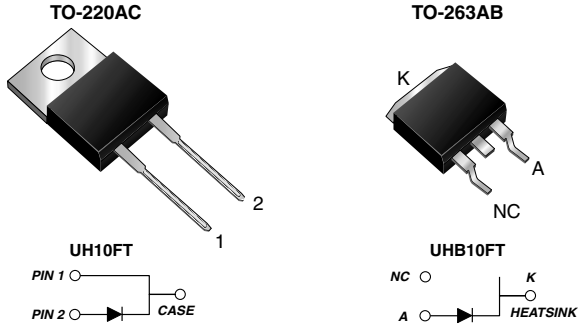
Ultrafast Recovery Rectifier



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-020C, LF max peak of 245 °C (for TO-263AB package)
- Solder Dip 260 °C, 40 seconds (for TO-220AC package)
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC

MAJOR RATINGS AND 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

TYPICAL APPLICATIONS

For use in high frequency rectification and free-wheeling application in switching mode converter and inverter for consumer.

MECHANICAL DATA

Case: TO-220AC & TO-263AB

Epoxy meets UL 94V-0 flammability rating

Terminals: Matte tin plated leads, solderable per J-STD-002B and JESD22-B102D
E3 suffix for commercial grade

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 (see 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

ELECTRICAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)						
PARAMETER	**TEST CONDITIONS**		**SYMBOL**	**TYP.**	**MAX.**	**UNIT**
Maximum instantaneous forward voltage (1)	at I_F = 5.0 A,	T_j = 25 °C	V_F	0.96	-	V
	I_F = 5.0 A,	T_j = 125 °C		0.77	-	
	at I_F = 10 A,	T_j = 25 °C		1.0	1.2	
	I_F = 10 A,	T_j = 125 °C		0.83	0.90	
Maximum reverse current (1)	at V_R = 300 V	T_j = 25 °C	I_R	0.5	5	µA
		T_j = 125 °C		25	150	

ELECTRICAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)					
PARAMETER	**TEST CONDITIONS**	**SYMBOL**	**TYP.**	**MAX.**	**UNIT**
Maximum reverse recovery time	at I_F = 0.5 A, I_R = 1.0 A, I_{rr} = 0.25 A	t_{rr}	20	25	ns
Maximum reverse recovery time	at 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)	at 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	at I_F = 10 A, di/dt = 80 A/µs, V_{FR} = 1.1 x V_{Fmax}	t_{fr}	150	-	ns

Note:

(1) Pulse test: 300 µs pulse width, 1 % duty cycle

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					
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 Reel

RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

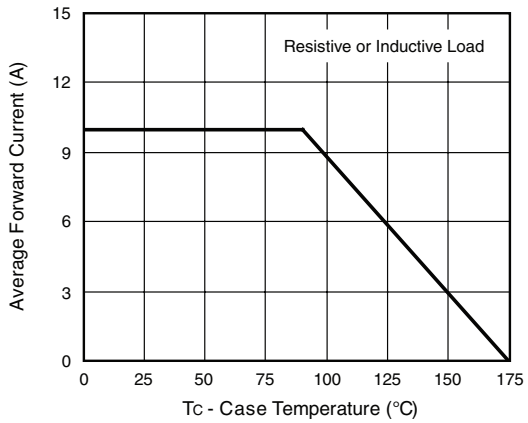


Figure 1. Maximum Forward Current Derating Curve

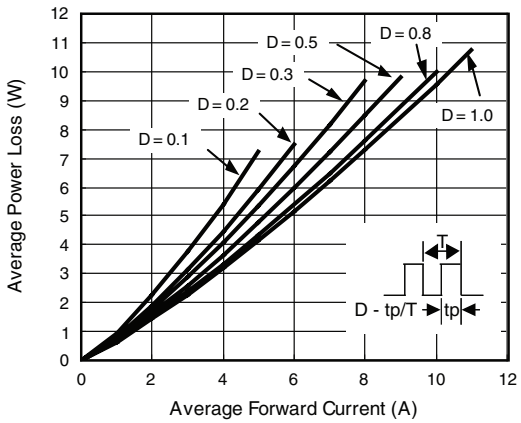


Figure 2. Forward Power Loss Characteristics

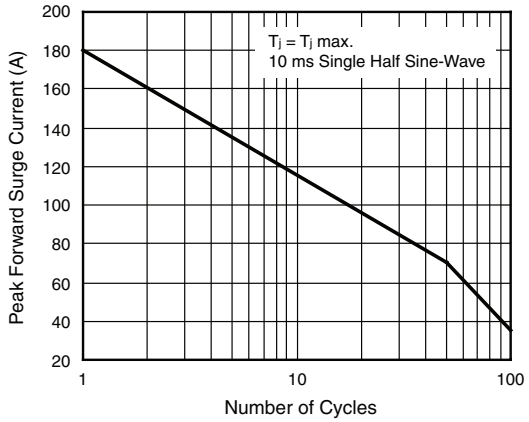


Figure 3. Maximum Non-Repetitive Peak Forward Surge Current

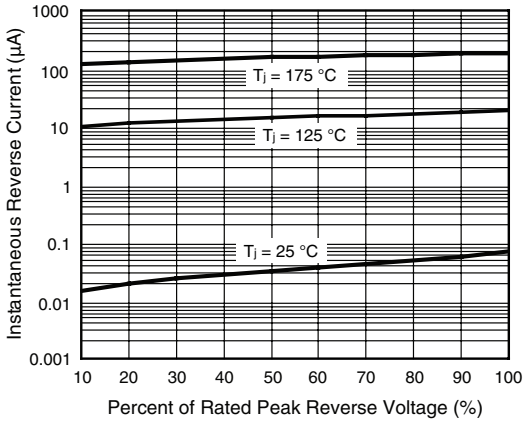


Figure 5. Typical Reverse Leakage Charactersitics

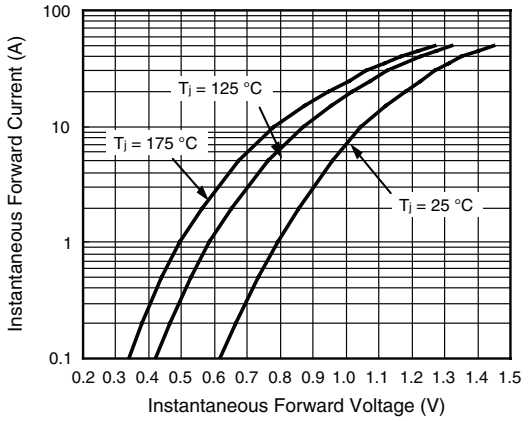


Figure 4. Typical Instantaneous Forward Characteristics

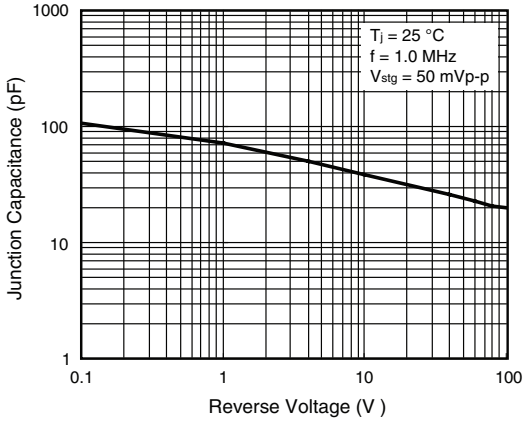
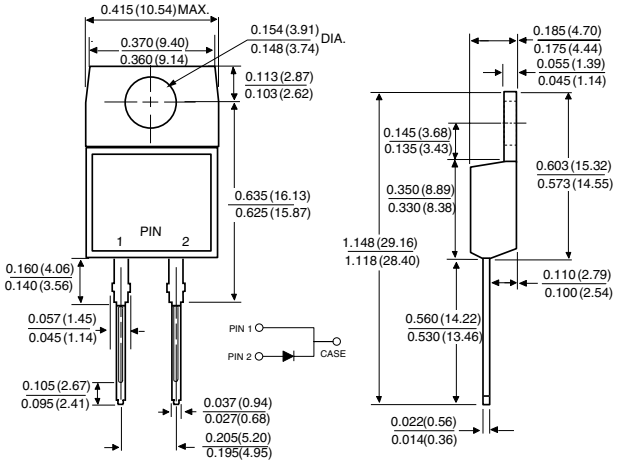


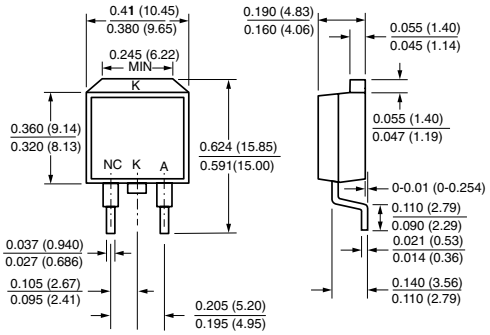
Figure 6. Typical Junction Capacitance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

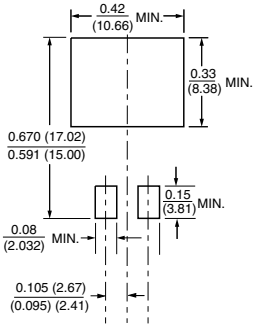
TO-220AC



TO-263AB



Mounting Pad Layout



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