

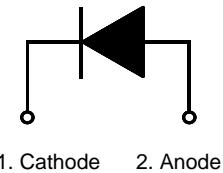
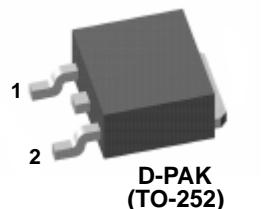
## FFD10UP20S

### Features

- Ultrafast with soft recovery,  $trr < 35\text{ns}$
- Reverse Voltage, 200V
- Forward Voltage  $< 1.1\text{V} @ T_C 100^\circ\text{C}$
- RoHS compliant

### Applications

- Power switching circuits
- Output rectifiers
- Freewheeling diodes
- Switching mode power supply



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

Symbol	Parameter	Ratings	Units
$V_{RRM}$	Peak Repetitive Reverse Voltage	200	V
$I_{F(AV)}$	Average Rectified Forward Current $@ T_C = 115^\circ\text{C}$	10	A
$I_{FSM}$	Non-repetitive Peak Surge Current 60Hz Single Half-Sine Wave	100	A
$T_J, T_{STG}$	Operating and Storage Temperature Range	-65 to +150	$^\circ\text{C}$

### Thermal Characteristics

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

### Package Marking and Ordering Information

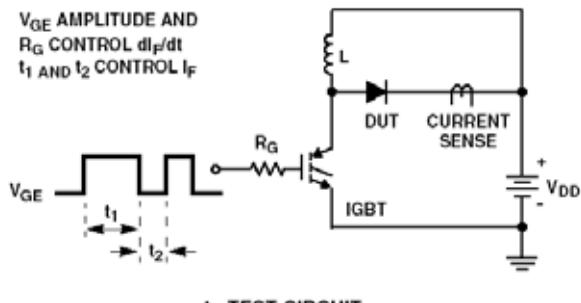
Device Marking	Device	Package	Reel Size	Tape Width	Quantity
F10UP20S	FFD10UP20S	TO-252	13" Dia	-	2500

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

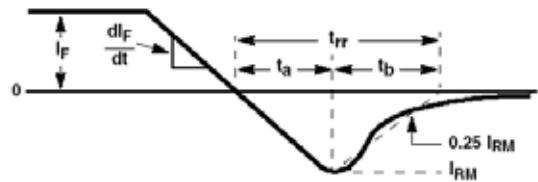
Symbol	Parameter	Min.	Typ.	Max.	Units
$V_{FM}^*$	Maximum Instantaneous Forward Voltage $I_F = 10A$ $I_F = 10A$	$T_C = 25^{\circ}C$ $T_C = 100^{\circ}C$	- -	- -	1.15 1.10
$I_{RM}^*$	Maximum Instantaneous Reverse Current @ rated $V_R$	$T_C = 25^{\circ}C$ $T_C = 100^{\circ}C$	- -	- -	100 500
$t_{rr}$ $I_{rr}$ $Q_{rr}$	Reverse Recovery Time Reverse Recovery Current Reverse Recovery Charge ( $I_F = 10A$ , $di/dt = 200A/\mu s$ )	- - -	20.8 2.8 28.5	- - -	ns A nC
$t_{rr}$	Maximum Reverse Recovery Time ( $I_F = 1A$ , $di/dt = 100A/\mu s$ )	-	-	35	ns
$W_{AVL}$	Avalanche Energy ( $L = 40mH$ )	10	-	-	mJ

