FFPF10UP60S

10 A, 600 V Ultrafast Diode

ON Semiconductor®

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Description

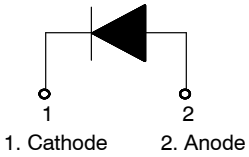
The FFPF10UP60S is an ultrafast diode with low forward voltage drop and rugged UIS capability. This device is intended for use as freewheeling and clamping diodes in a variety of switching power supplies and other power switching applications. It is specially suited for use in switching power supplies and industrial applications as welder and UPS application.

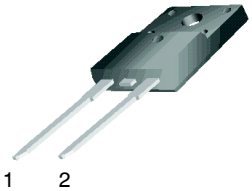
Features

- Ultrafast Recovery, t_{RR} = 40 ns (@ I_F = 1 A)
- Max Forward Voltage, V_F = 2.2 V (@ T_C = 25°C)
- 600 V Reverse Voltage and High Reliability
- Avalanche Energy Rated
- This Device is Pb−Free and is RoHS Compliant

Applications

- General Purpose
- SMPS, Power Switching Circuits
- Free−Wheeling Diode for Motor Application
- Welder, UPS





TO−220, 2−Lead
CASE 221AS

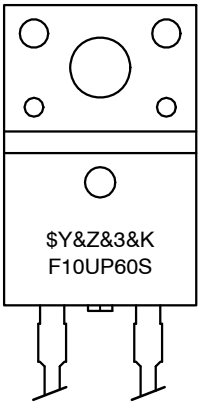
ABSOLUTE MAXIMUM RATINGS

T_C = 25°C unless otherwise noted

Symbol	Parameter	Rating	Unit
V_{RRM}	Peak Repetitive Reverse Voltage	600	V
V_{RWM}	Working Peak Reverse Voltage	600	V
$I_{F(AV)}$	Average Rectified Forward Current @ T_C = 60°C	10	A
I_{FSM}	Non−repetitive Peak Surge Current 60Hz Single Half−Sine Wave	50	A
T_J, T_{STG}	Operating Junction and Storage Temperature	− 65 to +175	°C

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

MARKING DIAGRAM



$Y	= ON Semiconductor Logo
&Z&3	= Data Code (Year & Week)
&K	= Lot
F10UP60S	= Specific Device Code

ORDERING INFORMATION

See detailed ordering and shipping information on page 2 of this data sheet.

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THERMAL CHARACTERISTICS T_C = 25°C unless otherwise noted

Symbol	Parameter	Max.	Unit
$R_{\theta JC}$	Maximum Thermal Resistance, Junction to Case	4.5	°C/W

PACKAGE MARKING AND ORDERING INFORMATION

Part Number	Top Mark	Package	Packing Method	Reel Size	Tape Width	Quantity
FFPF10UP60STU	F10UP60S	TO−220F−2L	Tube	N/A	N/A	30

ELECTRICAL CHARACTERISTICS T_C = 25°C unless otherwise noted

Parameter	Conditions		Min.	Typ.	Max.	Unit
V_F (Note 1)	Maximum Instantaneous Forward Voltage I_F = 10 A I_F = 10 A	 T_C = 25°C T_C = 100°C	 – –	 – –	 2.2 2.0	V
I_R (Note 1)	Maximum Instantaneous Reverse Current @ rated V_R	 T_C = 25°C T_C = 100°C	 – –	 – –	 100 500	μA
t_{RR}	I_F = 1 A, di_F/dt = 100 A/μs, V_R = 30 V	T_C = 25°C	–	–	25	ns
t_{RR} I_{RR} Q_{RR}	Reverse Recovery Time Reverse Recovery Current Reverse Recovery Charge (I_F = 8 A, di_F/dt = 200 A/μs, V_R = 390 V)		– – –	34 1.0 17	40 1.5 30	ns A nC
t_{RR}	Maximum Reverse Recovery Time (I_F =10 A, di_F/dt = 200 A/μs, V_R = 390 V)		–	58	–	ns
W_{AVL}	Avalanche Energy (L = 40 mH)		20	–	–	mJ

