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# FFPF15UP20S

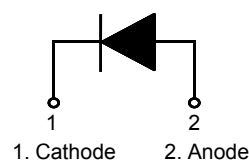
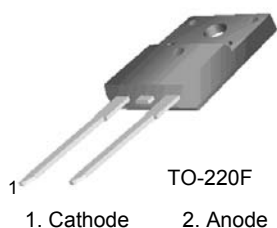
## Ultrafast Recovery Power Rectifier

### Features

- Ultrafast with Soft Recovery :  $< 45\text{ns}$  ( $@I_F = 15\text{A}$ )
- High Reverse Voltage :  $V_{RRM} = 200\text{V}$
- Avalanche Energy Rated
- Planar Construction

### 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	Units
$V_{RRM}$	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 @ $T_C = 105^\circ\text{C}$	15	A
$I_{FSM}$	Non-repetitive Peak Surge Current 60Hz Single Half-Sine Wave	150	A
$T_J, T_{STG}$	Operating Junction and Storage Temperature	- 65 to +150	$^\circ\text{C}$

### Thermal Characteristics

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Maximum Thermal Resistance, Junction to Case	3.8	$^\circ\text{C/W}$

### Package Marking and Ordering Information

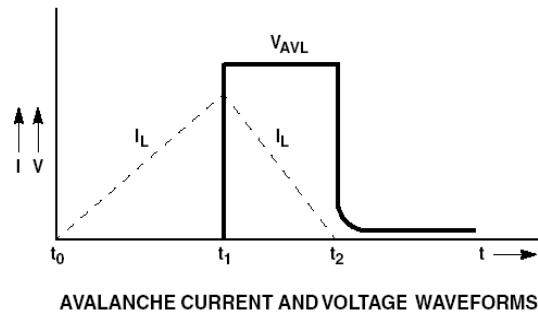
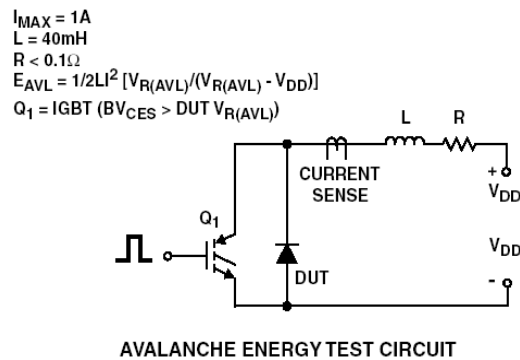
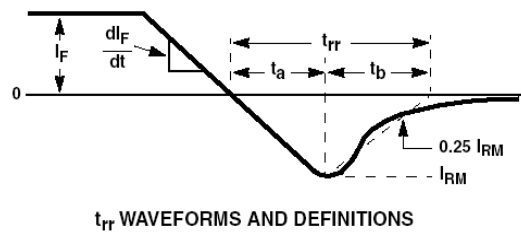
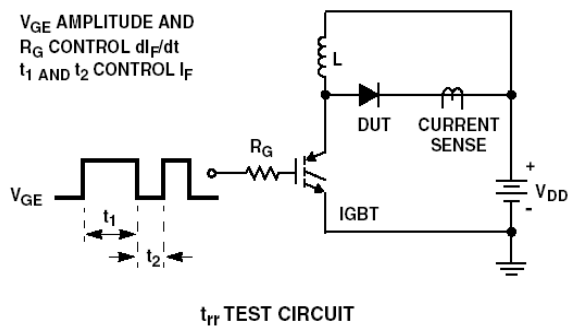
Device Marking	Device	Package	Reel Size	Tape Width	Quantity
F15UP20S	FFPF15UP20STU	TO-220F	-	-	50

