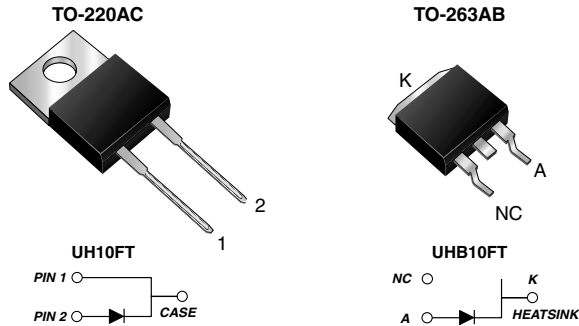


## Ultrafast Recovery Rectifier



### 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



### 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

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

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 (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 ( $T_A = 25\text{ °C}$ unless otherwise noted)					
PARAMETER	TEST CONDITIONS	SYMBOL	TYP.	MAX.	UNIT
Maximum instantaneous forward voltage <sup>(1)</sup>	at $I_F = 5.0\text{ A}, T_j = 25\text{ °C}$ $I_F = 5.0\text{ A}, T_j = 125\text{ °C}$	$V_F$	0.96 0.77	- -	V
	at $I_F = 10\text{ A}, T_j = 25\text{ °C}$ $I_F = 10\text{ A}, T_j = 125\text{ °C}$		1.0 0.83	1.2 0.90	
Maximum reverse current <sup>(1)</sup>	at $V_R = 300\text{ V}$ $T_j = 25\text{ °C}$ $T_j = 125\text{ °C}$	$I_R$	0.5 25	5 150	$\mu\text{A}$

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

**Note:**

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

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

<b>ORDERING INFORMATION</b>					
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