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

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

Test Circuit and Waveforms

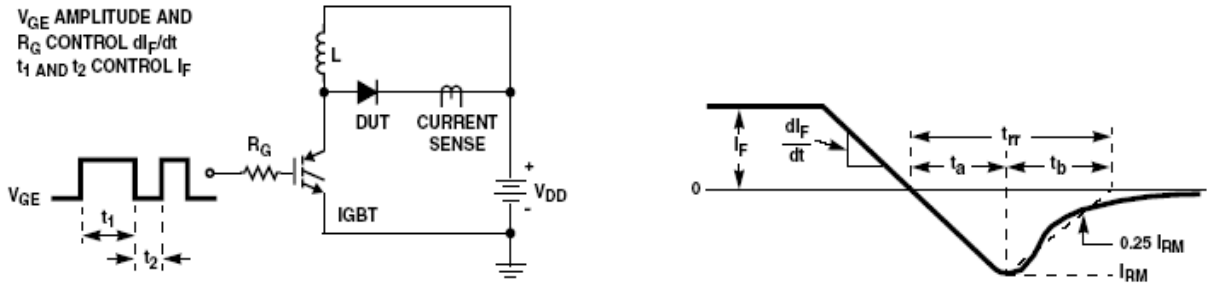

Figure 1. Diode Reverse Recovery Test Circuit & Waveform

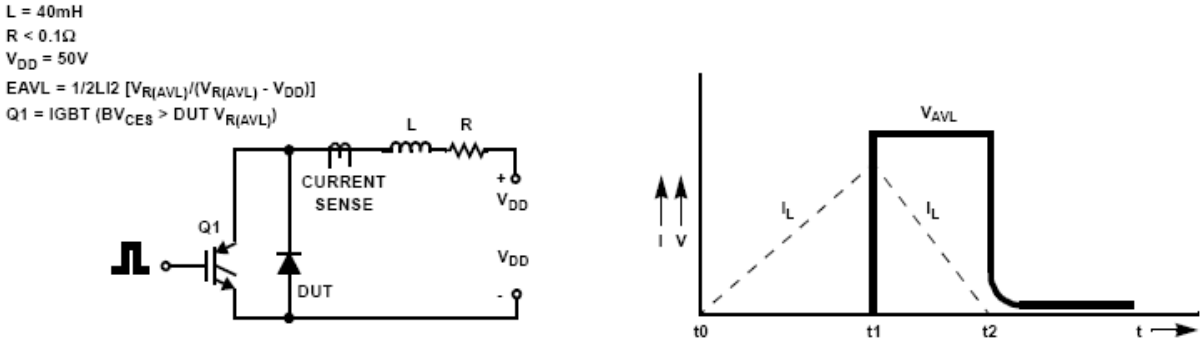

Figure 2. Unclamped Inductive Switching Test Circuit & Waveform

TYPICAL PERFORMANCE CHARACTERISTICS

T_C = 25°C unless otherwise noted

