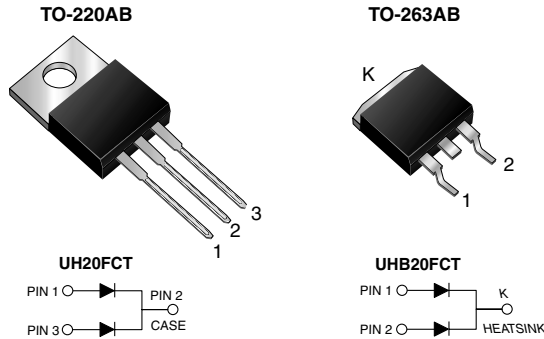




## Dual Common-Cathode Ultrafast Recovery Rectifier



### FEATURES

- Oxide planar chip junction
- Ultrafast recovery times
- Soft recovery characteristics
- Low switching losses, high efficiency
- High forward surge capability
- Meets MSL level 1, per J-STD-020, LF maximum peak of 245 °C (for TO-263AB package)
- Solder dip 260 °C, 40 s (for TO-220AB package)
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC



### TYPICAL APPLICATIONS

For use in high frequency power factor correctors, switching mode power supplies, freewheeling diodes and secondary dc-to-dc rectification application.

### MECHANICAL DATA

**Case:** TO-220AB and TO-263AB

Epoxy meets UL 94V-0 flammability rating

**Terminals:** Matte tin plated leads, solderable per J-STD-002 and JESD22-B102

E3 suffix for consumer grade, meets JESD 201 class 1A whisker test

**Polarity:** As marked

**Mounting Torque:** 10 in-lbs maximum

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	10 A x 2
$V_{RRM}$	300 V
$I_{FSM}$	180 A
$t_{rr}$	25 ns
$V_F$	0.83 V
$T_J$ max.	175 °C

MAXIMUM RATINGS ( $T_A = 25\text{ °C}$ unless otherwise noted)				
PARAMETER	SYMBOL	UH20FCT	UHB20FCT	UNIT
Maximum repetitive peak reverse voltage	$V_{RRM}$	300		V
Maximum average forward rectified current (see Fig.1)	$I_{F(AV)}$	20	10	A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	$I_{FSM}$	180		A
Operating junction and storage temperature range	$T_J, T_{STG}$	- 55 to + 175		°C

ELECTRICAL CHARACTERISTICS ( $T_A = 25\text{ °C}$ unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Maximum instantaneous forward voltage per diode <sup>(1)</sup>	$I_F = 5.0\text{ A}$	$T_J = 25\text{ °C}$	$V_F$	0.96	-	V
	$I_F = 5.0\text{ A}$	$T_J = 125\text{ °C}$		0.77	-	
	$I_F = 10\text{ A}$	$T_J = 25\text{ °C}$		1.0	1.2	
	$I_F = 10\text{ A}$	$T_J = 125\text{ °C}$		0.83	0.90	



<b>ELECTRICAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Maximum reverse current per diode <sup>(2)</sup>	$V_R = 300\text{ V}$	$T_J = 25\text{ }^\circ\text{C}$ $T_J = 125\text{ }^\circ\text{C}$	$I_R$	0.5 25	5 150	$\mu\text{A}$
Maximum reverse recovery time	$I_F = 0.5\text{ A}$ , $I_R = 1.0\text{ A}$ , $I_{rr} = 0.25\text{ A}$		$t_{rr}$	20	25	ns
Maximum reverse recovery time per diode	$I_F = 1.0\text{ A}$ , $dI/dt = 50\text{ A}/\mu\text{s}$ , $V_R = 30\text{ V}$ , $I_{rr} = 0.1 I_{RM}$		$t_{rr}$	28	35	ns
Typical softness factor (tb/ta)	$I_F = 10\text{ A}$ , $dI/dt = 200\text{ A}/\mu\text{s}$ , $V_R = 200\text{ V}$ , $T_J = 125\text{ }^\circ\text{C}$ per diode		S	0.36	-	-
Typical reverse recovery current			$I_{RM}$	7.0	-	A
Typical stored charge			$Q_{rr}$	160	-	nC
Typical forward recovery time per diode	$I_F = 10\text{ A}$ , $dI/dt = 80\text{ A}/\mu\text{s}$ , $V_{FR} = 1.1 \times V_{F\text{ max.}}$		$t_{fr}$	150	-	ns

