

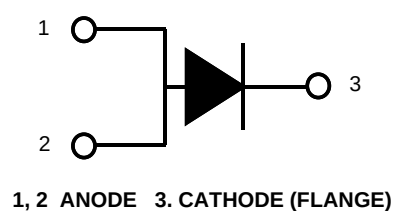
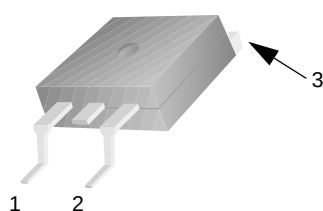
FFD20UP20S

Features

- Ultrafast with soft recovery, $t_{rr} < 45\text{ns}$
- Reverse Voltage, $V_{RRM}=200\text{V}$
- Forward Voltage $< 1.05\text{V}$ @ $T_C=100^\circ\text{C}$
- 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 @ $T_C = 123^\circ\text{C}$	20	A
I_{FSM}	Non-repetitive Peak Surge Current 60Hz Single Half-Sine Wave	200	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	1.9	$^\circ\text{C/W}$

Package Marking and Ordering Information

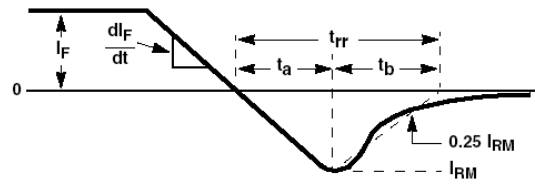
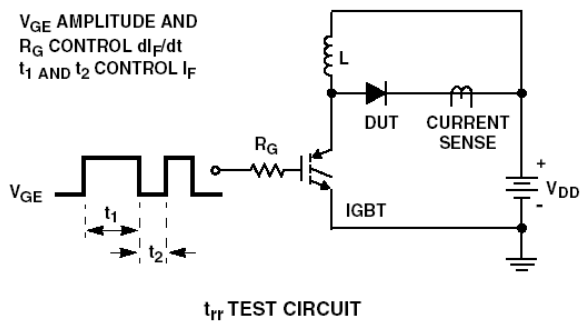
Device Marking	Device	Package	Reel Size	Tape Width	Quantity
F20UP20S	FFD20UP20S	D-PAK	13" Dia	-	2500

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

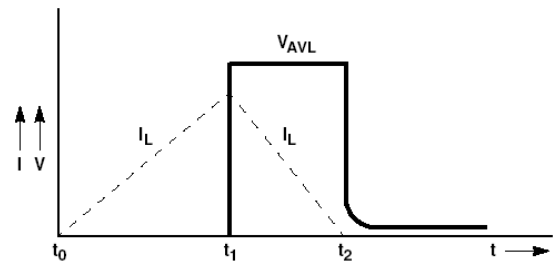
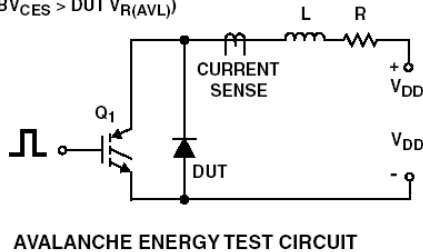
Symbol	Parameter	Min.	Typ.	Max.	Units
V_{FM}^*	Maximum Instantaneous Forward Voltage				
	$I_F = 20\text{A}$ $T_C = 25^\circ\text{C}$	-	0.94	1.15	V
	$I_F = 20\text{A}$ $T_C = 100^\circ\text{C}$	-	0.84	1.05	
	$I_F = 30\text{A}$ $T_C = 25^\circ\text{C}$	-	1.00	-	
I_{RM}^*	Maximum Instantaneous Reverse Current @ rated V_R	-	-	100 500	μA
t_{rr}	Reverse Recovery Time ($I_F = 20\text{A}$, $di/dt = 200\text{A}/\mu\text{s}$)	-	22	45	ns
W_{AVL}	Avalanche Energy ($L = 40\text{mH}$)	20	-	-	mJ

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

*



$I_{MAX} = 1\text{A}$
 $L = 40\text{mH}$
 $R < 0.1\Omega$
 $E_{AVL} = 1/2 L I^2 [V_{R(AVL)}/(V_{R(AVL)} - V_{DD})]$
 $Q_1 = \text{IGBT (}BV_{CES} > V_{R(AVL)}\text{)}$



