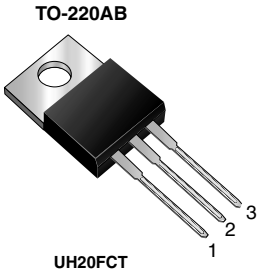
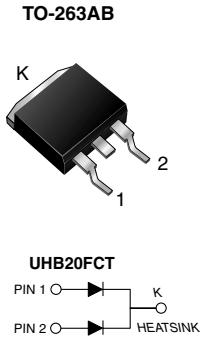
Dual Common-Cathode Ultrafast Recovery Rectifier





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

RoHS COMPLIANT

TYPICAL APPLICATIONS

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

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

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

MAXIMUM RATINGS (T_A = 25 °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)	per device per diode	$I_{F(AV)}$	20 10		A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	per diode	I_{FSM}	180		A
Operating junction and storage temperature range		T_J, T_{STG}	- 55 to + 175		°C

ELECTRICAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)

PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Maximum instantaneous forward voltage per diode (1)	I_F = 5.0 A I_F = 5.0 A	T_J = 25 °C T_J = 125 °C	V_F	0.96 0.77	- -	V
	I_F = 10 A I_F = 10 A	T_J = 25 °C T_J = 125 °C		1.0 0.83	1.2 0.90	

ELECTRICAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)						
PARAMETER	**TEST CONDITIONS**		**SYMBOL**	**TYP.**	**MAX.**	**UNIT**
Maximum reverse current per diode (2)	V_R = 300 V	T_J = 25 °C T_J = 125 °C	I_R	0.5 25	5 150	µA
Maximum reverse recovery time	I_F = 0.5 A, I_R = 1.0 A, I_{rr} = 0.25 A		t_{rr}	20	25	ns
Maximum reverse recovery time per diode	I_F = 1.0 A, dI/dt = 50 A/µs, V_R = 30 V, I_{rr} = 0.1 I_{RM}		t_{rr}	28	35	ns
Typical softness factor (tb/ta)	I_F = 10 A, dI/dt = 200 A/µs, V_R = 200 V, T_J = 125 °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 A, dI/dt = 80 A/µs, V_{FR} = 1.1 x $V_{F\ max.}$		t_{fr}	150	-	ns

Notes:
(1) Pulse test: 300 µs pulse width, 1 % duty cycle
(2) Pulse test: Pulse width ≤ 40 ms

THERMAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)				
PARAMETER	**SYMBOL**	**UH20FCT**	**UHB20FCT**	**UNIT**
Typical thermal resistance per diode	$R_{\theta JC}$	2.0	2.0	°C/W

ORDERING INFORMATION					
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 °C unless otherwise noted)