**Notes:**

- (1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle
- (2) Pulse test: Pulse width  $\leq 40\text{ ms}$

<b>THERMAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)				
PARAMETER	SYMBOL	UH20FCT	UHB20FCT	UNIT
Typical thermal resistance per diode	$R_{\theta JC}$	2.0	2.0	$^\circ\text{C}/\text{W}$

<b>ORDERING INFORMATION</b>					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AB	UH20FCT-E3/4W	1.88	4W	50/tube	Tube
TO-263AB	UHB20FCT-E3/4W	1.38	4W	50/tube	Tube
TO-263AB	UHB20FCT-E3/8W	1.38	8W	800/reel	Tape and reel

**RATINGS AND CHARACTERISTICS CURVES**

( $T_A = 25\text{ }^\circ\text{C}$  unless otherwise noted)

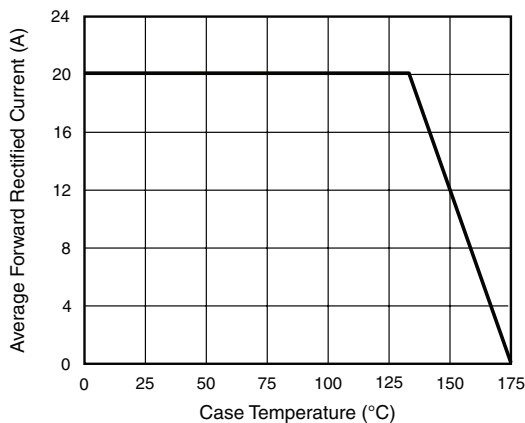


Figure 1. Maximum Forward Current Derating Curve

