FAIRCHILD

December 2014

FFPF20UP20DN
20 A, 200 V, Ultrafast Dual Diode

Features

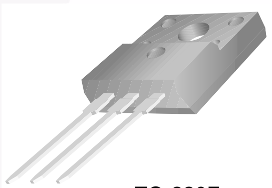
- Ultrafast Recovery t_{rr} = 45 ns (@ I_F = 10 A)
- Max Forward Voltage, V_F = 1.15 V (@ T_C = 25°C)
- Reverse Voltage, V_{RRM} = 200 V
- Avalanche Energy Rated
- RoHS Compliant

Applications

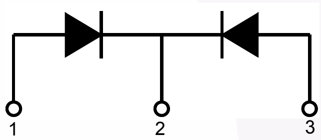
- Output Rectifiers
- SMPS, Power Switching Circuits
- Free-Wheeling Diode for Motor Application

Description

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 applications as welder and UPS application.



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	Rating	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 +175	°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

Package Marking and Ordering Information

Part Number	Top Mark	Package	Packing Method	Reel Size	Tape Width	Quantity
FFPF20UP20DN	FFPF20UP20DN	TO-220F	Tube	N/A	N/A	30

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_F/dt = 100 A/μs, V_R = 30 V I_F = 10 A, di_F/dt = 200 A/μs, V_R = 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_F/dt = 200 A/μs, V_R = 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 = 20 mH)		10	-	-	mJ

