Pb Free Plating Product

FFB20UP20DN

20Ampere,200Volt Surface Mount Dual Common Cathode Ultra Fast Recovery Epitaxial Diode

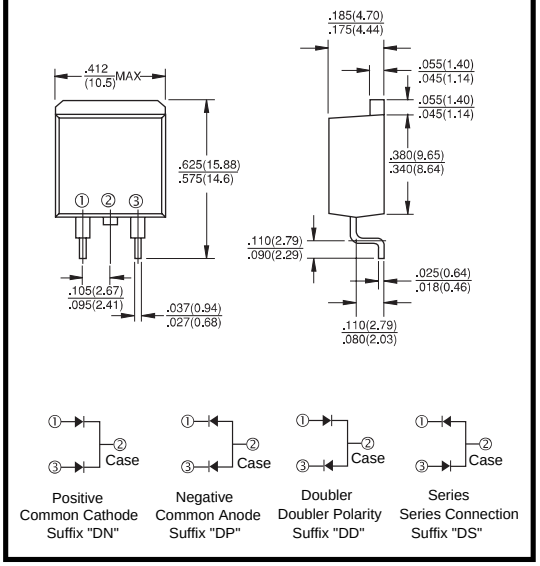
APPLICATION

- Freewheeling, Snubber, Clamp
- Inversion Welder
- PFC
- Plating Power Supply
- Ultrasonic Cleaner and Welder
- Converter & Chopper
- UPS

PRODUCT FEATURE

- Ultrafast Recovery Time
- Soft Recovery Characteristics
- Low Recovery Loss
- Low Forward Voltage
- High Surge Current Capability
- Low Leakage Current

D2PAK/TO-263 Unit : inch (mm)



GENERAL DESCRIPTION

FFB20UP20DN using the lastest FRED FAB process(planar passivation pellet) with ultrafast and soft recovery characteristics.

Absolute Maximum Ratings T_C = 25°C unless otherwise noted

Symbol	Parameter	Ratings	Units
V_{RRM}	Peak Repetitive Reverse Voltage	200	V
V_{RWM}	Working Peak Reverse Voltage	200	V
V_R	DC Blocking Voltage	200	V
$I_{f(avg)}$	Average Rectified Forward Current @ T_C = 155°C	10	A
I_{FSM}	Non-repetitive Peak Surge Current 60Hz Single Half-Sine Wave	100	A
T_J, T_{STG}	Operating Junction and Storage Temperature	-55 to +175	°C

Thermal Characteristics T_C = 25°C unless otherwise noted

Symbol	Parameter	Max	Units
$R_{\theta JC}$[1]	Maximum Thermal Resistance, Junction to Case	3.5	°C/W

Electrical Characteristics T_C = 25°C unless otherwise noted

Symbol	Parameter		Min.	Typ.	Max	Units
V_F[2]	I_F = 10A I_F = 10A	T_C = 25°C T_C = 150°C	- -	- -	1.15 1.0	V V
I_R[2]	V_R = 200V V_R = 200V	T_C = 25°C T_C = 150°C	- -	- -	10 250	μA μA
t_{rr}	I_F =1A, di/dt = 200A/μs, V_{CC} = 130V I_F =10A, di/dt = 200A/μs, V_{CC} = 130V	T_C = 25 °C T_C = 25°C	- -	15 27	25 40	ns ns
t_a t_b Q_{rr}	I_F =10A, di/dt = 200A/μs, V_{CC} = 130V	T_C = 25°C T_C = 25°C T_C = 25°C	- - -	21 6 50	- - -	ns ns nC
W_{AVL}	Avalanche Energy (L = 20mH)		10	-	-	mJ

Notes
1: Rth_jc value is specified for each die
2: Pulse: Test Pulse width = 300S, Duty Cycle = 2%

