FFPF30UP20S

30 A, 200 V, Ultrafast Diode

The FFPF30UP20S is a ultrafast 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.

Features

- Ultrafast Recovery t_{rr} = 50 ns (@ I_F = 30 A)
- Max Forward Voltage, V_F = 1.15 V (@ T_C = 25°C)
- Reverse Voltage, V_{RRM} = 200 V
- Avalanche Energy Rated
- This Device is Pb−Free and is RoHS Compliant

Applications

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

ABSOLUTE MAXIMUM RATINGS

T_C = 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 = 102°C	30	A
I_{FSM}	Non−repetitive Peak Surge Current 60 Hz Single Half−Sine Wave	300	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.

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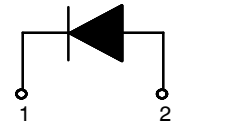
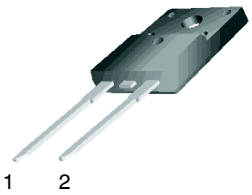
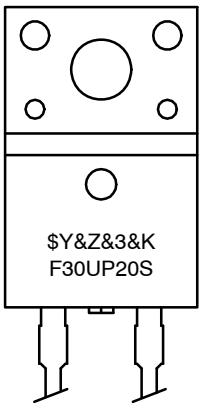


1. Cathode 2. Anode



TO−220, 2−Lead
CASE 221AS

MARKING DIAGRAM



$Y	= ON Semiconductor Logo
&Z&3	= Data Code (Year & Week)
&K	= Lot
F30UP20S	= Specific Device Code

ORDERING INFORMATION

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

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THERMAL CHARACTERISTICS

Symbol	Parameter	Max.	Unit
$R_{\theta JC}$	Maximum Thermal Resistance, Junction to Case	3.0	°C/W

PACKAGE MARKING AND ORDERING INFORMATION

Part Number	Top Mark	Package	Packing Method	Reel Size	Tape Width	Quantity
FFPF30UP20STU	F30UP20S	TO−220F−2L	Tube	N/A	N/A	50

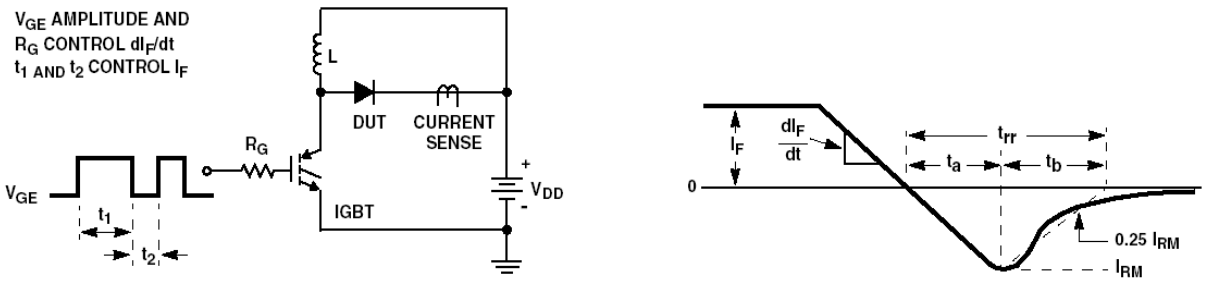
ELECTRICAL CHARACTERISTICS T_C = 25°C unless otherwise noted