Test Circuit and Waveforms

Typical Performance Characteristics

Figure 1. Typical Forward Voltage Drop vs. Forward Current

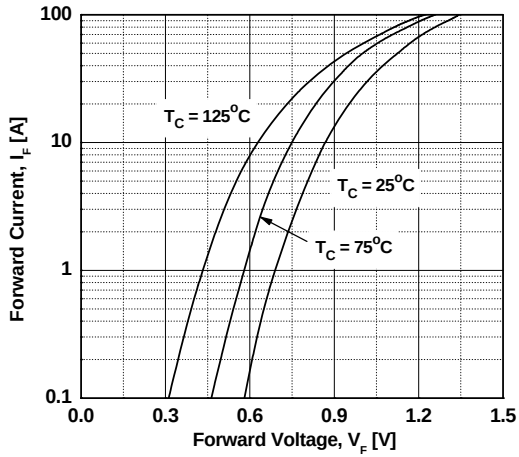


Figure 2. Typical Reverse Current vs. Reverse Voltage

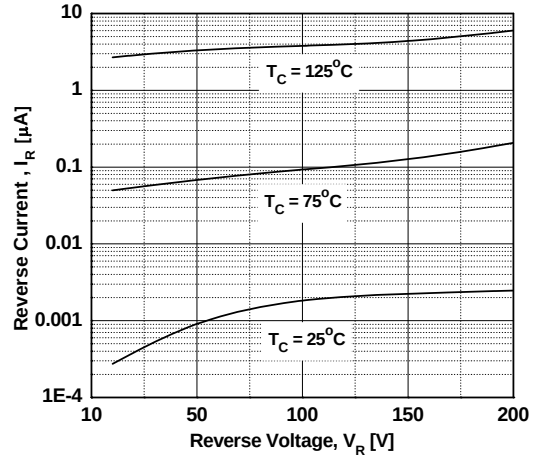


Figure 3. Typical Junction Capacitance

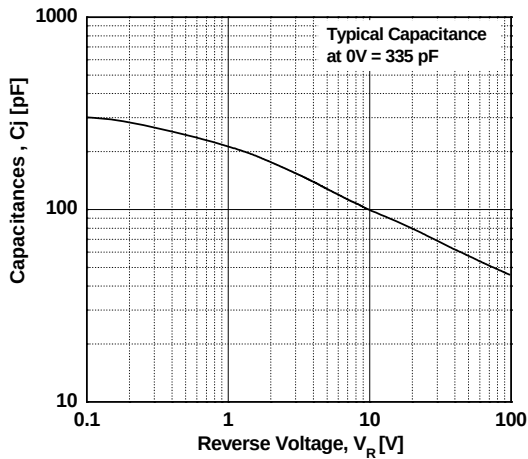


Figure 4. Typical Reverse Recovery Time vs. di/dt

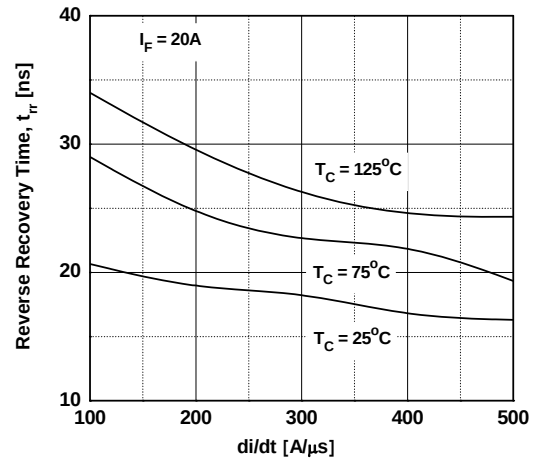


Figure 5. Typical Reverse Recovery Current vs. di/dt

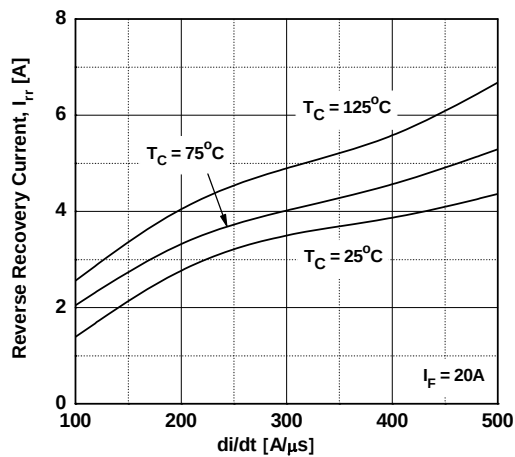


Figure 6. Forward Current Derating Curve

