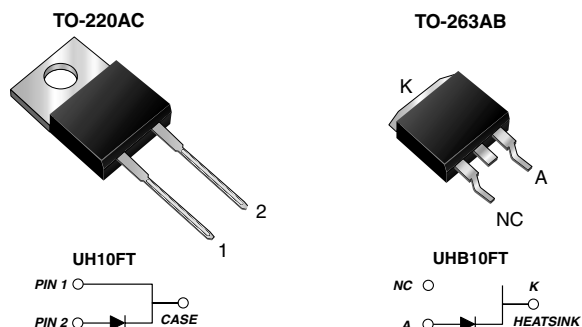


## Ultrafast Recovery Rectifier



### 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.

### 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

### PRIMARY CHARACTERISTICS

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

### MAXIMUM RATINGS ( $T_A = 25 \text{ °C}$ 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

ELECTRICAL CHARACTERISTICS ( $T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Maximum instantaneous forward voltage <sup>(1)</sup>	$I_F = 5.0\text{ A}$	$T_J = 25\text{ }^{\circ}\text{C}$	$V_F$	0.96	-	V
	$I_F = 5.0\text{ A}$	$T_J = 125\text{ }^{\circ}\text{C}$		0.77	-	
	$I_F = 10\text{ A}$	$T_J = 25\text{ }^{\circ}\text{C}$		1.0	1.2	
	$I_F = 10\text{ A}$	$T_J = 125\text{ }^{\circ}\text{C}$		0.83	0.90	
Maximum reverse current <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	$I_F = 1.0\text{ A}$ , $dI/dt = 50\text{ A}/\mu\text{s}$ , $V_R = 30\text{ V}$ , $I_{rr} = 0.1\text{ }I_{RM}$		$t_{rr}$	28	35	ns
Typical softness factor (tb/ta)	$I_F = 10\text{ A}$ , $dI/dt = 200\text{ A}/\mu\text{s}$ , $V_R = 200\text{ V}$ , $T_J = 125\text{ }^{\circ}\text{C}$		S	0.36	-	-
Typical reverse recovery current			$I_{RM}$	7.0	-	ns
Typical stored charge			$Q_{rr}$	160	-	A
Typical forward recovery time	$I_F = 10\text{ A}$ , $dI/dt = 80\text{ A}/\mu\text{s}$ , $V_{FR} = 1.1 \times V_{F\text{ max.}}$		$t_{fr}$	150	-	ns

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

THERMAL CHARACTERISTICS ( $T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)				
PARAMETER	SYMBOL	UH10FT	UHB10FT	UNIT
Typical thermal resistance	$R_{\theta JC}$	2.0	2.0	$^{\circ}\text{C}/\text{W}$