Parameter	Conditions		Min.	Typ.	Max.	Unit
V_F (Note 1)	I_F = 30 A I_F = 30 A	T_C = 25°C T_C = 125°C	– –	– –	1.15 1.0	V V
I_R (Note 1)	V_R = 200 V V_R = 200 V	T_C = 25°C T_C = 125°C	– –	– –	100 500	μA μA
t_{rr}	I_F = 1 A, di_F/dt = 100 A/μs, V_{CC} = 30 V I_F = 30 A, di_F/dt = 200 A/μs, V_{CC} = 130 V	T_C = 25°C T_C = 25°C	– –	– –	40 50	ns ns
t_a t_b Q_{rr}	I_F = 30 A, di_F/dt = 200 A/μs, V_{CC} = 130 V	T_C = 25°C T_C = 25°C T_C = 25°C	– – –	22 14 67	– – –	ns ns nC
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



t_{rr} TEST CIRCUIT

t_{rr} WAVEFORMS AND DEFINITIONS

Figure 1. Diode Reverse Recovery Test Circuit & Waveform

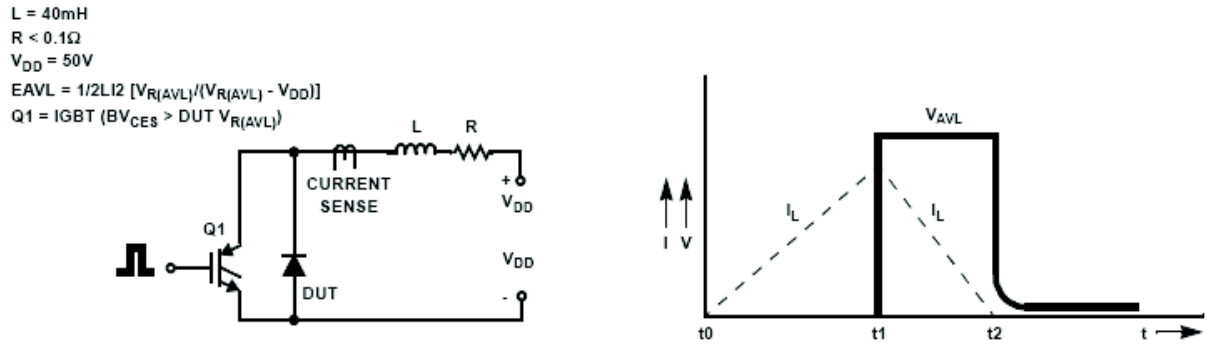


Figure 2. Unclamped Inductive Switching Test Circuit & Waveform

TYPICAL CHARACTERISTICS

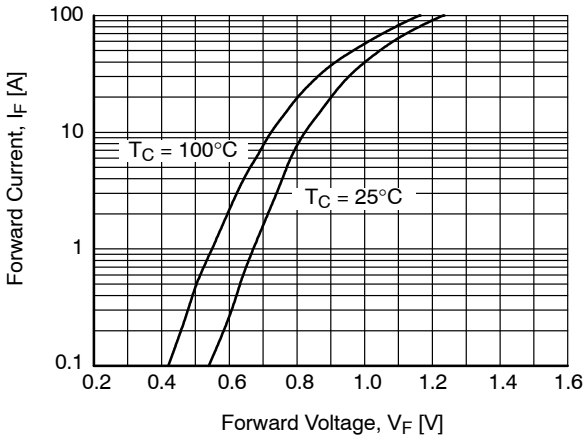


Figure 3. Typical Forward Voltage Drop

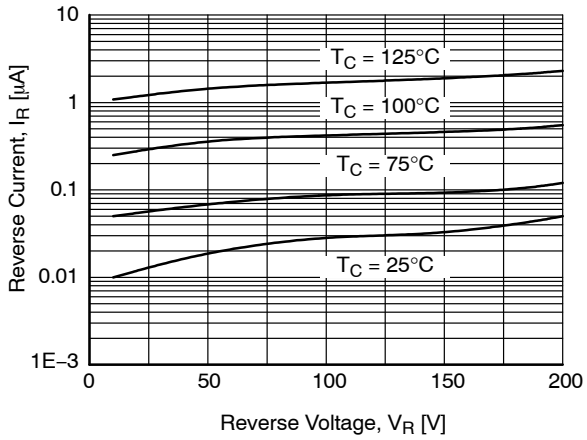


Figure 4. Typical Reverse Current

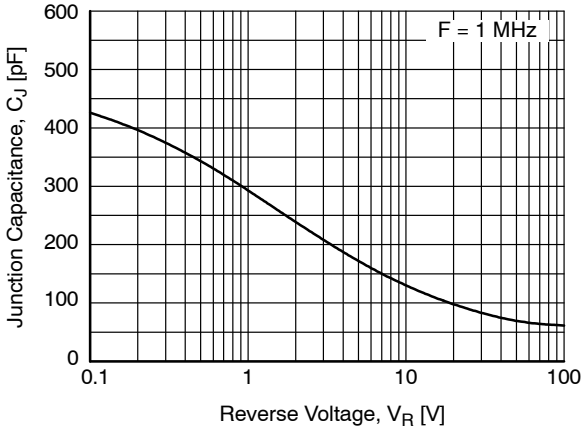


Figure 5. Typical Junction Capacitance

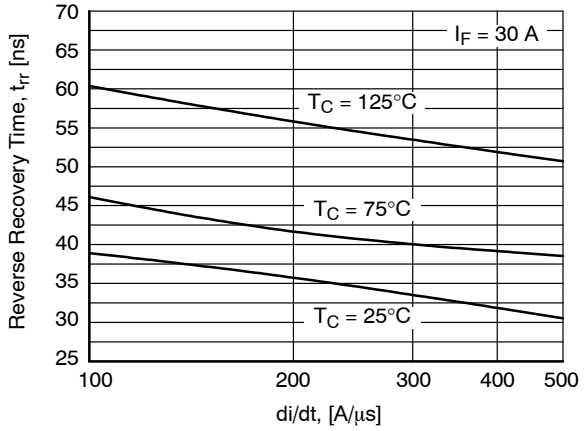


