FAIRCHILD SEMICONDUCTOR®

October 2005

FFPF20UP20DN

20 A, 200 V, Ultrafast Dual Diode

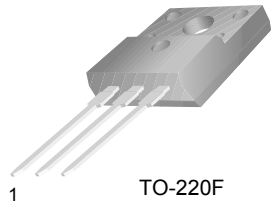
Features

- Ultrafast Recovery t_{rr} = 45 ns (@ I_F = 10 A)
- Max Forward Voltage, V_F = 1.15 V (@ T_C = 25°C)
- Reverse Voltage, V_{RRM} = 200 V
- Avalanche Energy Rated
- RoHS Compliant

The FFPF20UP20DN is an ultrafast 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 applicationa as welder and UPS application.

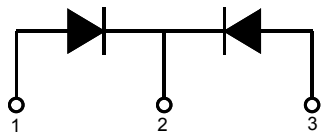
Applications

- Output Rectifiers
- Switching Mode Power Supply
- Free-Wheeling Diode for Motor Application
- Power Switching Circuits



1 TO-220F

1.Anode 2.Cathode 3.Anode



1. Anode 2. Cathode 3. Anode

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

Symbol	Parameter	Value	Unit
V_{RRM}	Peak Repetitive Reverse Voltage	200	V
V_{RWM}	Working Peak Reverse Voltage	200	V
V_R	DC Blocking Voltage	200	V
$I_{F(AV)}$	Average Rectified Forward Current @ T_C = 115°C	10	A
I_{FSM}	Non-repetitive Peak Surge Current 60Hz Single Half-Sine Wave	100	A
T_J, T_{STG}	Operating Junction and Storage Temperature	- 65 to +150	°C

Thermal Characteristics T_a = 25°C unless otherwise noted

Symbol	Parameter	Max	Unit
$R_{\theta JC}$	Maximum Thermal Resistance, Junction to Case	4.3	°C/W

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

Symbol	Parameter		Min.	Typ.	Max.	Unit
V_F *	I_F = 10 A I_F = 10 A	T_C = 25 °C T_C = 150 °C	- -	- -	1.15 1.0	V V
I_R *	V_R = 200 V V_R = 200 V	T_C = 25 °C T_C = 150 °C	- -	- -	100 500	μA μA
t_{rr}	I_F = 1 A, di/dt = 100 A/μs, V_{CC} = 30 V I_F = 10 A, di/dt = 200 A/μs, V_{CC} = 130 V	T_C = 25 °C T_C = 25 °C	- -	- -	35 45	ns ns
t_a t_b Q_{rr}	I_F =10 A, di/dt = 200 A/μs, V_{CC} = 130 V	T_C = 25 °C T_C = 25 °C T_C = 25 °C	- - -	15 12 36	- - -	ns ns nC
W_{AVL}	Avalanche Energy (L = 20mH)		10	-	-	mJ