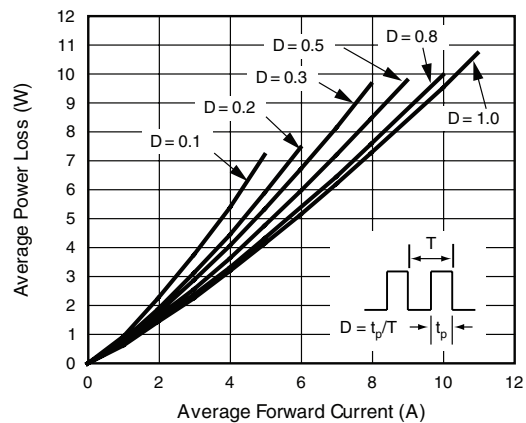


Figure 2. Forward Power Loss Characteristics Per Diode

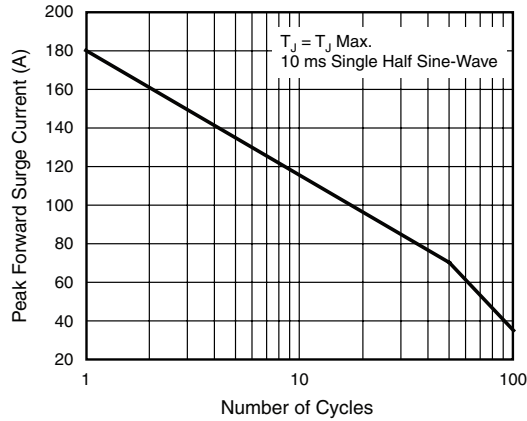


Figure 3. Maximum Non-Repetitive Peak Forward Surge Current Per Diode

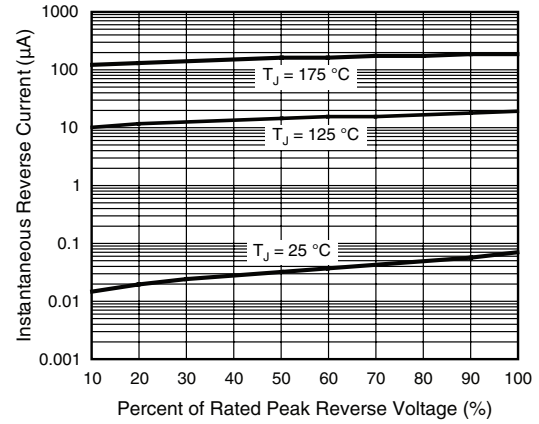


Figure 5. Typical Reverse Leakage Characteristics Per Diode

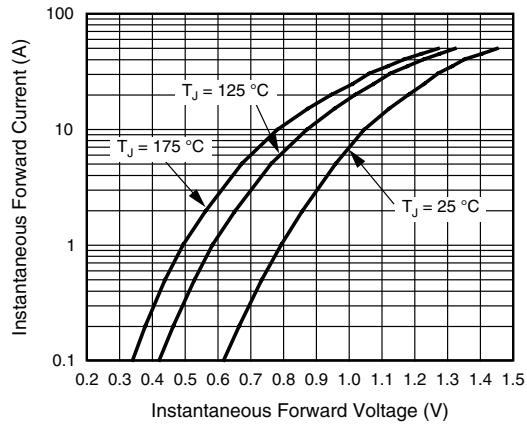


Figure 4. Typical Instantaneous Forward Characteristics Per Diode

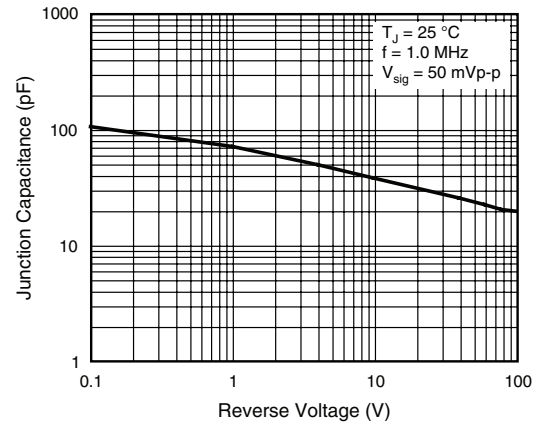
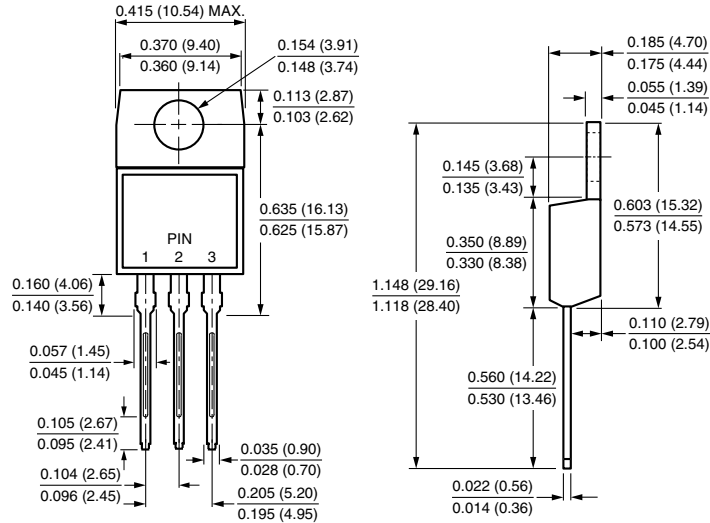


Figure 6. Typical Junction Capacitance Per Diode

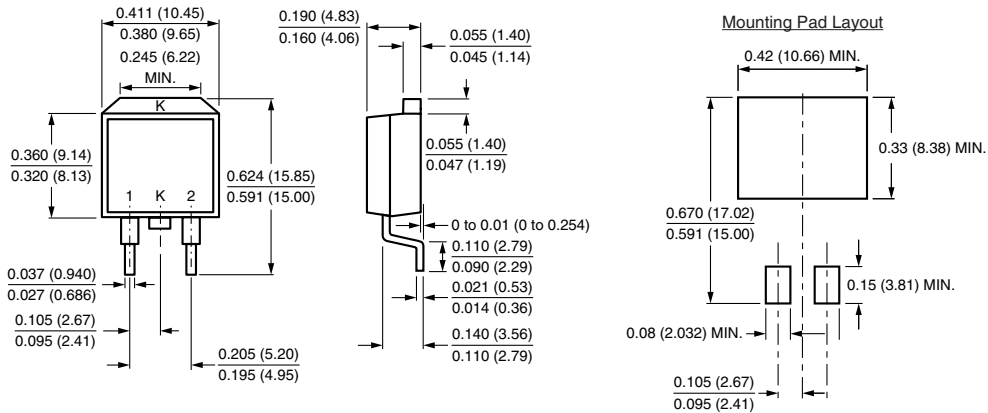


**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)

**TO-220AB**



**TO-263AB**





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