Figure 6. Typical Reverse Recovery Time

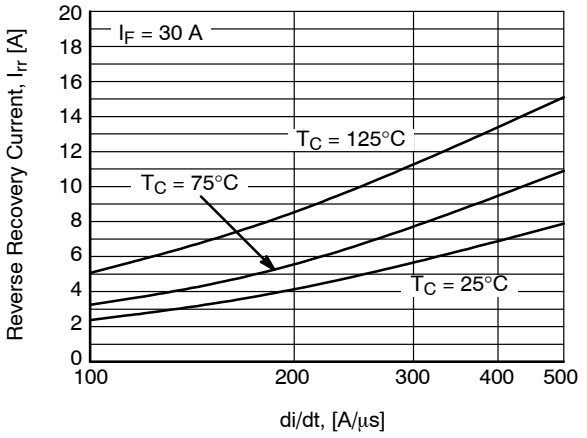


Figure 7. Typical Reverse Recovery Current

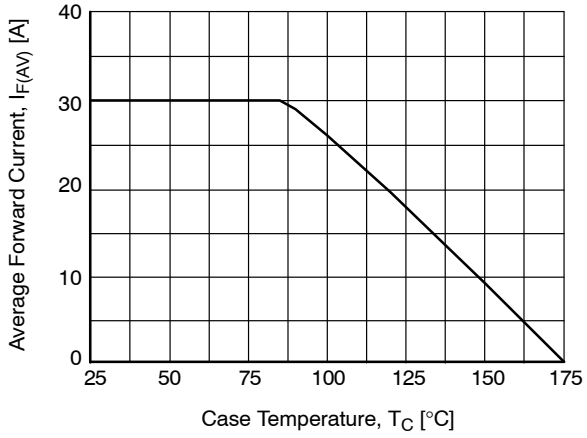


Figure 8. Forward Current Deration Curve

TO−220 Fullpack, 2−Lead / TO−220F−2FS
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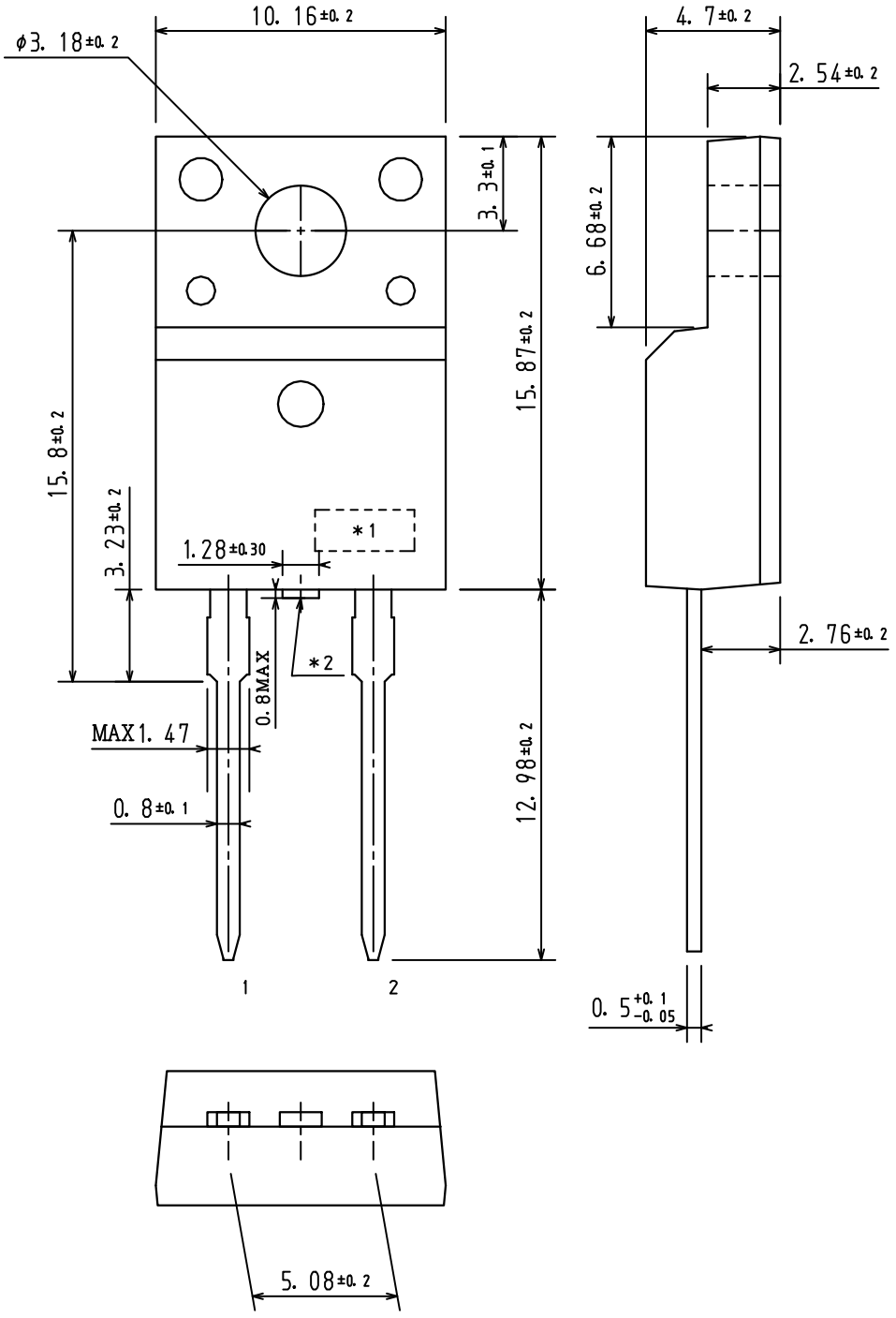

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DESCRIPTION:	**TO−220 FULLPACK, 2−LEAD / TO−220F−2FS**		**PAGE 1 OF 1**

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