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

Test Circuit and Waveforms

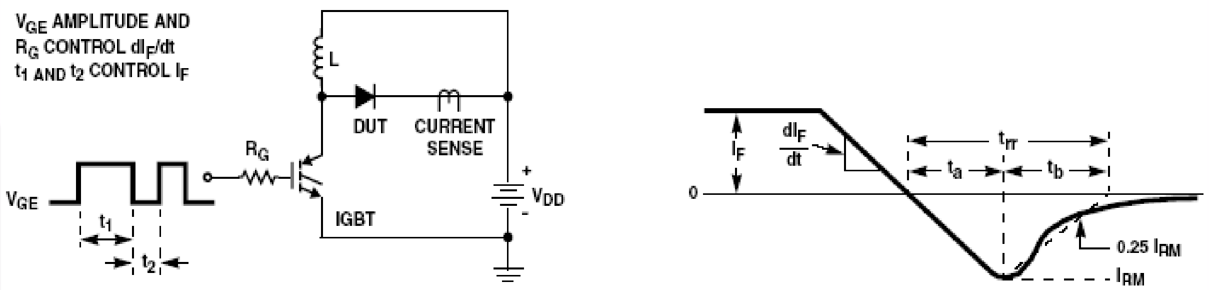


Figure 1. Diode Reverse Recovery Test Circuit & Waveform

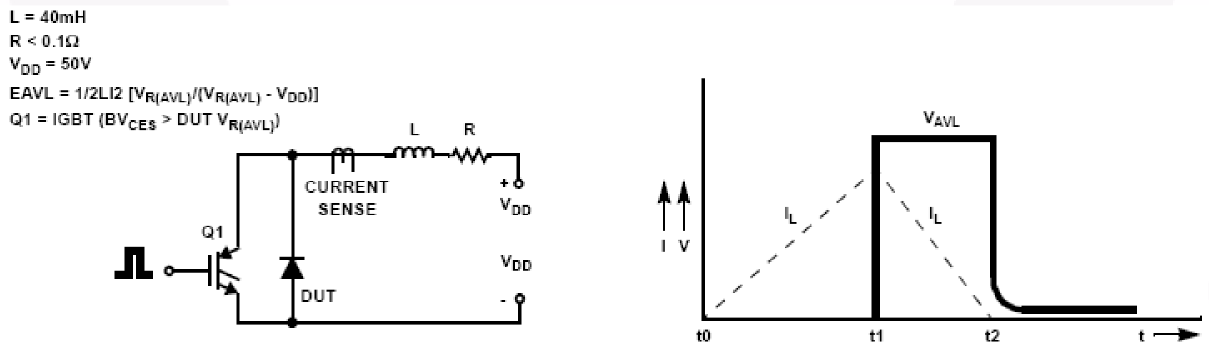


Figure 2. Unclamped Inductive Switching Test Circuit & Waveform

Typical Performance Characteristics

Figure 3. Typical Forward Voltage Drop

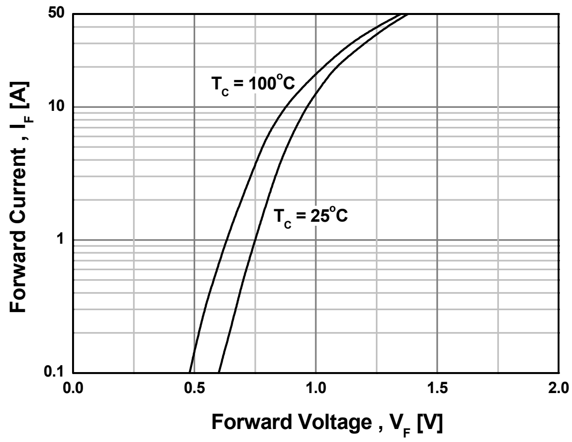


Figure 4. Typical Reverse Current

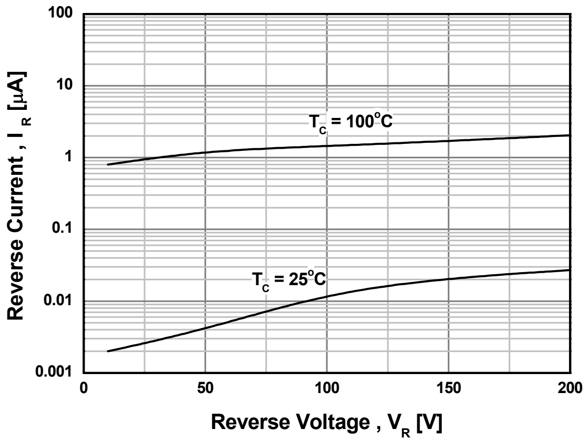


Figure 5. Typical Junction Capacitance

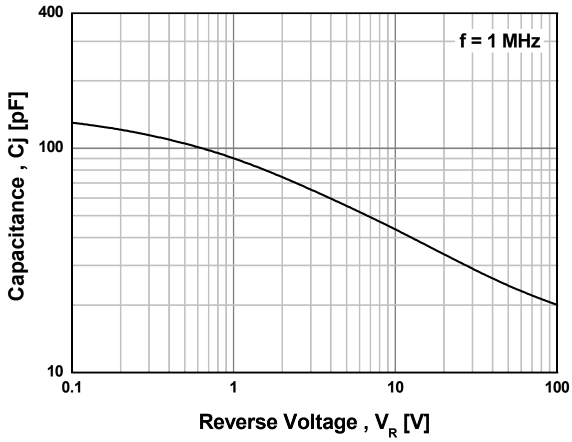


Figure 6. Typical Reverse Recovery Time

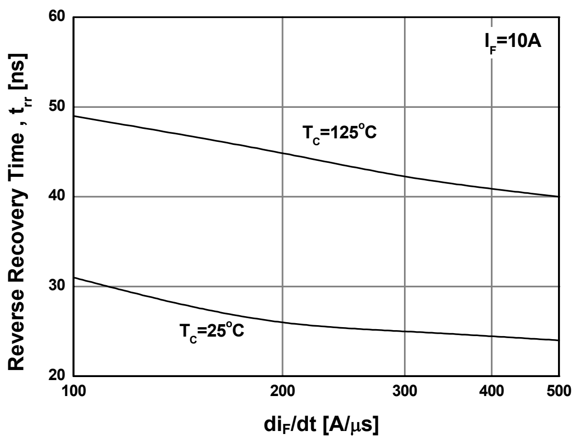


Figure 7. Typical Reverse Recovery Current

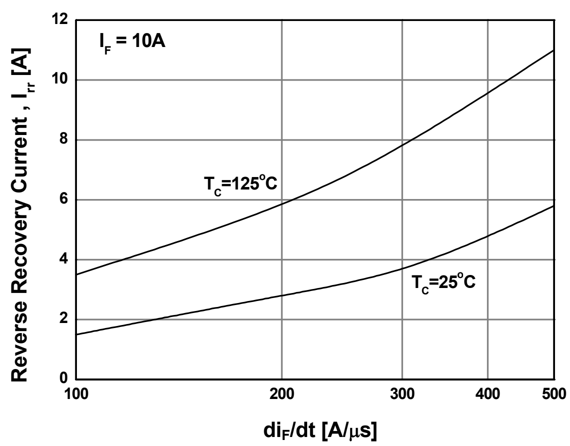
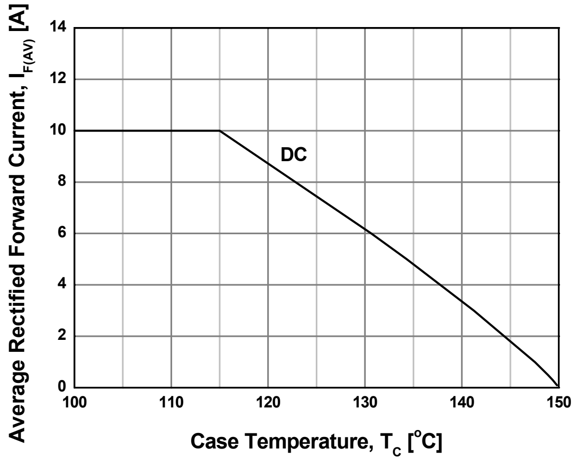


