

**Pb Free Plating Product****FFB20UP30DN**

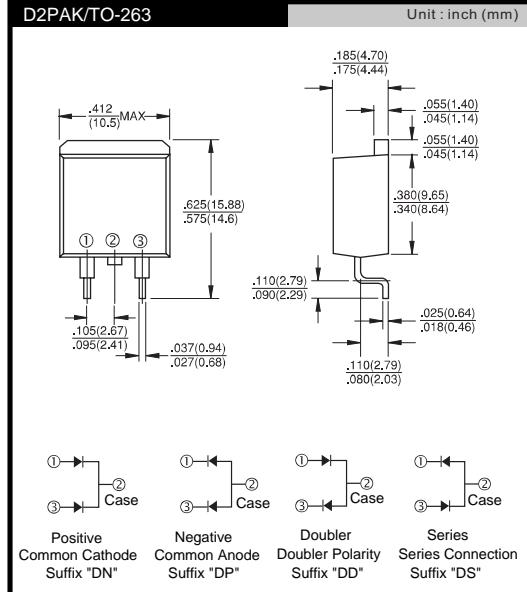
20Ampere,300Volt Surface Mount Dual Common Cathode Ultra Fast Recovery Epitaxial Diode

**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

**GENERAL DESCRIPTION**

FFB20UP30DN using the lastest FRED FAB process(planar passivation pellet) with ultrafast and soft recovery characteristics.

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

Symbol	Parameter	Value	Units
$V_{RRM}$	Peak Repetitive Reverse Voltage	300	V
$V_{RWM}$	Working Peak Reverse Voltage	300	V
$V_R$	DC Blocking Voltage	300	V
$I_{F(AV)}$	Average Rectified Forward Current Rating for each diode $I_{F(AV)/2}$ @ $T_C = 130^\circ\text{C}$	20	A
$I_{FSM}$	Non-repetitive Peak Surge Current 60Hz Single Half-Sine Wave	180	A
$T_J, T_{STG}$	Operating Junction and Storage Temperature	- 65 to +150	°C

**Thermal Characteristics**

Symbol	Parameter	Max	Units
$R_{0JC}$	Maximum Thermal Resistance, Junction to Case	2.0	°C/W

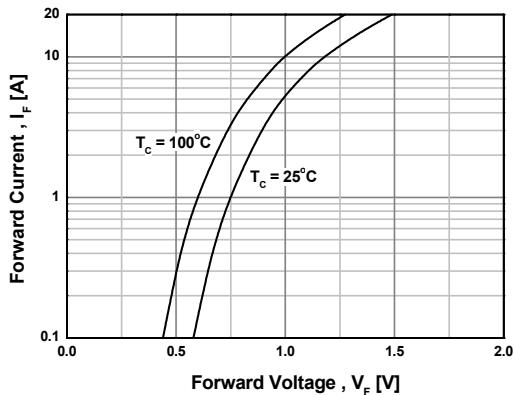
**Electrical Characteristics**  $(\text{per diode}) T_C = 25^\circ\text{C}$  unless otherwise noted

Symbol	Parameter	Min.	Typ.	Max.	Units	
$V_{FM} *$	$I_F = 10\text{A}$ $I_F = 10\text{A}$	$T_C = 25^\circ\text{C}$ $T_C = 150^\circ\text{C}$	- -	- -	1.3 1.2	V V
$I_{RM} *$	$V_R = 300\text{V}$ $V_R = 300\text{V}$	$T_C = 25^\circ\text{C}$ $T_C = 150^\circ\text{C}$	- -	- -	1 500	μA μA
$t_{rr}$	$I_F = 0.5\text{A}, I_{rr} = 1\text{A}, V_{CC} = 30\text{V}$ $I_F = 1\text{A}, dI/dt = 100\text{A}/\mu\text{s}, V_{CC} = 30\text{V}$ $I_F = 10\text{A}, dI/dt = 200\text{A}/\mu\text{s}, V_{CC} = 195\text{V}$	$T_C = 25^\circ\text{C}$ $T_C = 25^\circ\text{C}$ $T_C = 25^\circ\text{C}$	- - -	- - -	30 35 45	ns ns ns
$t_a$ $t_b$ $Q_{rr}$	$I_F = 10\text{A}, dI/dt = 200\text{A}/\mu\text{s}, V_{CC} = 195\text{V}$	$T_C = 25^\circ\text{C}$ $T_C = 25^\circ\text{C}$ $T_C = 25^\circ\text{C}$	- - -	11 13 20	- - -	ns ns nC
$W_{AVL}$	Avalanche Energy ( $L = 20\text{mH}$ )	20	-	-	mJ	