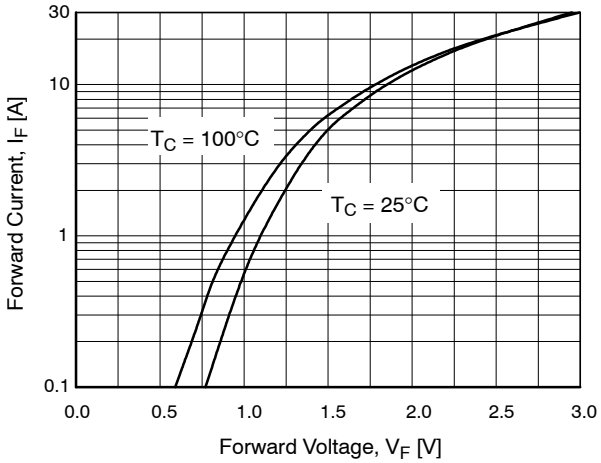

Figure 3. Typical Forward Voltage Drop

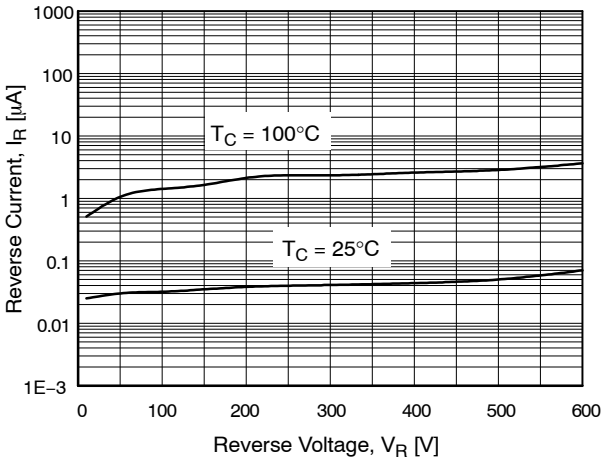

Figure 4. Typical Reverse Current

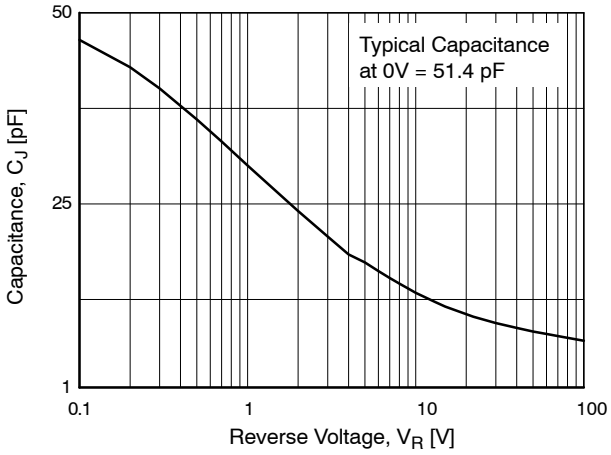

Figure 5. Typical Junction Capacitance

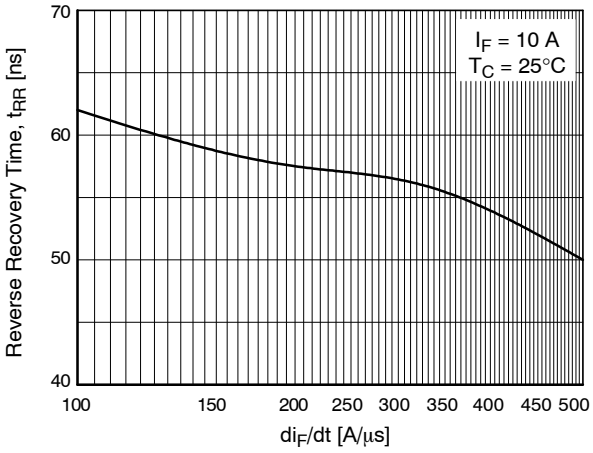

Figure 6. Typical Reverse Recovery Time

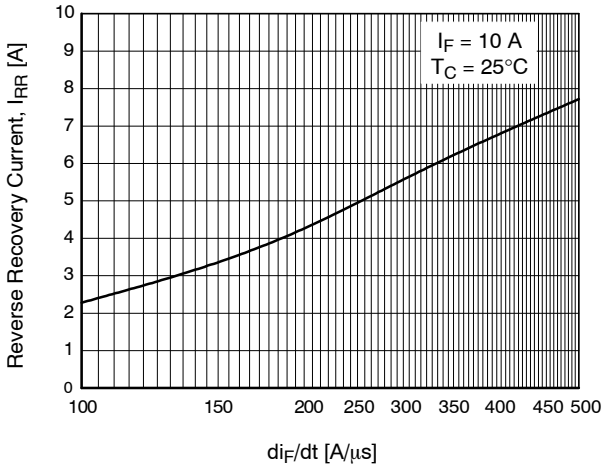

Figure 7. Typical Reverse Recovery Current

