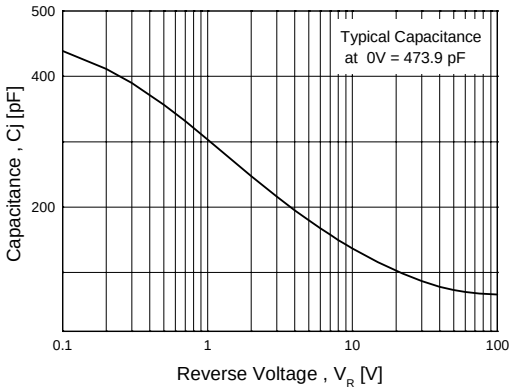


Figure 3. Typical Junction Capacitance

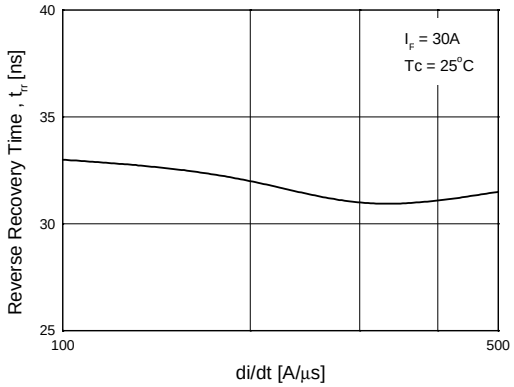


Figure 4. Typical Reverse Recovery Time vs. di/dt

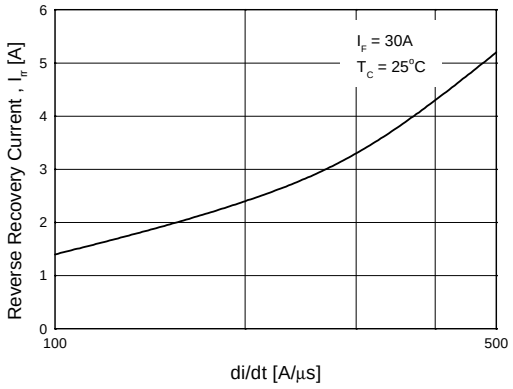


Figure 5. Typical Reverse Recovery Current vs. di/dt

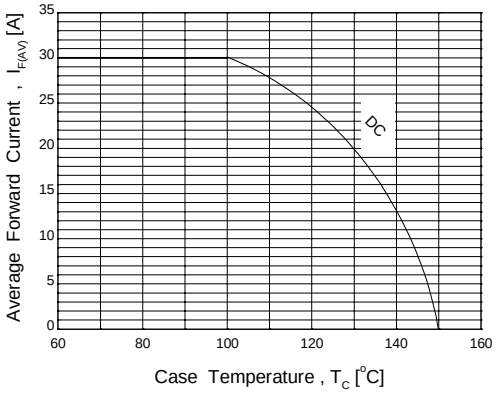
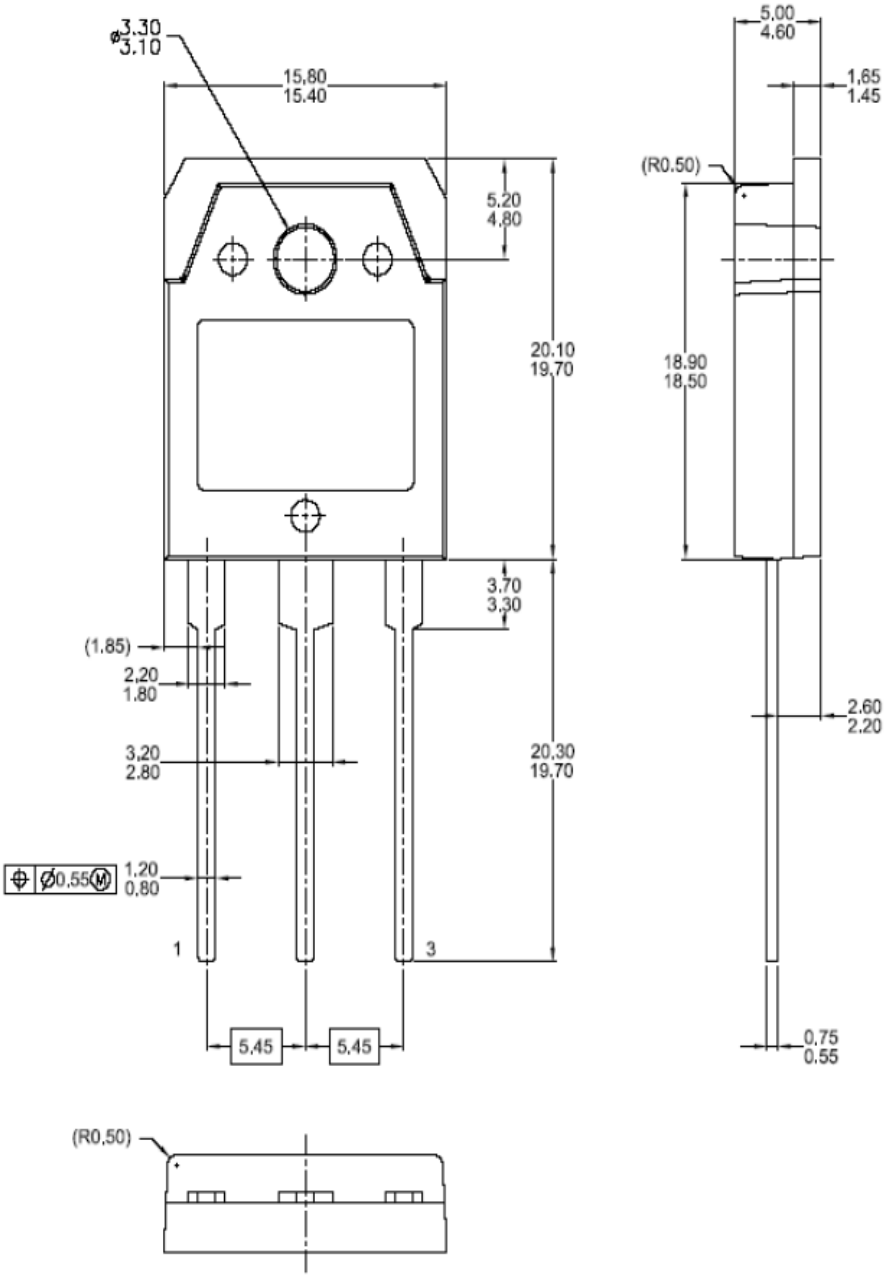


Figure 6. Forward Current Derating Curve

Mechanical Dimensions

TO-3PN



Dimensions in Millimeters

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