



# FFPF30UP20ST

## Features

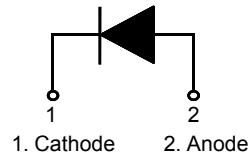
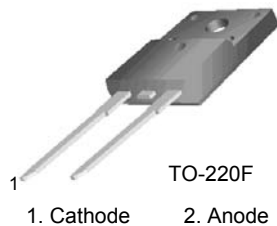
- Ultrafast Recovery  $t_{rr} = 50 \text{ ns}$  (@  $I_F = 30 \text{ A}$ )
- Max Forward Voltage,  $V_F = 1.15 \text{ V}$  (@  $T_C = 25^\circ\text{C}$ )
- Reverse Voltage,  $V_{RRM} = 200 \text{ V}$
- Avalanche Energy Rated
- RoHS Compliant

## 30 A, 200 V, Ultrafast Diode

The FFPF30UP20ST 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.

## Applications

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



## Absolute Maximum Ratings $T_C = 25^\circ\text{C}$ 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 @ $T_C = 85^\circ\text{C}$	30	A
$I_{FSM}$	Non-repetitive Peak Surge Current 60Hz Single Half-Sine Wave	300	A
$T_J, T_{STG}$	Operating Junction and Storage Temperature	- 65 to +150	$^\circ\text{C}$

## Thermal Characteristics

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

## Package Marking and Ordering Information

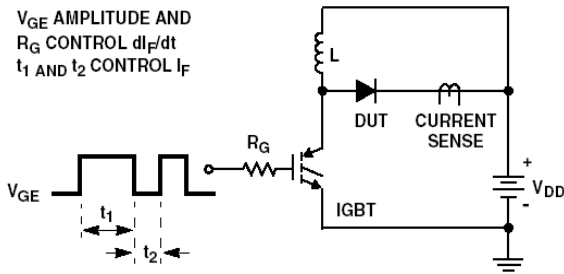
Device Marking	Device	Package	Reel Size	Tape Width	Quantity
F30UP20ST	FFPF30UP20STTU	TO-220F	-	-	50

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

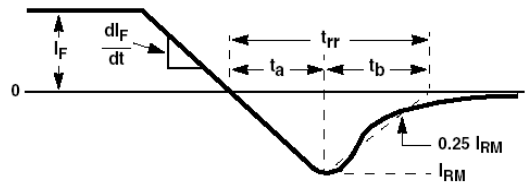
Symbol	Parameter	Min.	Typ.	Max.	Unit
$V_F^*$	$I_F = 30\text{ A}$	-	-	1.15	V
	$I_F = 30\text{ A}$	-	-	1.0	V
$I_R^*$	$V_R = 200\text{ V}$	-	-	100	$\mu\text{A}$
	$V_R = 200\text{ V}$	-	-	500	$\mu\text{A}$
$t_{rr}$	$I_F = 1\text{ A}, di/dt = 100\text{ A}/\mu\text{s}, V_{CC} = 30\text{ V}$	-	-	40	ns
	$I_F = 30\text{ A}, di/dt = 200\text{ A}/\mu\text{s}, V_{CC} = 130\text{ V}$	-	-	50	ns
$t_a$ $t_b$ $Q_{rr}$	$I_F = 30\text{ A}, di/dt = 200\text{ A}/\mu\text{s}, V_{CC} = 130\text{ V}$	$T_C = 25^\circ\text{C}$	22	-	ns
		$T_C = 25^\circ\text{C}$	14	-	ns
		$T_C = 25^\circ\text{C}$	67	-	nC
$W_{AVL}$	Avalanche Energy (L = 40 mH)	20	-	-	mJ