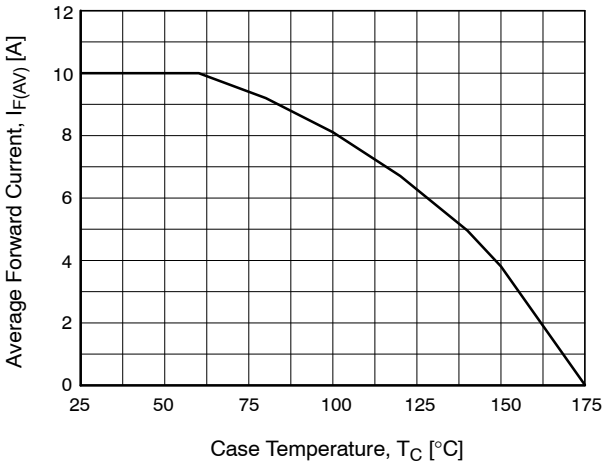

Figure 8. Forward Current Derating Curve

TO−220 Fullpack, 2−Lead / TO−220F−2FS
CASE 221AS
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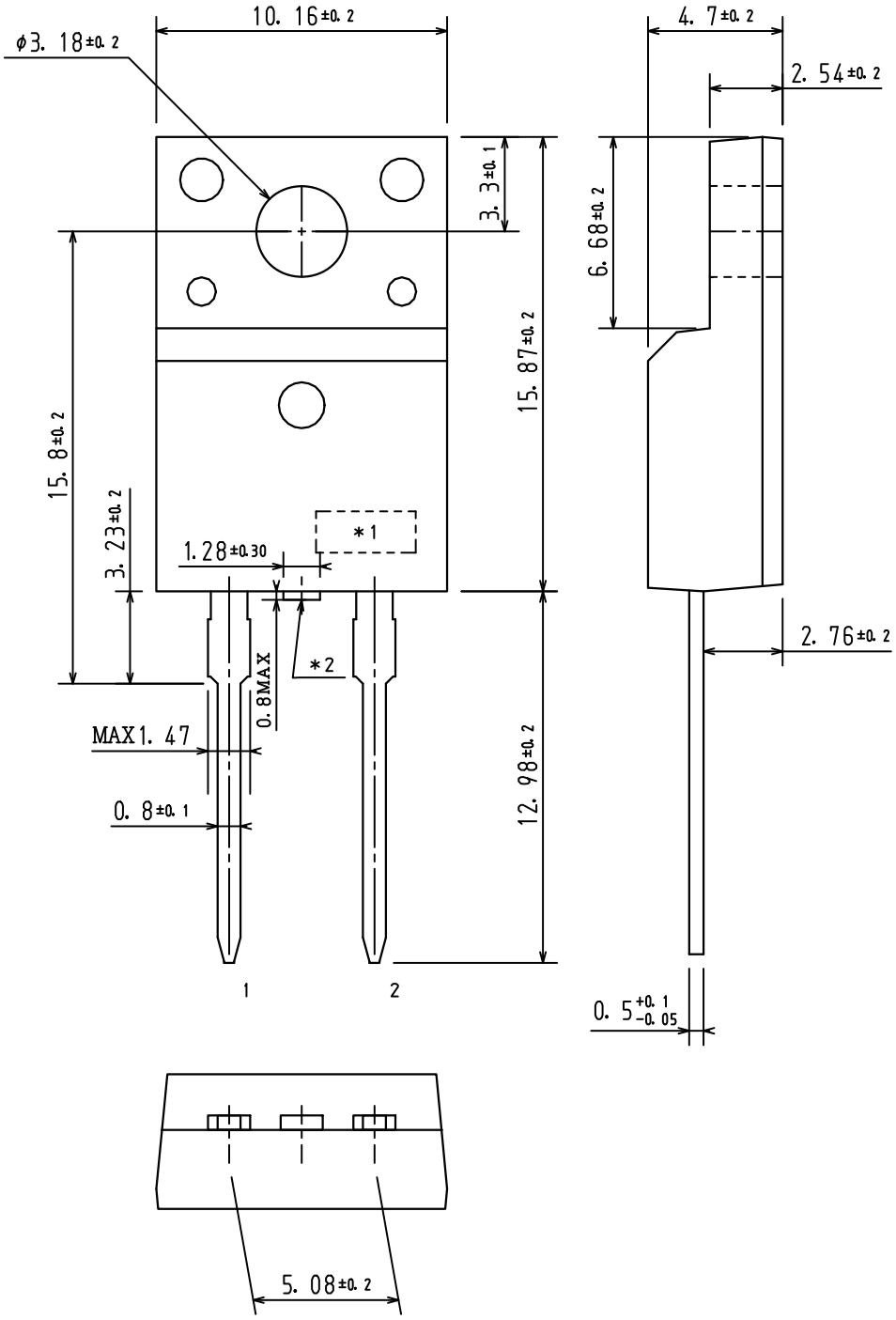

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DESCRIPTION:	**TO−220 FULLPACK, 2−LEAD / TO−220F−2FS**		**PAGE 1 OF 1**

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