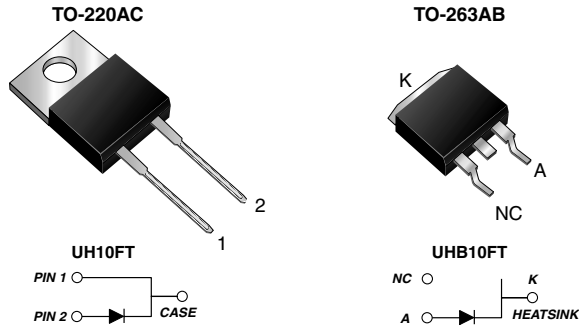


Ultrafast Recovery Rectifier



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
$T_j \text{ max.}$	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 (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 ⁽¹⁾	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 ⁽¹⁾	at $V_R = 300 \text{ V}$ $T_j = 25 \text{ °C}$ $T_j = 125 \text{ °C}$	I_R	0.5 25	5 150	μA

ELECTRICAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ 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 μs pulse width, 1 % duty cycle

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					
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)

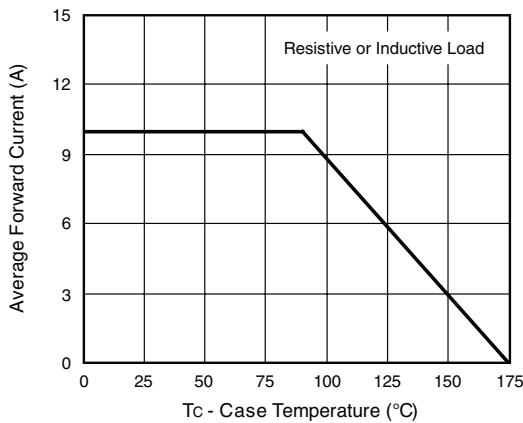