\*Pulse Test: Pulse Width=300  $\mu\text{s}$ , Duty Cycle=2%

**Test Circuit and Waveforms**



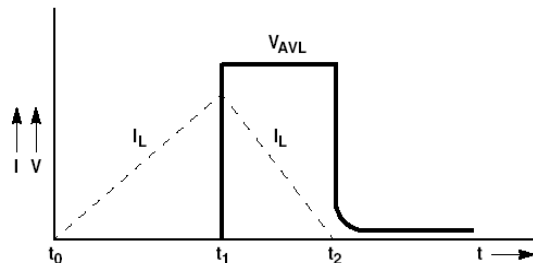
$t_{rr}$  TEST CIRCUIT



$t_{rr}$  WAVEFORMS AND DEFINITIONS



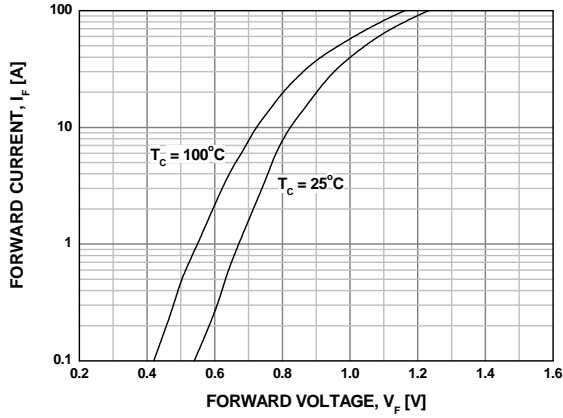
AVALANCHE ENERGY TEST CIRCUIT



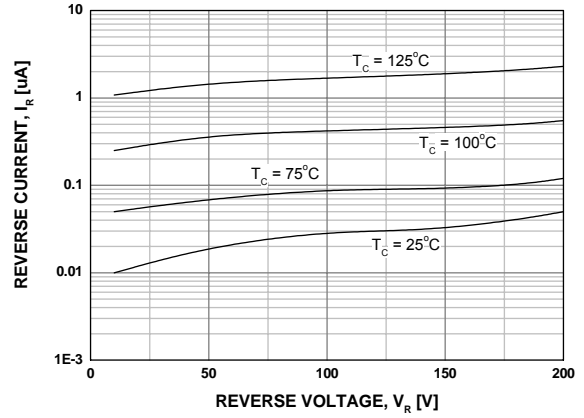
AVALANCHE CURRENT AND VOLTAGE WAVEFORMS

## Typical Performance Characteristics

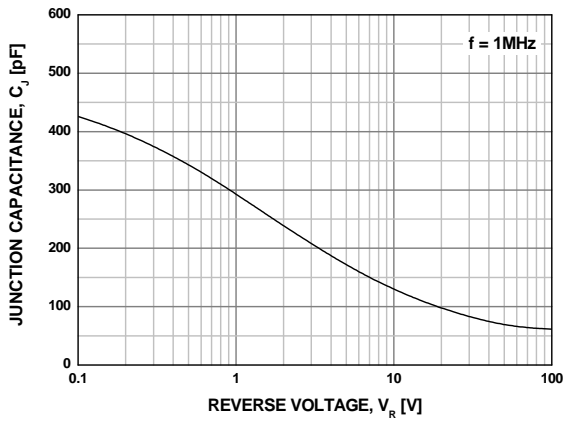
**Figure 1. Typical Forward Voltage Drop**



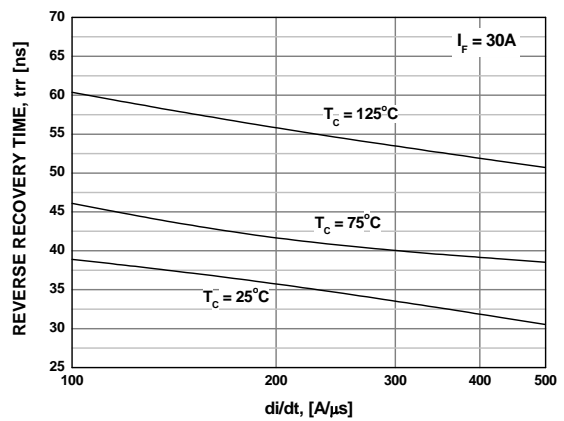
**Figure 2. Typical Reverse Current**



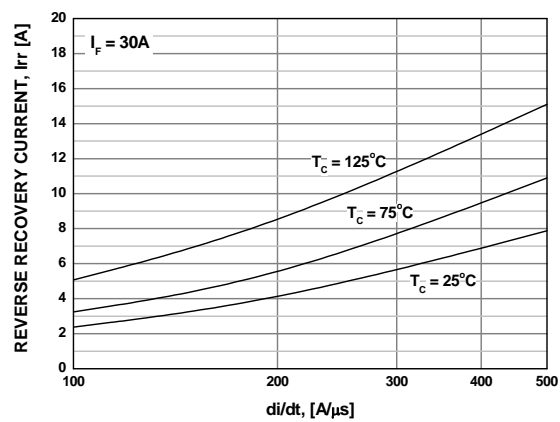
**Figure 3. Typical Junction Capacitance**