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

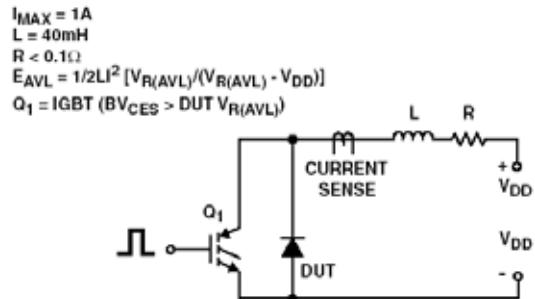
## Test Circuit and Waveforms



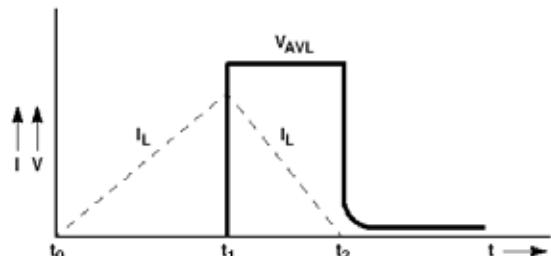
### **t<sub>rr</sub> TEST CIRCUIT**



## **t<sub>ff</sub> WAVEFORMS AND DEFINITIONS**



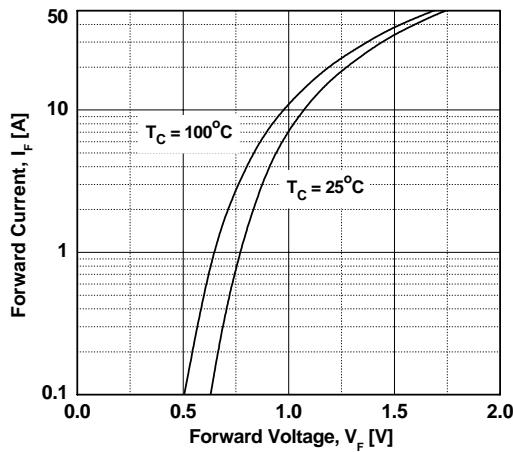
## AVALANCHE ENERGY TEST CIRCUIT



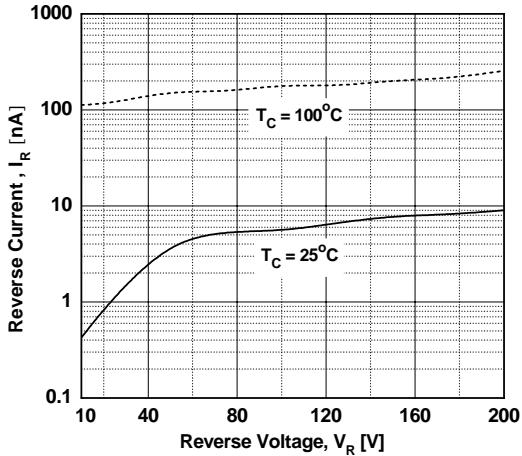
## AVALANCHE CURRENT AND VOLTAGE WAVEFORMS

## Typical Performance Characteristics

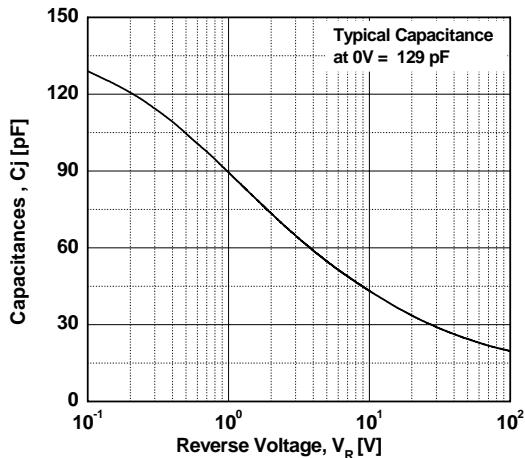
**Figure 1. Typical Forward Voltage Drop vs. Forward Current**



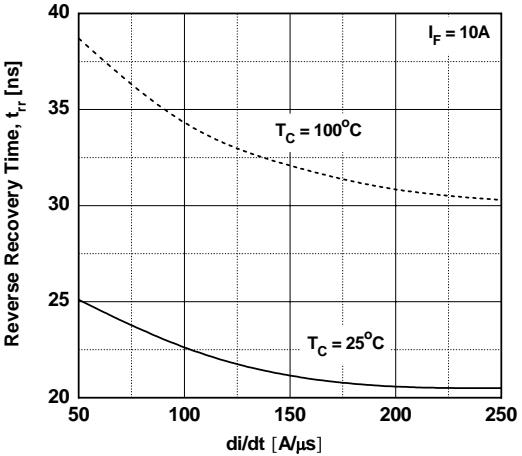
**Figure 2. Typical Reverse Current vs. Reverse Voltage**



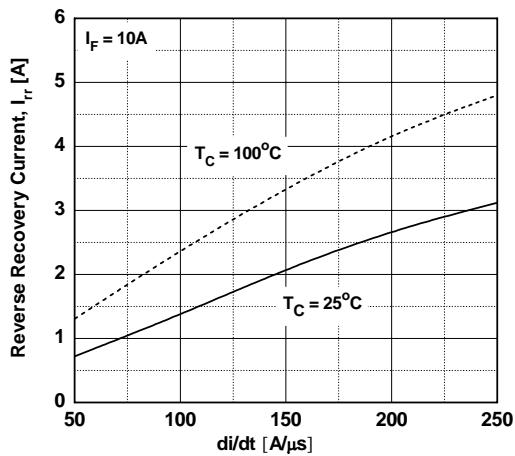
**Figure 3. Typical Junction Capacitance**



