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ON Semiconductor®

July 2017

FFPF20UP60DN

20 A, 600 V, Ultrafast Dual Diode

Features

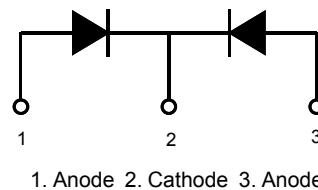
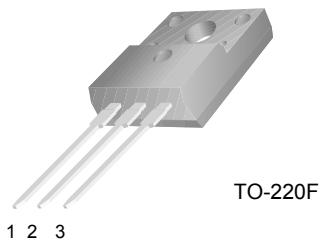
- Ultrafast Recovery $t_{rr} = 70$ ns (@ $I_F = 10$ A)
- Max Forward Voltage, $V_F = 2.2$ V (@ $T_C = 25^\circ\text{C}$)
- 600 V Reverse Voltage and High Reliability
- Avalanche Energy Rated
- RoHS Compliant

Applications

- General Purpose
- SMPS, Power Switching Circuits
- Boost Diode in Continuous Mode Power Factor Corrections

Description

The FFPF20UP60DN is a ultrafast dual diode with low forward voltage drop. 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.



Absolute Maximum Ratings $T_C = 25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Rating	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 @ $T_C = 103^\circ\text{C}$	10	A
I_{FSM}	Non-repetitive Peak Surge Current 60Hz Single Half-Sine Wave	50	A
T_J, T_{STG}	Operating and Storage Temperature Range	-65 to +175	°C

Thermal Characteristics

Symbol	Parameter	Max.	Unit
$R_{\theta JC}$	Maximum Thermal Resistance, Junction to Case	7	°C/W

Package Marking and Ordering Information

Part Number	Top Mark	Package	Packing Method	Reel Size	Tape Width	Quantity
FFPF20UP60DNTU	FFPF20UP60DN	TO-220F	Tube	N/A	N/A	50

Electrical Characteristics $T_C = 25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter		Min.	Typ.	Max.	Unit
V_{F1}	$I_F = 10 \text{ A}$ $I_F = 10 \text{ A}$	$T_C = 25^\circ\text{C}$ $T_C = 100^\circ\text{C}$	-	-	2.2	V
I_{R1}	$V_R = 600 \text{ V}$ $V_R = 600 \text{ V}$	$T_C = 25^\circ\text{C}$ $T_C = 100^\circ\text{C}$	-	-	100	μA
t_{rr}	$I_F = 10 \text{ A}$, $dI_F/dt = 200 \text{ A}/\mu\text{s}$, $V_R = 390 \text{ V}$	$T_C = 25^\circ\text{C}$	-	53	70	ns
t_{rr} I_{rr} Q_{rr}	$I_F = 1 \text{ A}$, $dI_F/dt = 100 \text{ A}/\mu\text{s}$, $V_R = 30 \text{ V}$	$T_C = 25^\circ\text{C}$	-	30	40	ns
W_{AVL}	Avalanche Energy ($L = 40 \text{ mH}$)		10	-	-	mJ

Notes:

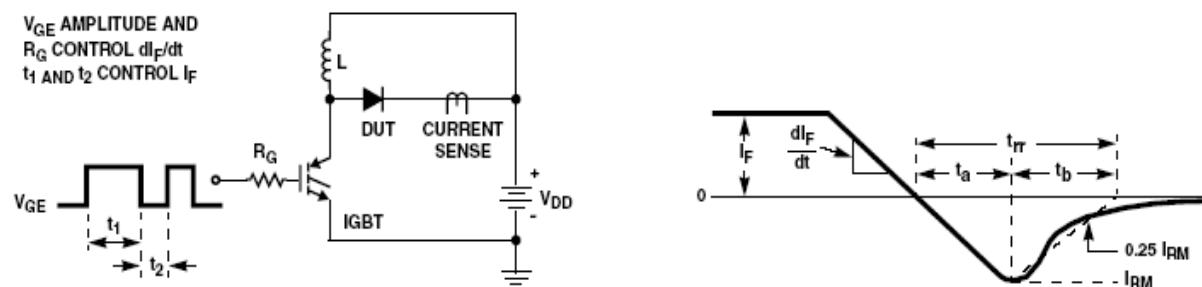
1: Pulse: Test Pulse width = 300 μs , Duty Cycle = 2%**Test Circuit and Waveforms**