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

Typical Performance Characteristics

Figure 1. Typical Forward Voltage Drop

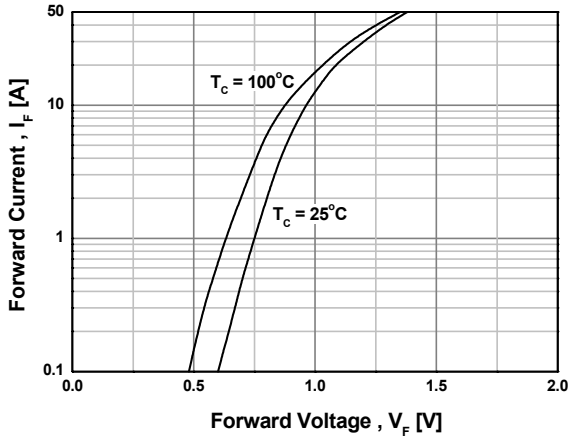


Figure 2. Typical Reverse Current

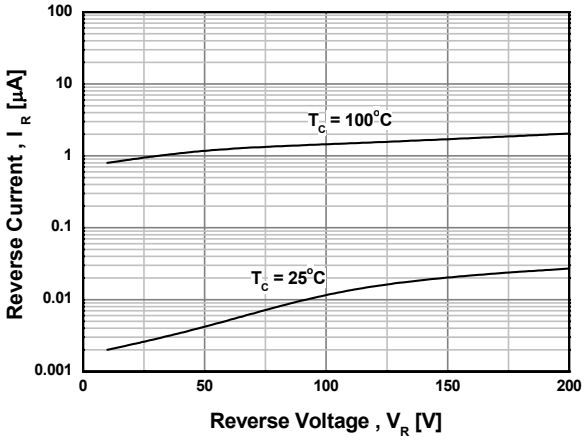


Figure 3. Typical Junction Capacitance

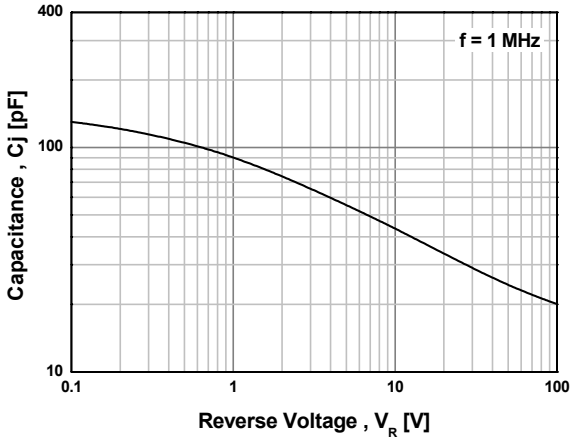


Figure 4. Typical Reverse Recovery Time

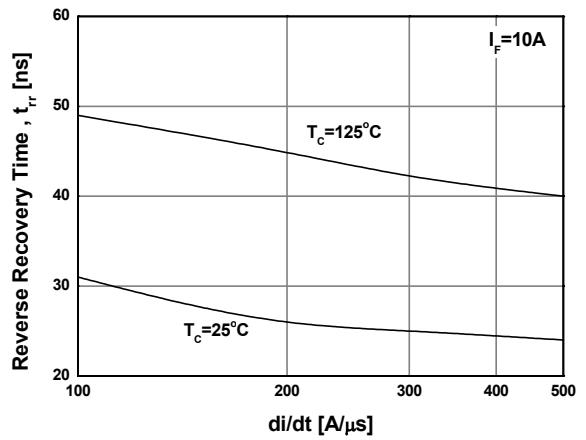


Figure 5. Typical Reverse Recovery Current

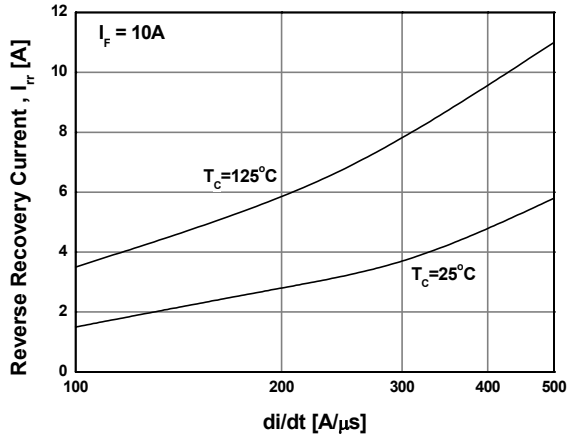
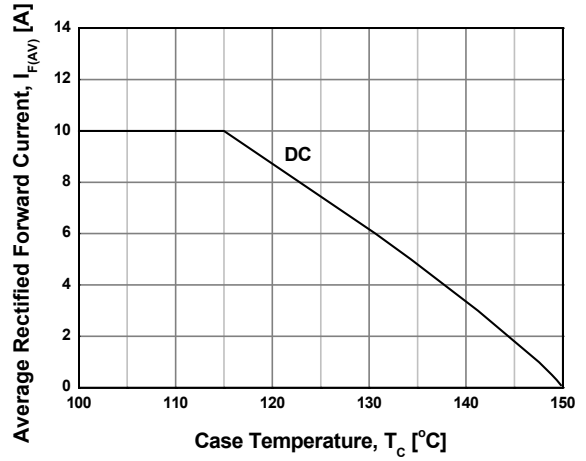


Figure 6. Forward Current Deration Curve



Package Demensions

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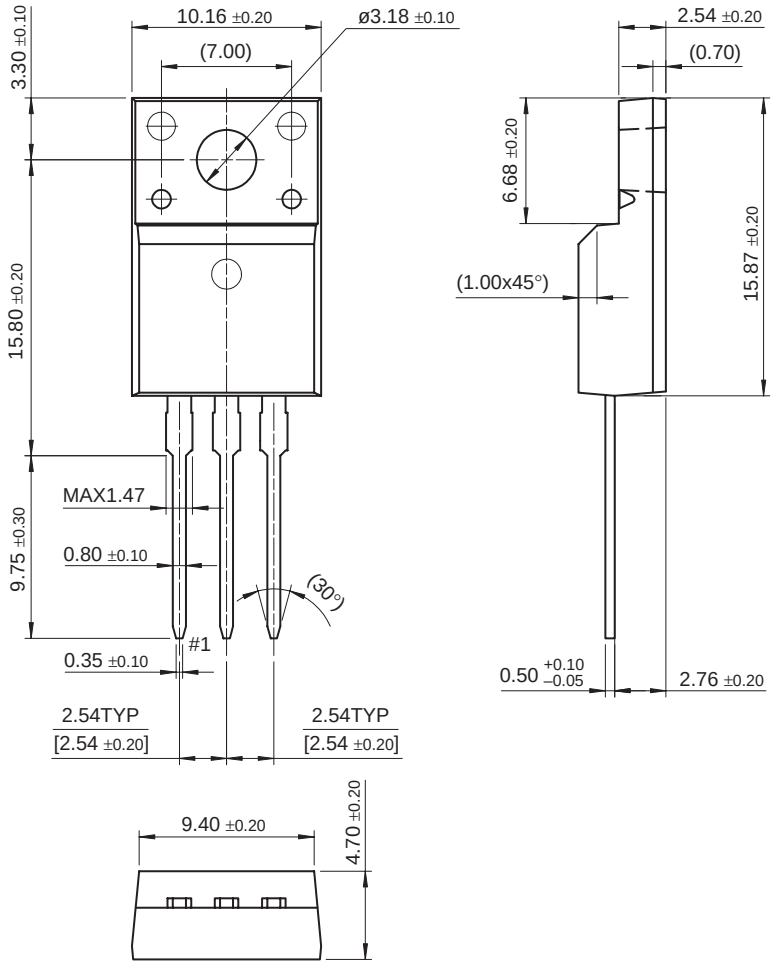

Dimensions in Millimeters

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