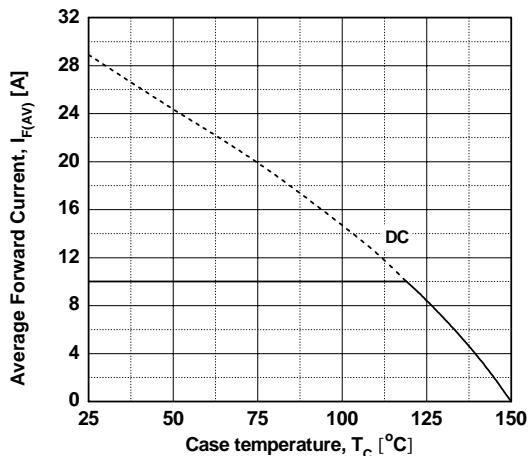
**Figure 4. Typical Reverse Recovery Time vs.  $\text{di}/\text{dt}$**



**Figure 5. Typical Reverse Recovery Current vs.  $\text{di}/\text{dt}$**

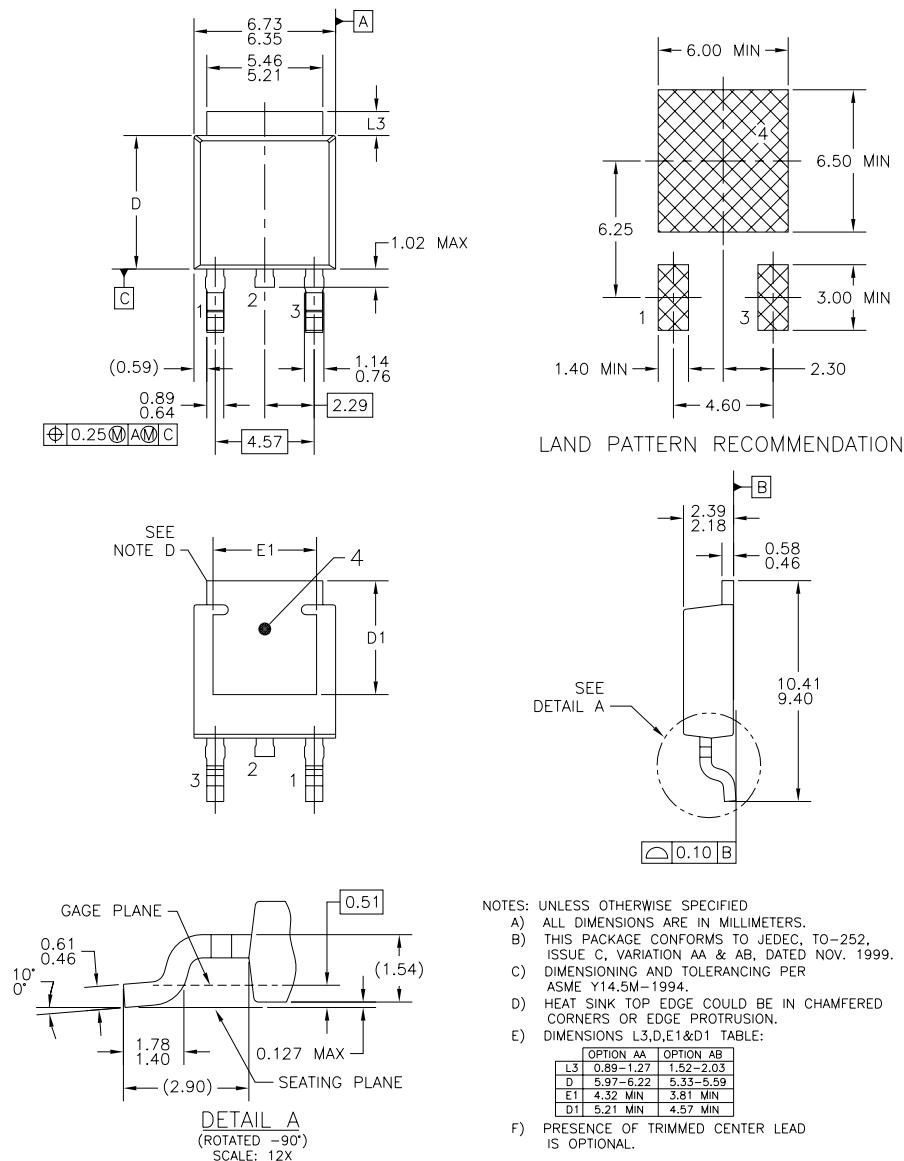


**Figure 6. Forward Current Derating Curve**



## Mechanical Dimensions

## D-PAK



Dimensions in Millimeters



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