Figure 1. Diode Reverse Recovery Test Circuit & Waveform

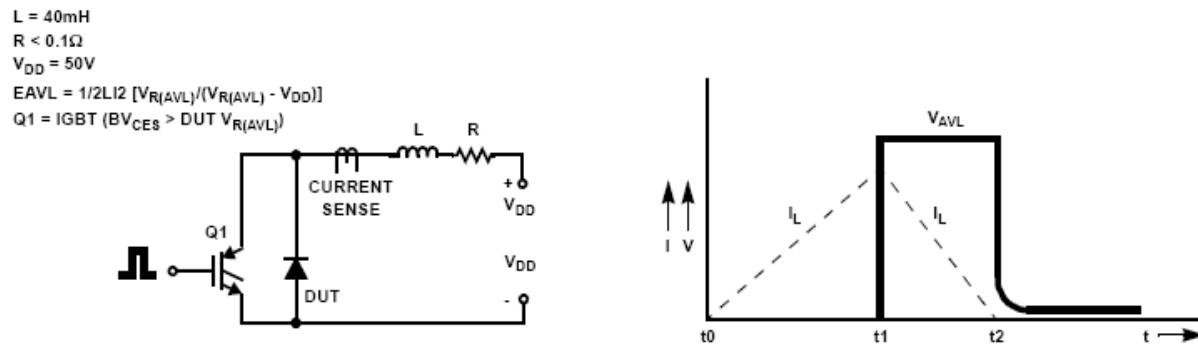


Figure 2. Unclamped Inductive Switching Test Circuit & Waveform

Typical Performance Characteristics

Figure 3. Typical Forward Voltage Drop vs. Forward Current

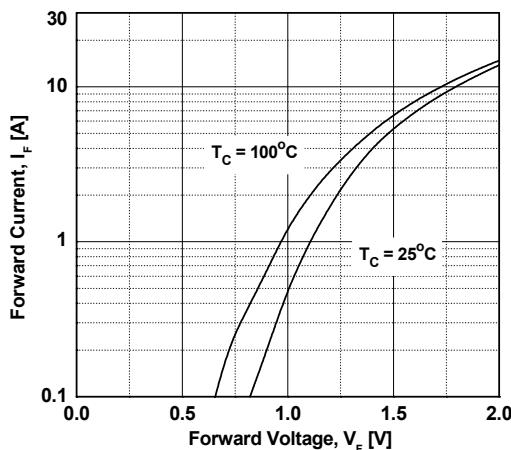


Figure 5. Typical Junction Capacitance

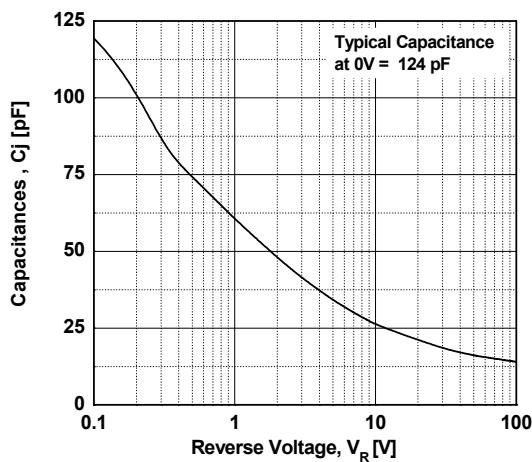


Figure 7. Typical Reverse Recovery Current vs. di_F/dt

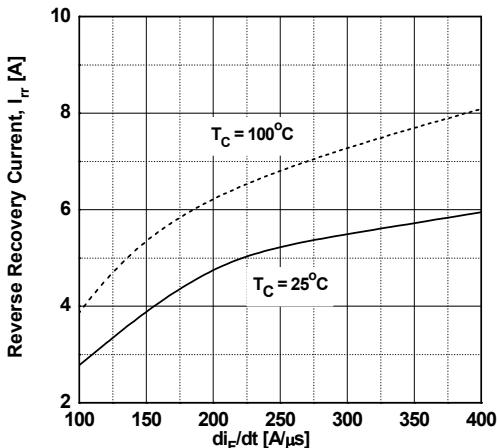