Figure 8. Forward Current Deration Curve



Package Dimensions

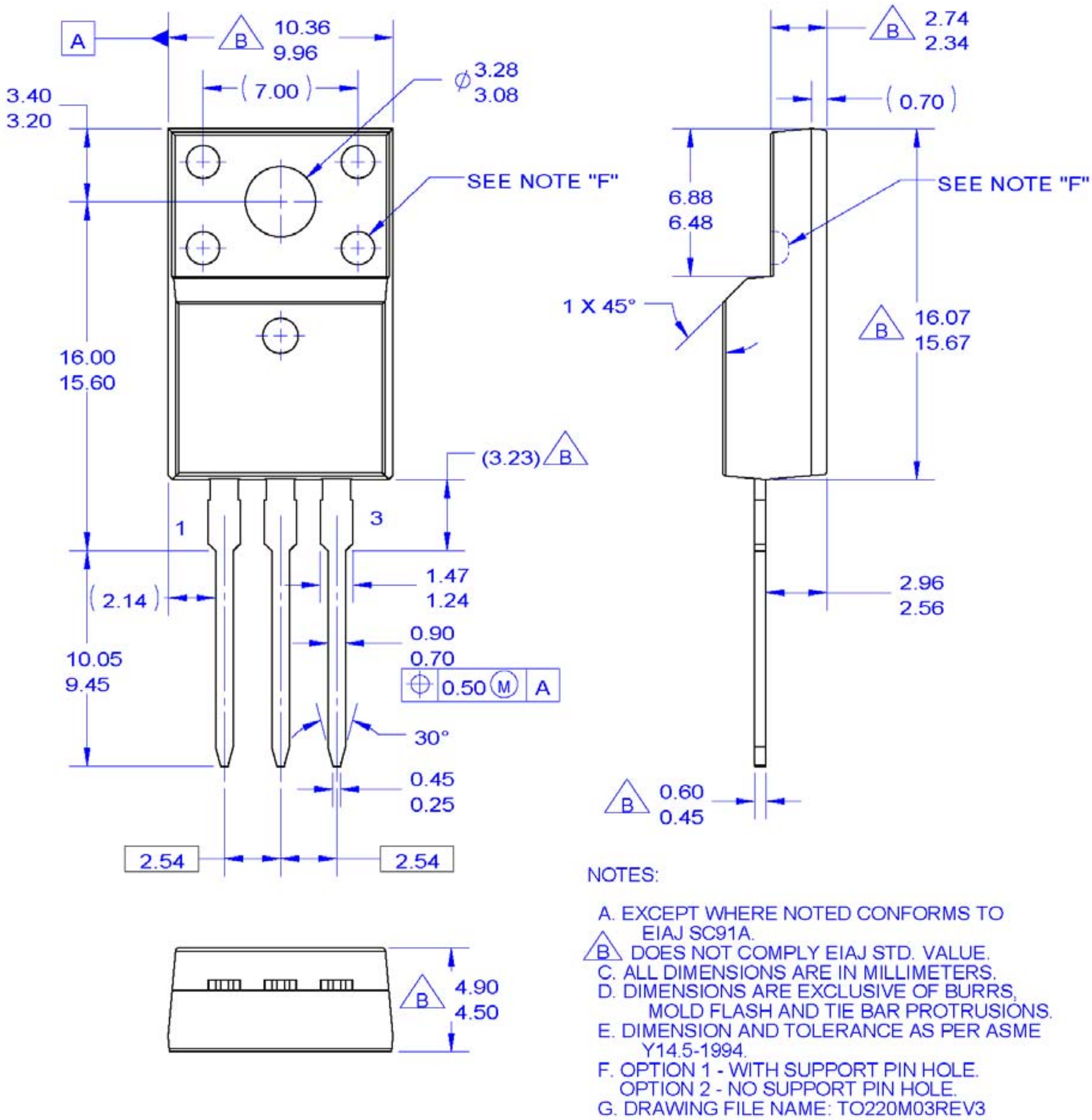


Figure 9. TO-220F 3L - TO220, MOLDED, 3LD, FULL PACK, EIAJ SC91, STRAIGHT LEAD

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Rev. I71

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