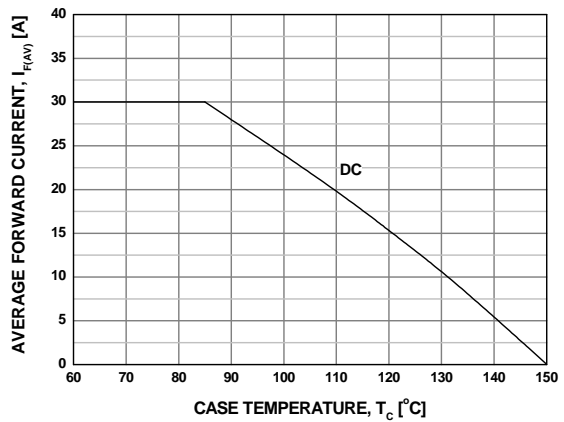
**Figure 4. Typical Reverse Recovery Time**



**Figure 5. Typical Reverse Recovery Current**

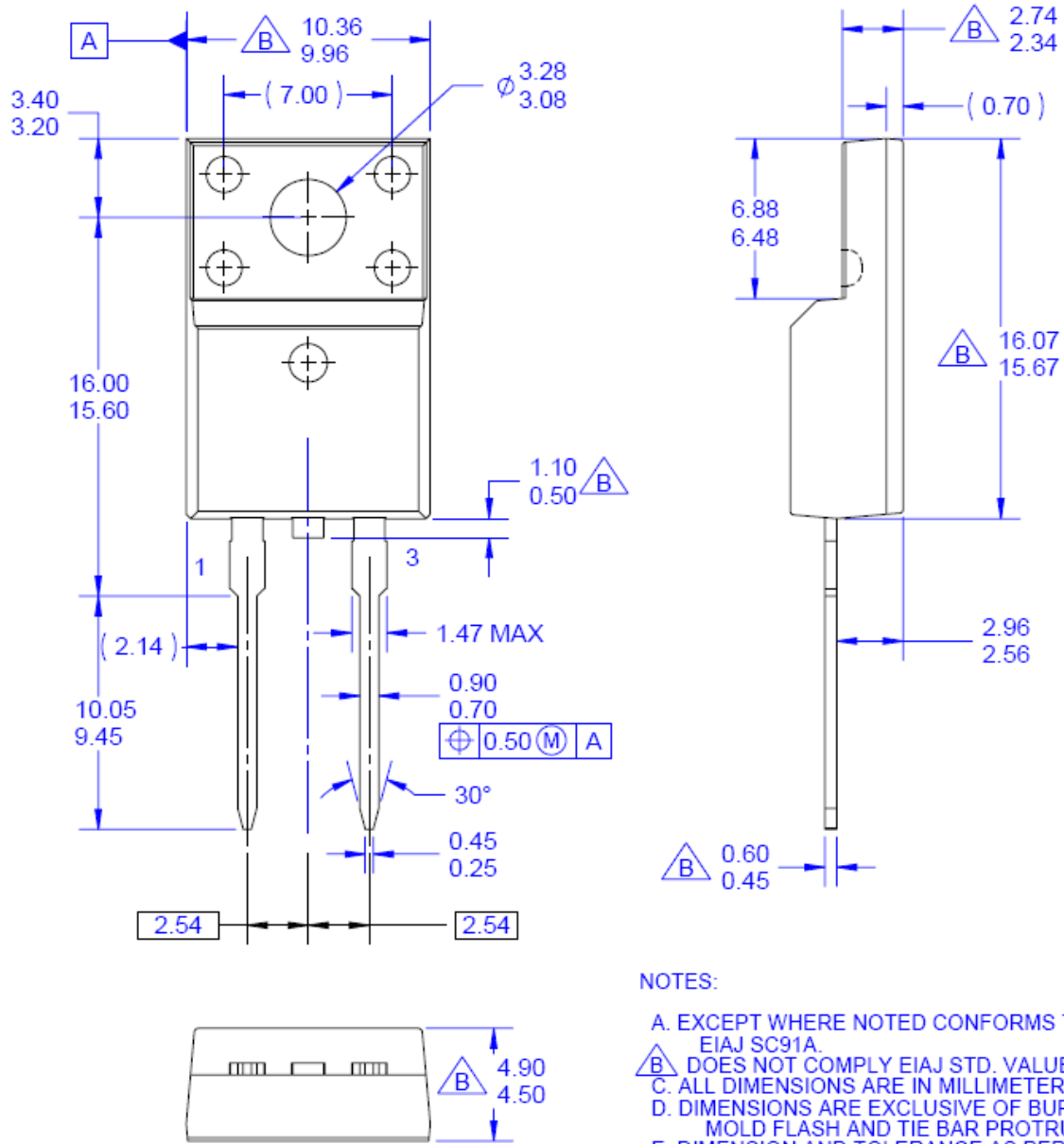


**Figure 6. Forward Current Deration Curve**



Mechanical Dimensions

TO-220F 2L Potting Type








Dimensions in Millimeters



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