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

Symbol	Parameter	Min.	Typ.	Max.	Units
$V_{FM}^*$	$I_F = 15\text{A}$	-	-	1.15	V
	$I_F = 15\text{A}$	-	-	1.0	V
$I_{RM}^*$	$V_R = 200\text{V}$	-	-	100	$\mu\text{A}$
	$V_R = 200\text{V}$	-	-	500	$\mu\text{A}$
$t_{rr}$	$I_F = 1\text{A}$ , $di/dt = 100\text{A}/\mu\text{s}$ , $V_{CC} = 30\text{V}$	-	-	35	ns
	$I_F = 15\text{A}$ , $di/dt = 200\text{A}/\mu\text{s}$ , $V_{CC} = 130\text{V}$	-	-	45	ns
$t_a$	$I_F = 15\text{A}$ , $di/dt = 200\text{A}/\mu\text{s}$ , $V_{CC} = 130\text{V}$	-	13	-	ns
$t_b$		-	11	-	ns
$Q_{rr}$		-	24	-	nC
$W_{AVL}$	Avalanche Energy ( $L = 40\text{mH}$ )	20	-	-	mJ

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

## Test Circuit and Waveforms



## Typical Performance Characteristics

Figure 1. Typical Forward Voltage Drop

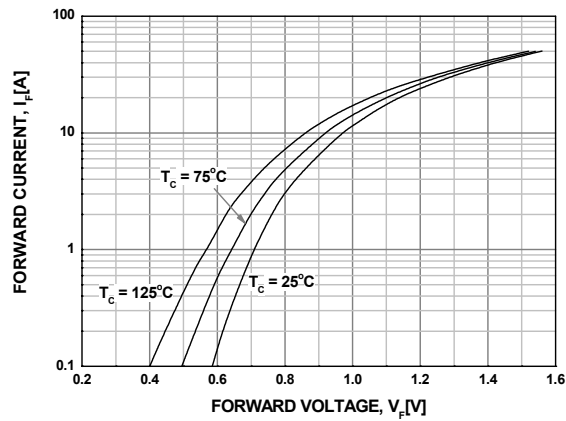


Figure 2. Typical Reverse Current

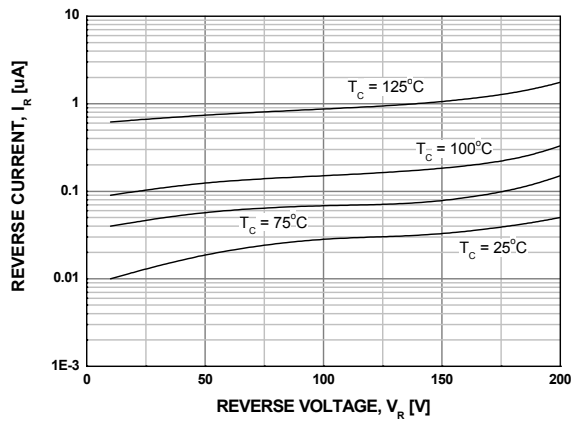


Figure 3. Typical Junction Capacitance

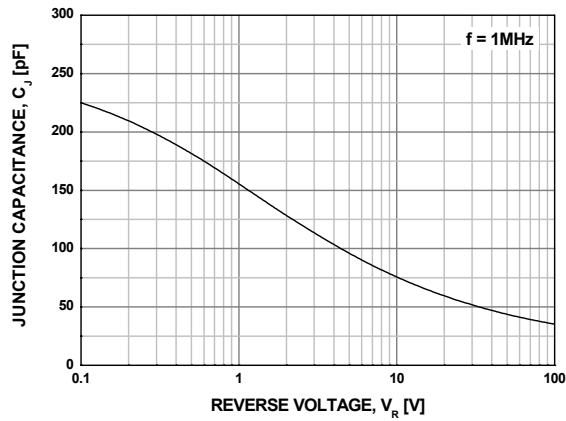


Figure 4. Typical Reverse Recovery Time

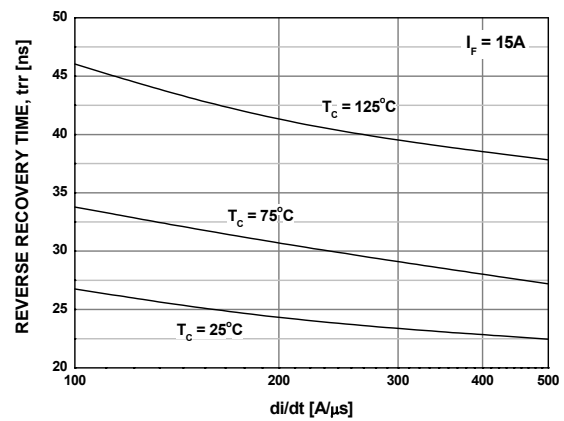


Figure 5. Typical Reverse Recovery Current

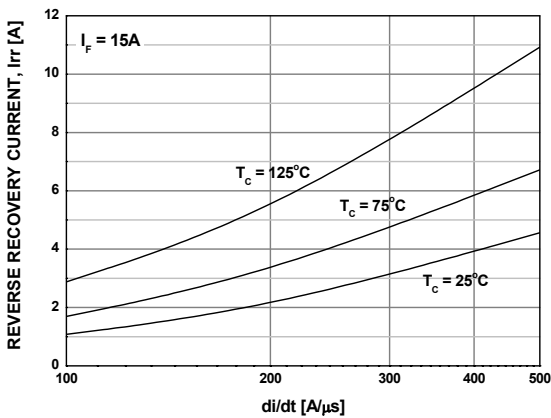