Typical Characteristics T_C = 25°C unless otherwise noted

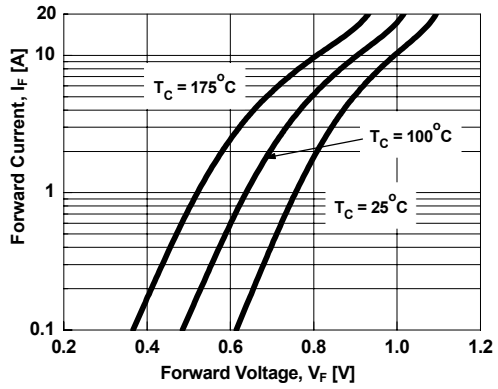


Figure 1. Typical Forward Voltage Drop

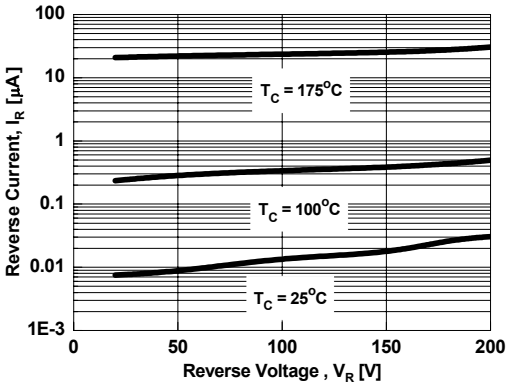


Figure 2. Typical Reverse Current

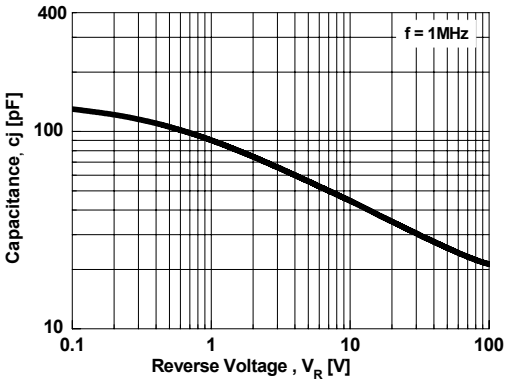


Figure 3. Typical Junction Capacitance

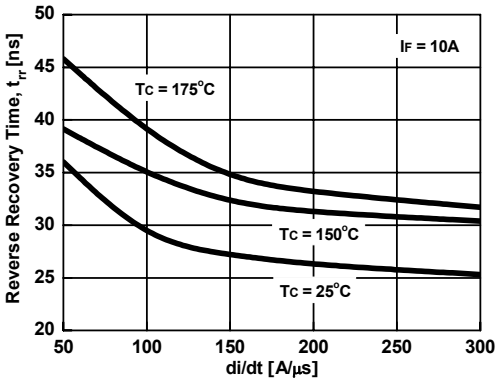


Figure 4. Typical Reverse Recovery Time

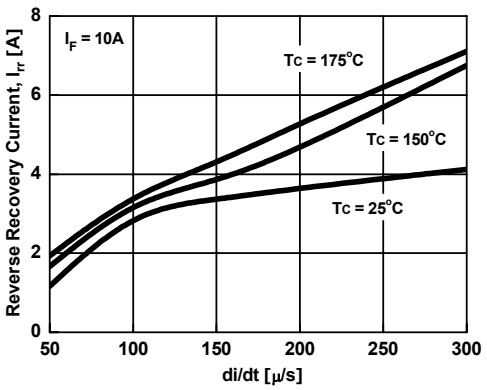


Figure 5. Typical Reverse Recovery Current

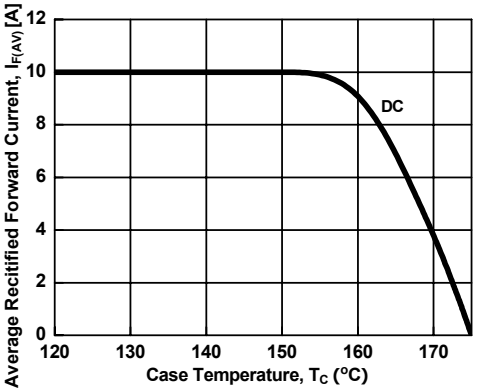
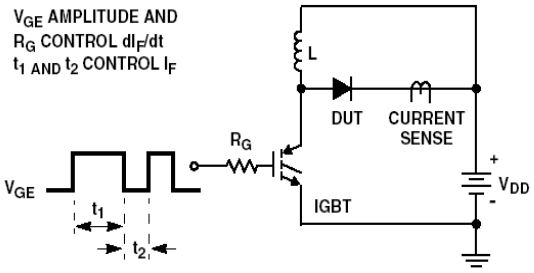
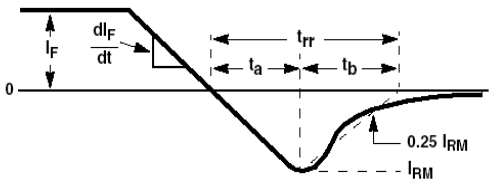


Figure 6. Case Temperature, T_C [°C]

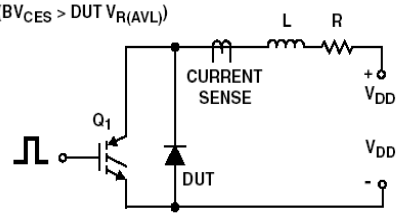


t_{rr} TEST CIRCUIT

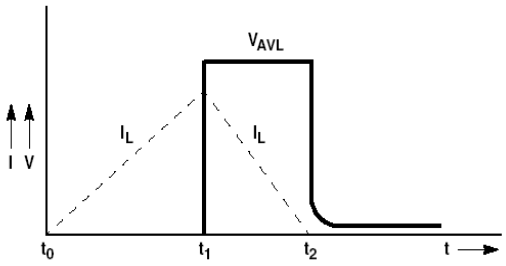


t_{rr} WAVEFORMS AND DEFINITIONS

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



AVALANCHE ENERGY TEST CIRCUIT



AVALANCHE CURRENT AND VOLTAGE WAVEFORMS