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

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

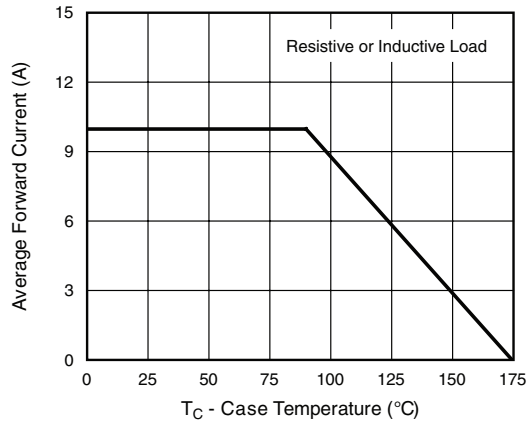


Figure 1. Maximum Forward Current Derating Curve

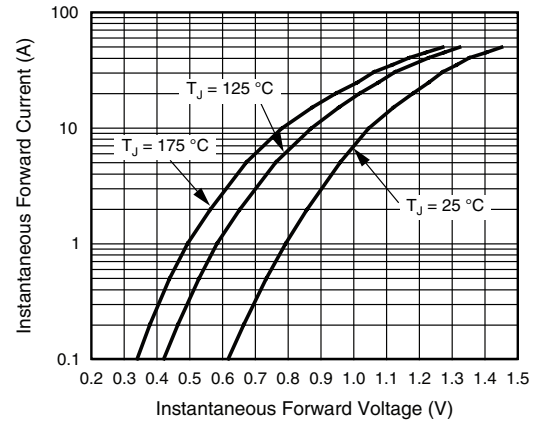


Figure 4. Typical Instantaneous Forward Characteristics

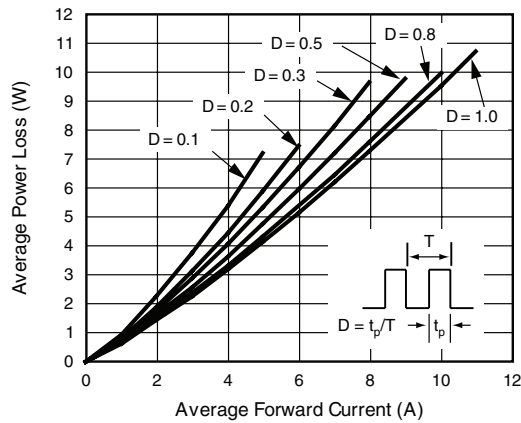


Figure 2. Forward Power Loss Characteristics

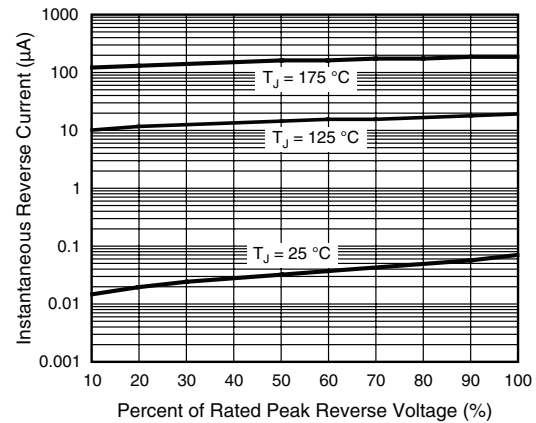


Figure 5. Typical Reverse Leakage Characteristics

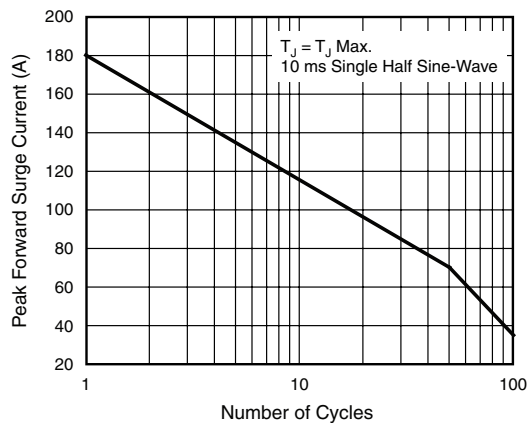


Figure 3. Maximum Non-Repetitive Peak Forward Surge Current

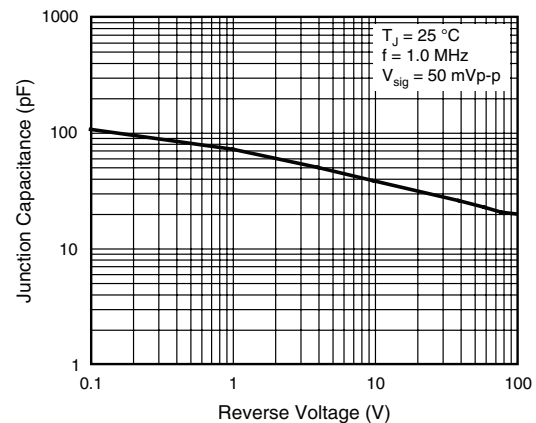
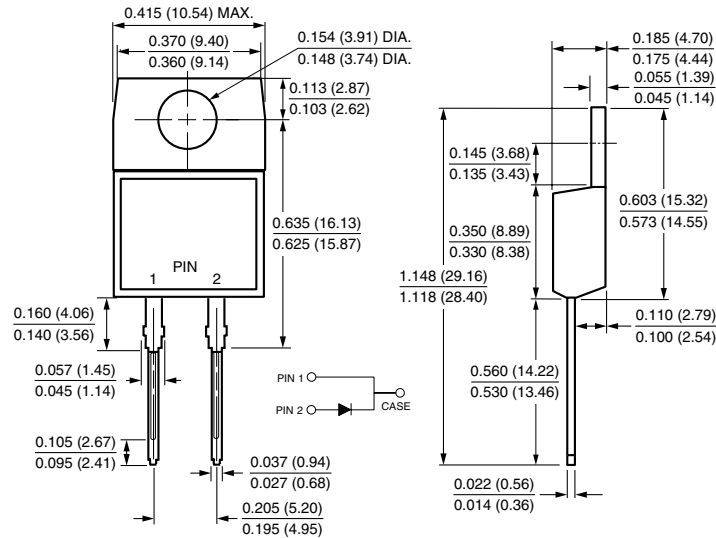


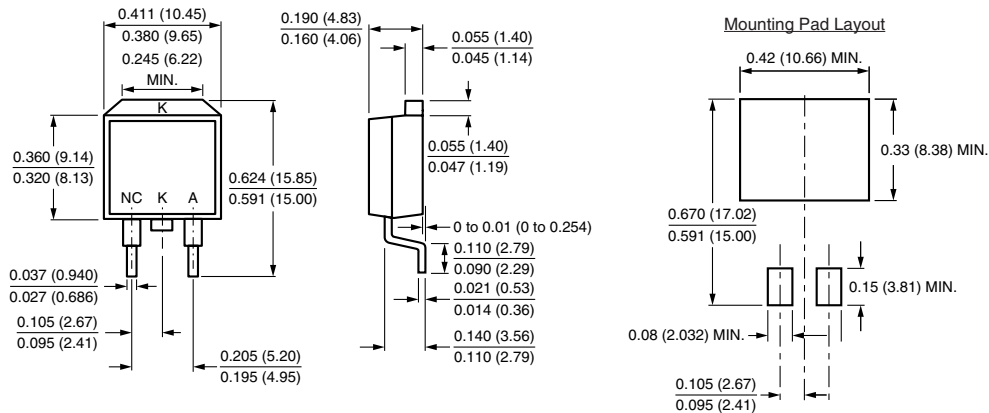
Figure 6. Typical Junction Capacitance

## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

### TO-220AC



### TO-263AB





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