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

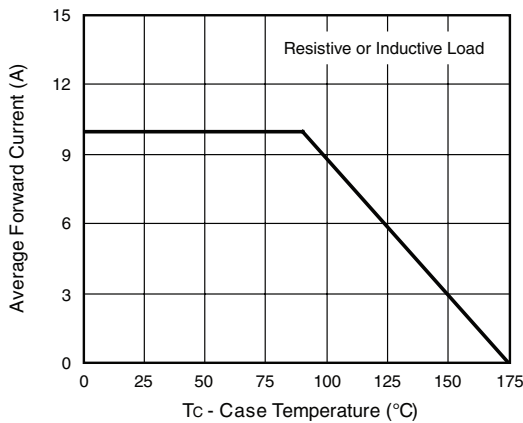


Figure 1. Maximum Forward Current Derating Curve

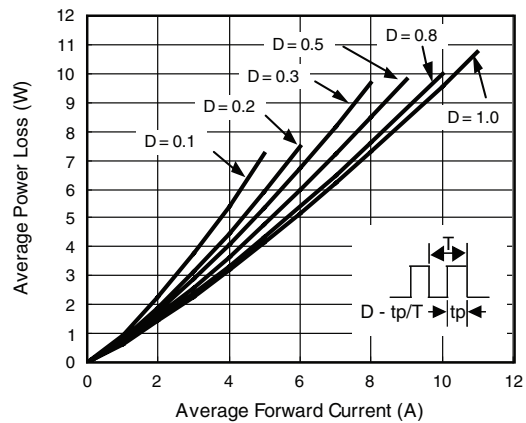


Figure 2. Forward Power Loss Characteristics

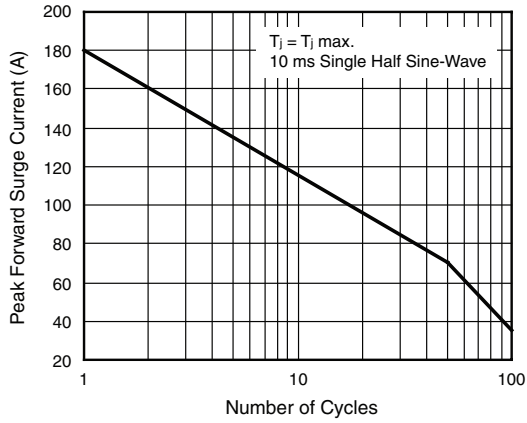


Figure 3. Maximum Non-Repetitive Peak Forward Surge Current

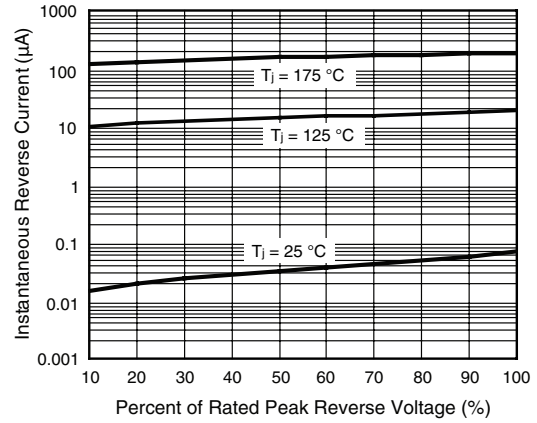


Figure 5. Typical Reverse Leakage Characteristics

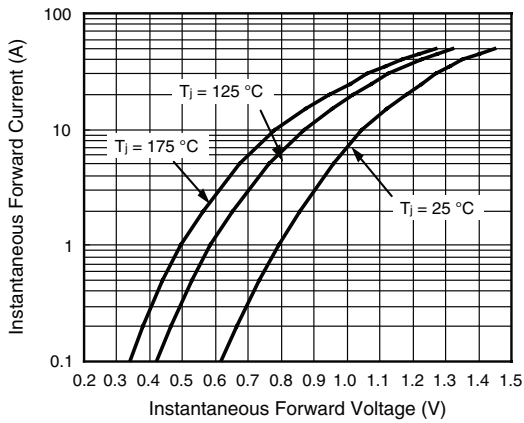


Figure 4. Typical Instantaneous Forward Characteristics

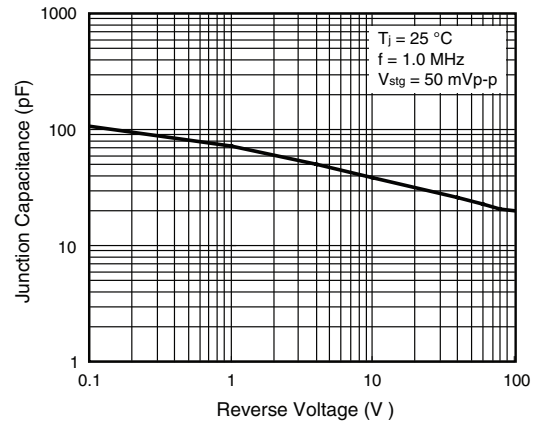


Figure 6. Typical Junction Capacitance

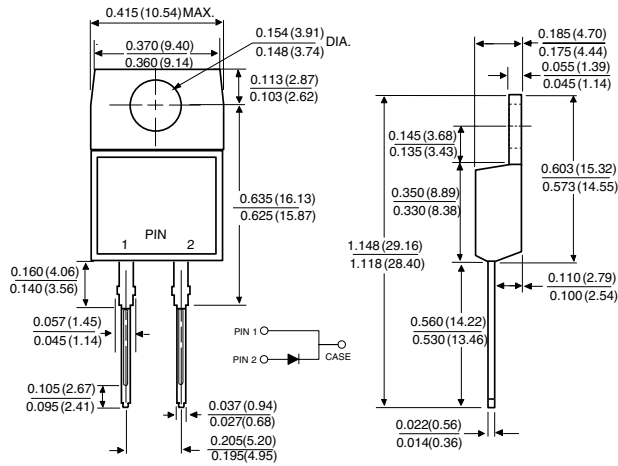
# UH10FT & UHB10FT

Vishay General Semiconductor

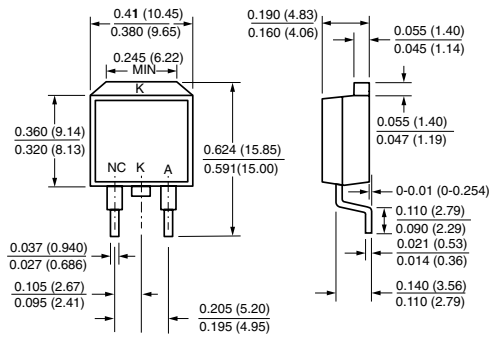


## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

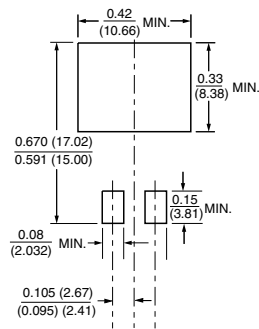
TO-220AC



TO-263AB



Mounting Pad Layout





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