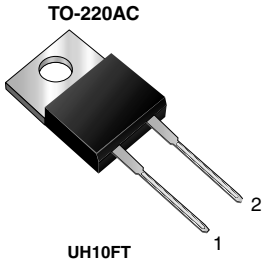
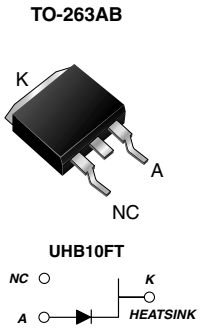
Ultrafast Recovery Rectifier





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-220AC package)
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC

RoHS COMPLIANT

TYPICAL APPLICATIONS

For use in high frequency rectification and freewheeling application in switching mode converter and inverter for consumer.

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	10 A
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-220AC 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	UH10FT	UHB10FT	UNIT
Maximum repetitive peak reverse voltage	V_{RRM}	300		V
Maximum average forward rectified current (Fig. 1)	$I_{F(AV)}$	10		A
Peak forward surge current 10 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

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ELECTRICAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)						
PARAMETER	**TEST CONDITIONS**		**SYMBOL**	**TYP.**	**MAX.**	**UNIT**
Maximum instantaneous forward voltage (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	
Maximum reverse current (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	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		S	0.36	-	-
Typical reverse recovery current			I_{RM}	7.0	-	ns
Typical stored charge			Q_{rr}	160	-	A
Typical forward recovery time	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**	**UH10FT**	**UHB10FT**	**UNIT**
Typical thermal resistance	$R_{\theta JC}$	2.0	2.0	°C/W

ORDERING INFORMATION (Example)					
PACKAGE	**PREFERRED P/N**	**UNIT WEIGHT (g)**	**PACKAGE CODE**	**BASE QUANTITY**	**DELIVERY MODE**
TO-220AC	UH10FT-E3/4W	1.82	4W	50/tube	Tube
TO-263AB	UHB10FT-E3/4W	1.32	4W	50/tube	Tube
TO-263AB	UHB10FT-E3/8W	1.32	8W	800/reel	Tape and reel

RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

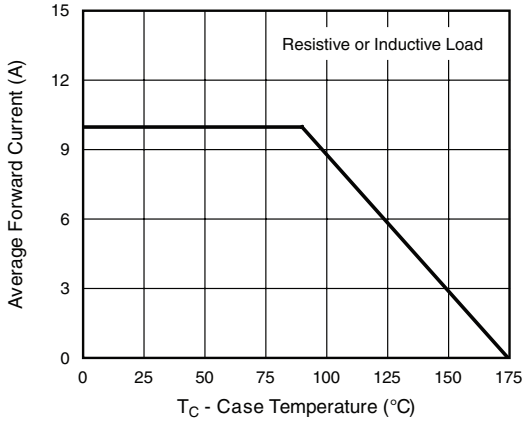


Figure 1. Maximum Forward Current Derating Curve

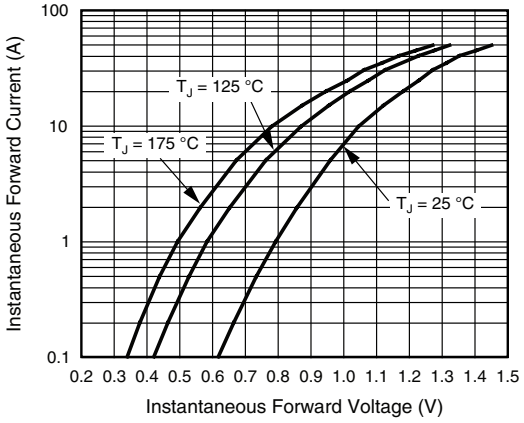


Figure 4. Typical Instantaneous Forward Characteristics

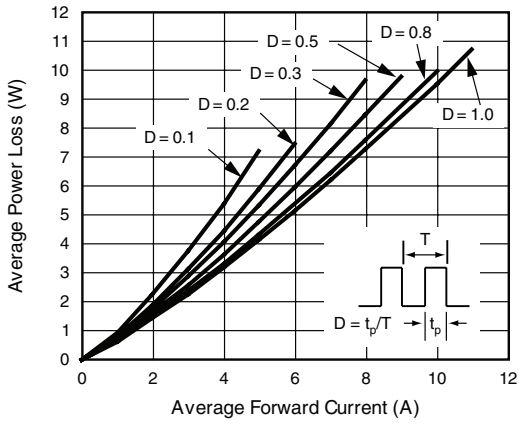


Figure 2. Forward Power Loss Characteristics

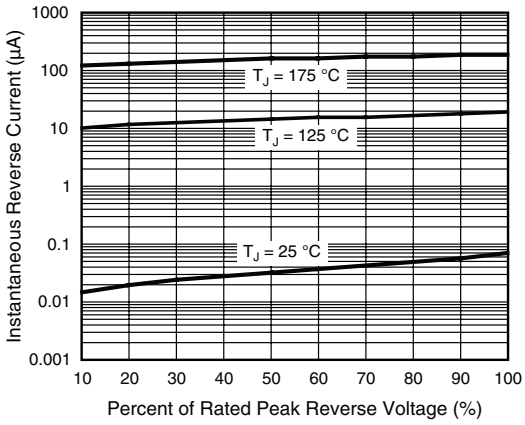


Figure 5. Typical Reverse Leakage Charactersitics

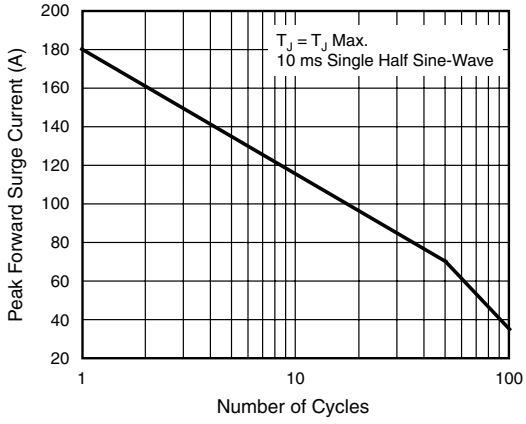


Figure 3. Maximum Non-Repetitive Peak Forward Surge Current

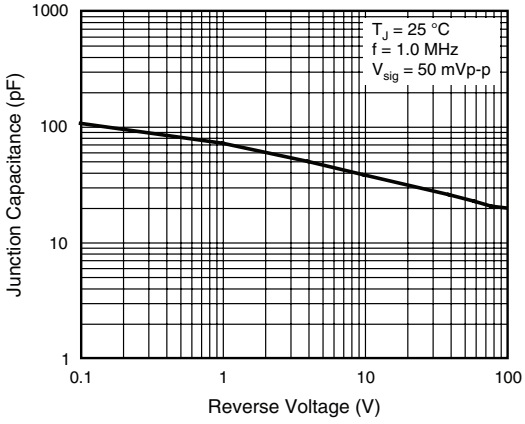
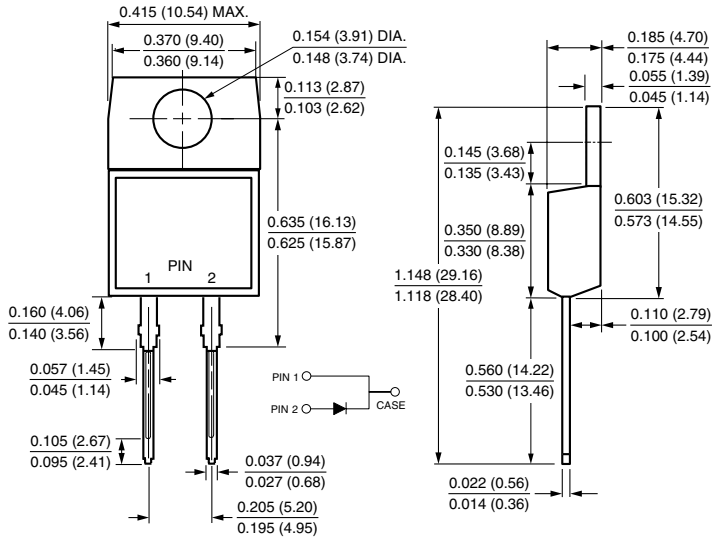


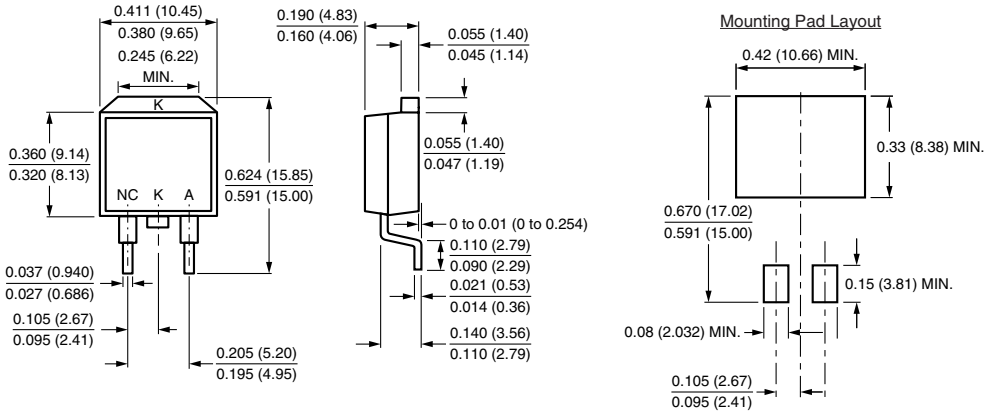
Figure 6. Typical Junction Capacitance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-220AC



TO-263AB



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