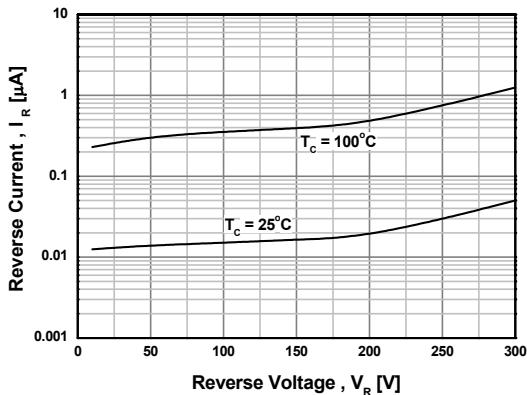
\* Pulse Test: Pulse Width=300μs, Duty Cycle=2%

### Typical Performance Characteristics

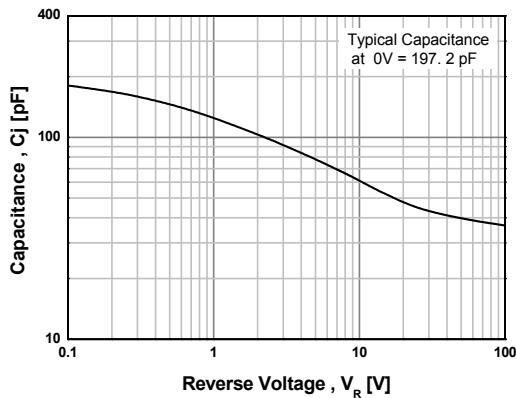
**Figure 1. Typical Forward Voltage Drop**



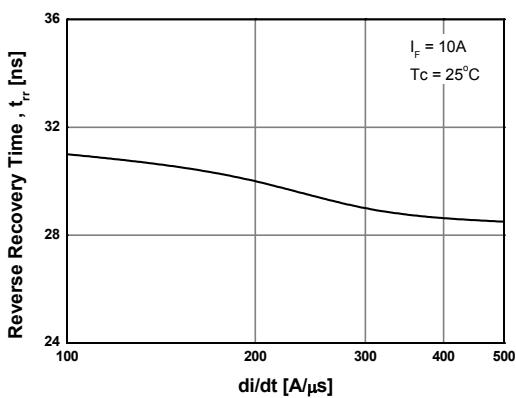
**Figure 2. Typical Reverse Current**



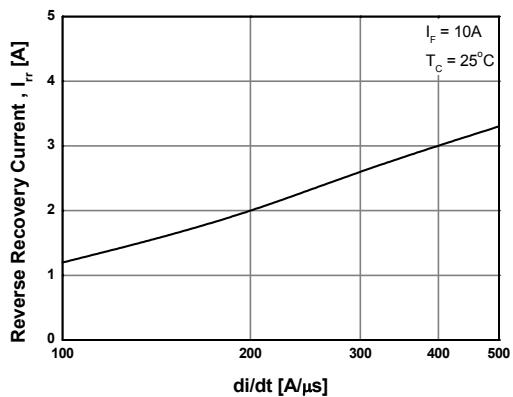
**Figure 3. Typical Junction Capacitance**



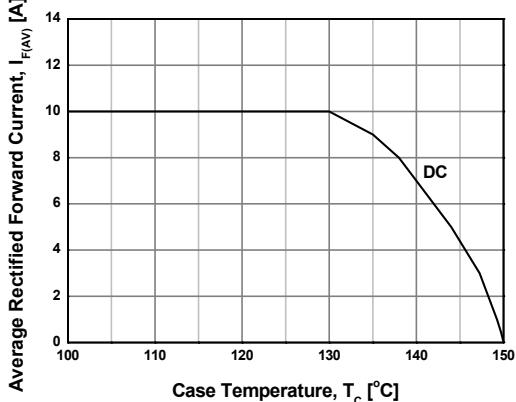
**Figure 4. Typical Reverse Recovery Time**



**Figure 5. Typical Reverse Recovery Current**



**Figure 6. Forward Current Deration Curve**



### Test Circuit and Waveforms