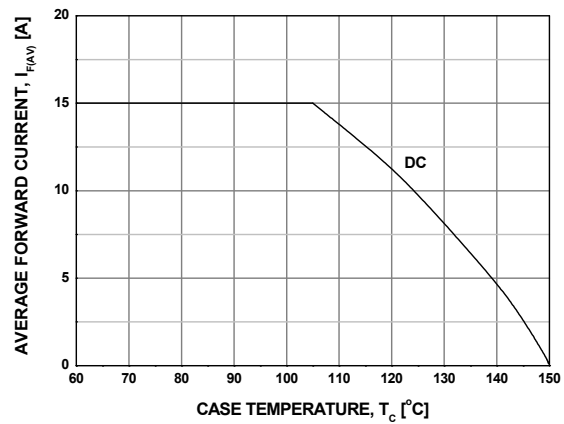


Figure 6. Forward Current Deration Curve



Technical drawing of a 2.54TYP connector, showing three views: front, side, and bottom.

**Front View Dimensions:**

- Overall width:  $10.16 \pm 0.20$
- Overall height:  $15.80 \pm 0.20$
- Top section height:  $3.30 \pm 0.10$
- Bottom section height:  $9.75 \pm 0.30$
- Pin pitch:  $2.54 \text{ TYP}$  ( $[2.54 \pm 0.20]$ )
- Pin length:  $12.00 \pm 0.20$
- Pin diameter:  $\phi 3.18 \pm 0.10$
- Pin spacing:  $0.80 \pm 0.10$
- Pin tip radius:  $\text{MAX} 1.47$
- Pin base width:  $0.35 \pm 0.10$
- Internal feature:  $(1.80)$
- Internal feature:  $(6.50)$

**Side View Dimensions:**

- Overall height:  $15.87 \pm 0.20$
- Top section height:  $2.54 \pm 0.20$
- Top section width:  $(0.70)$
- Top section depth:  $6.68 \pm 0.20$
- Top section angle:  $(1.00 \times 45^\circ)$
- Bottom section width:  $2.76 \pm 0.20$
- Bottom section height:  $0.50^{+0.10}_{-0.05}$

**Bottom View Dimensions:**

- Overall width:  $9.40 \pm 0.20$
- Overall height:  $4.70 \pm 0.20$

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### Ultrafast Recovery Power Rectifier

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