Figure 4. Typical Reverse Current vs. Reverse Voltage

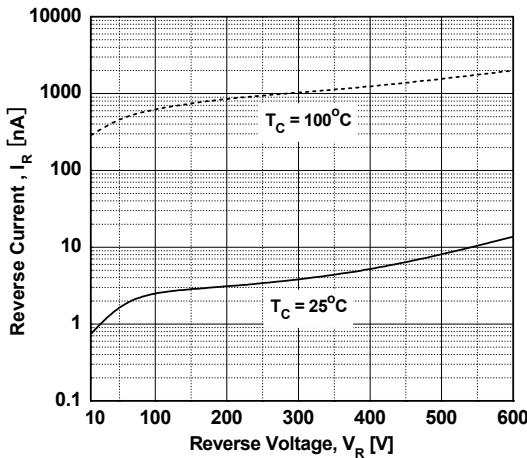


Figure 6. Typical Reverse Recovery Time vs. di_F/dt

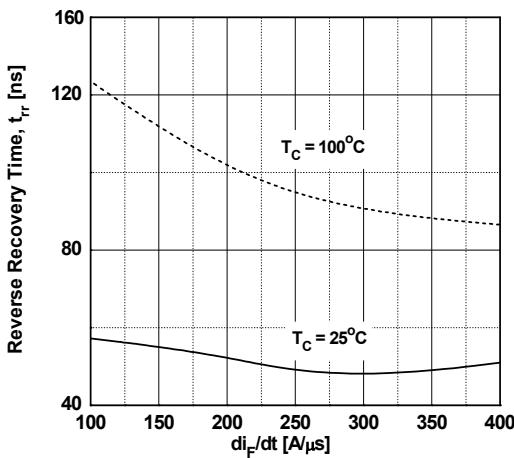
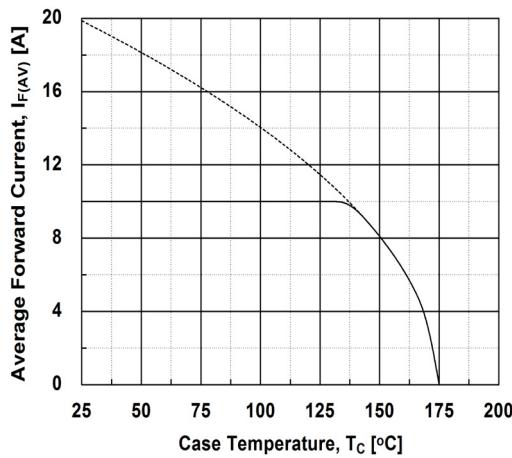


Figure 8. Forward Current Derating Curve



Package Dimensions

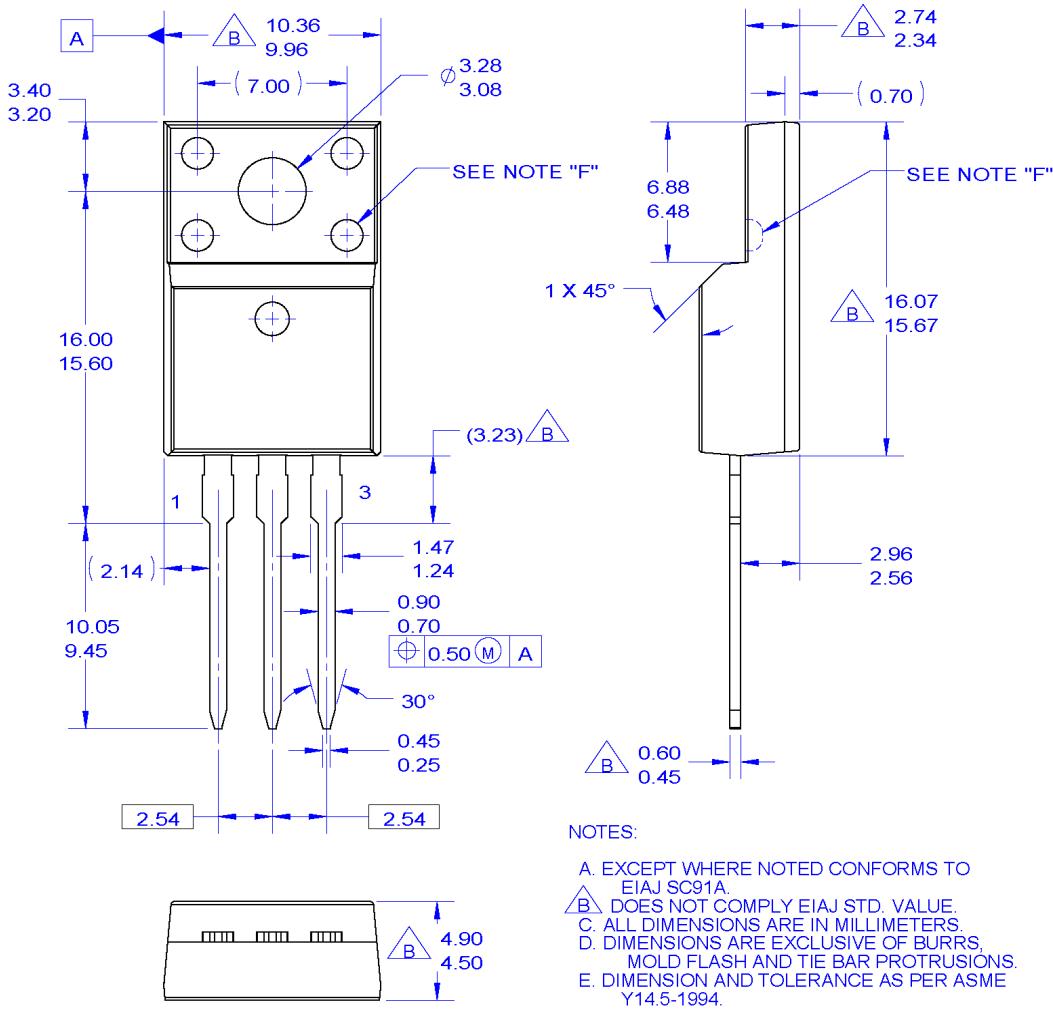


Figure 9. TO-220F 3L - TO220, MOLDED, 3LD, FULL PACK, EIAJ SC91, STRAIGHT LEAD

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