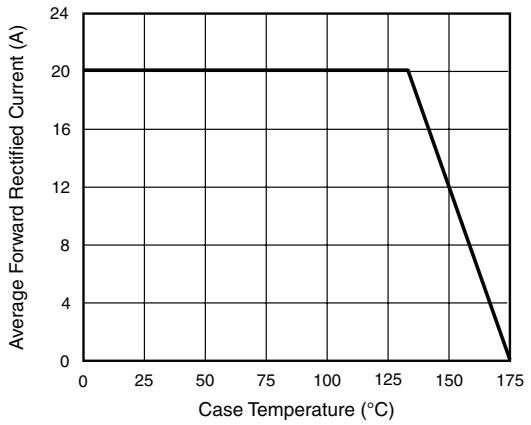


Figure 1. Maximum Forward Current Derating Curve

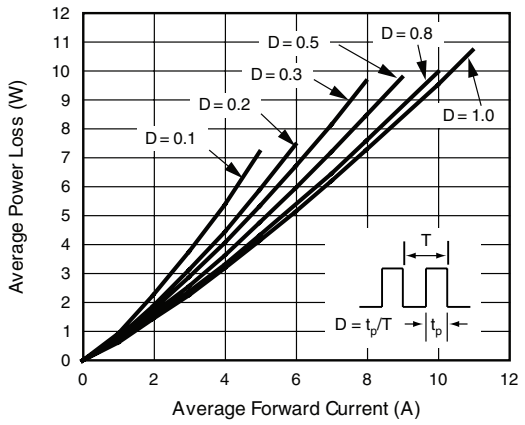


Figure 2. Forward Power Loss Characteristics Per Diode

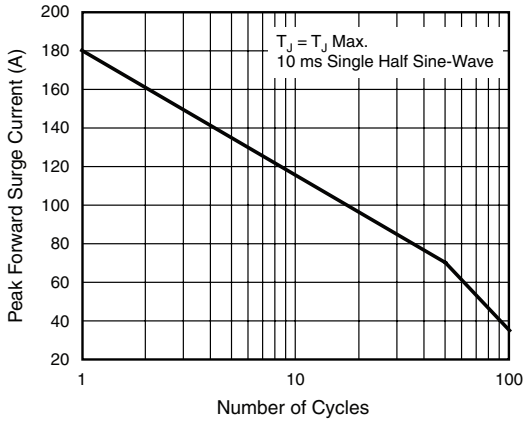


Figure 3. Maximum Non-Repetitive Peak Forward Surge Current Per Diode

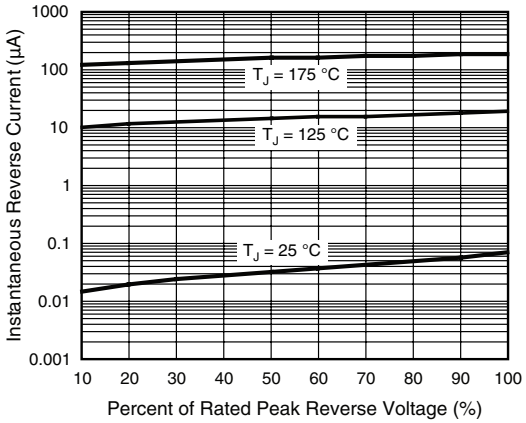


Figure 5. Typical Reverse Leakage Characteristics Per Diode

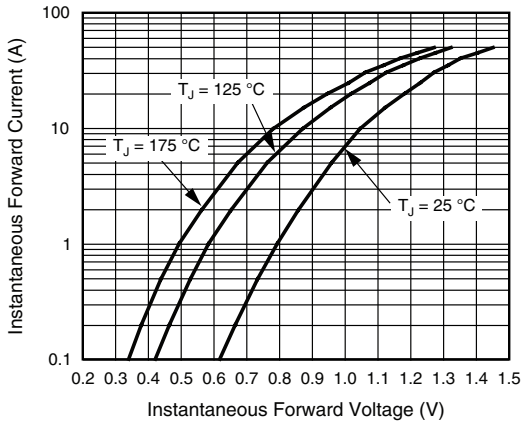


Figure 4. Typical Instantaneous Forward Characteristics Per Diode

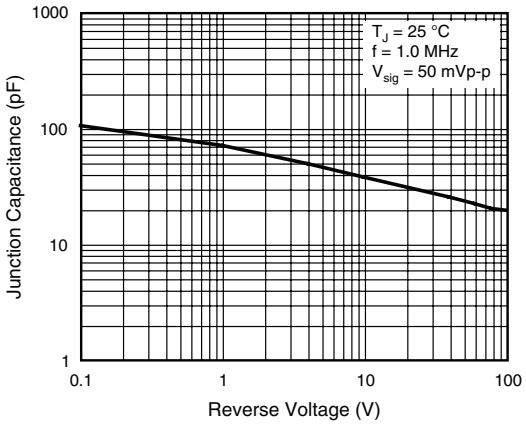
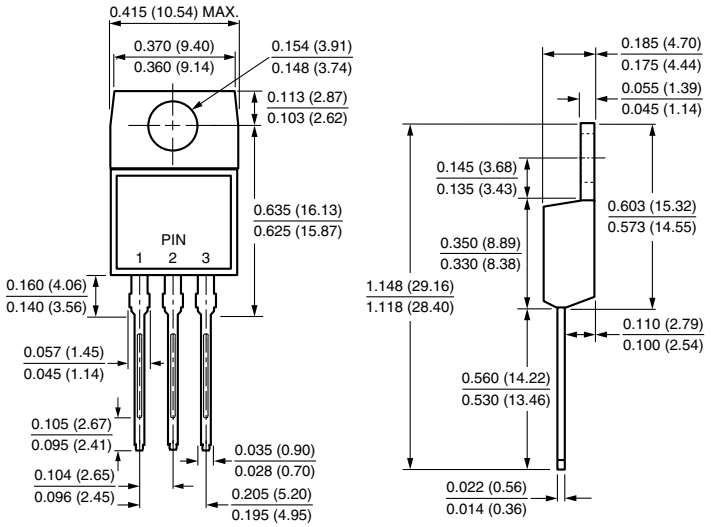


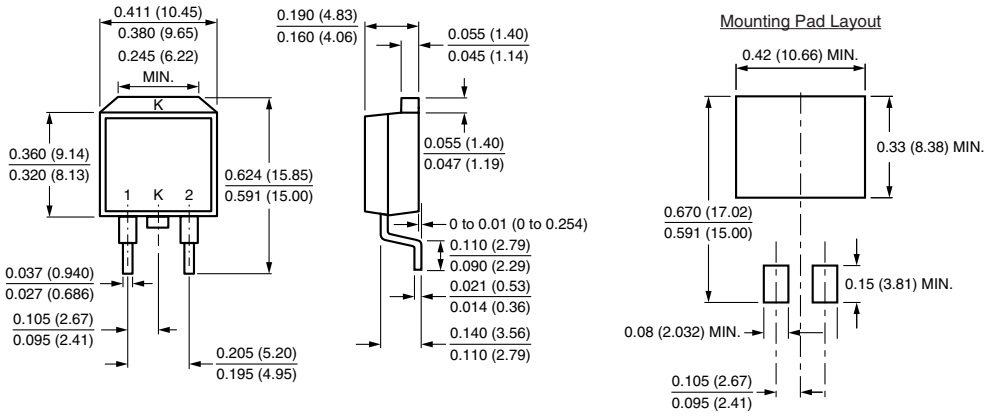
Figure 6. Typical Junction Capacitance Per Diode

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-220AB



TO-263AB



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