Figure 1. Maximum Forward Current Derating Curve

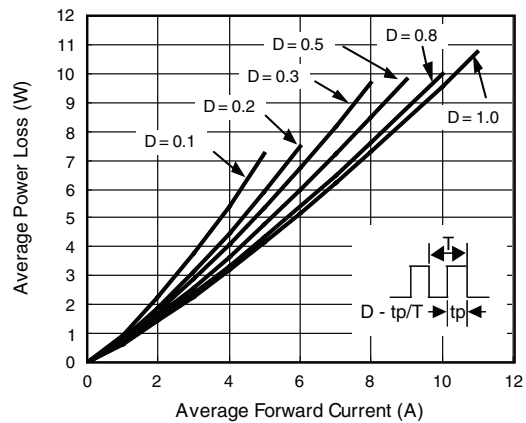


Figure 2. Forward Power Loss Characteristics

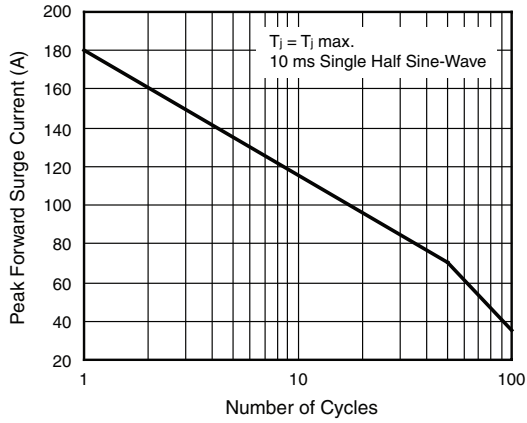


Figure 3. Maximum Non-Repetitive Peak Forward Surge Current

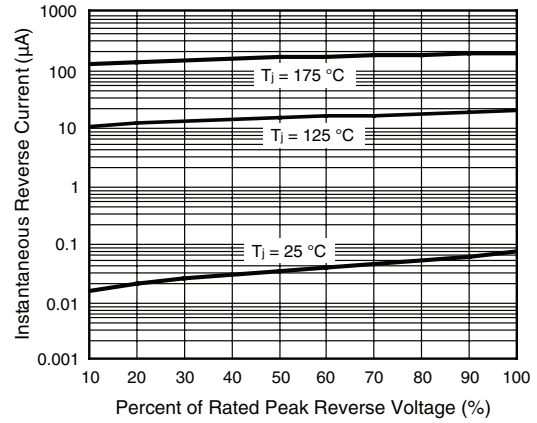


Figure 5. Typical Reverse Leakage Characteristics

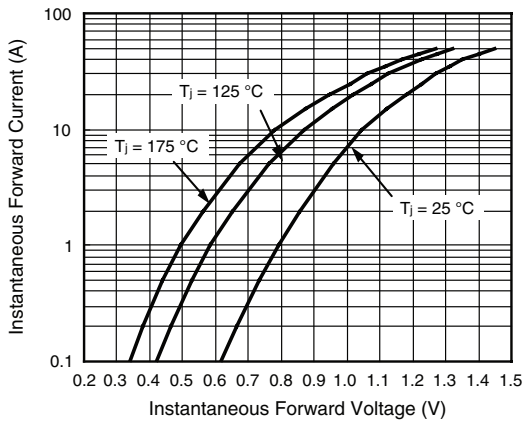


Figure 4. Typical Instantaneous Forward Characteristics

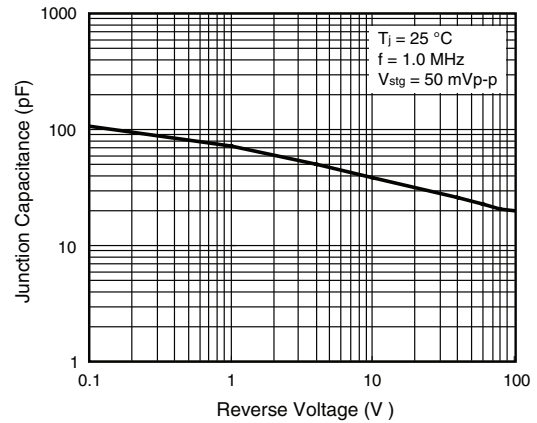


Figure 6. Typical Junction Capacitance

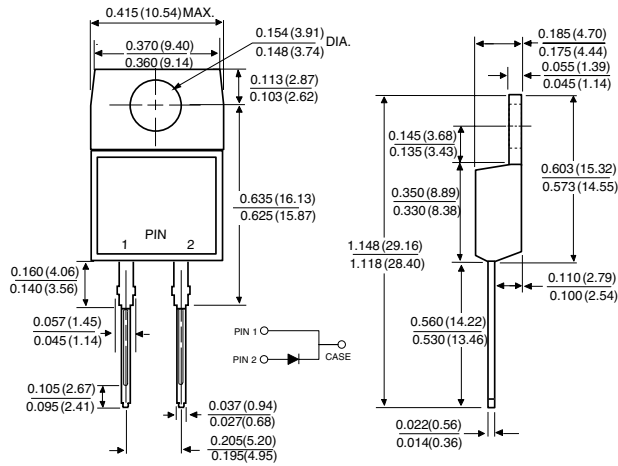
UH10FT & UHB10FT

Vishay General Semiconductor

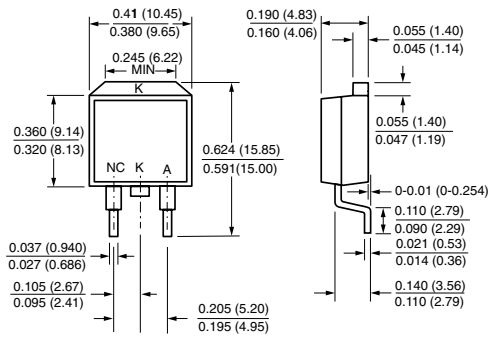


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

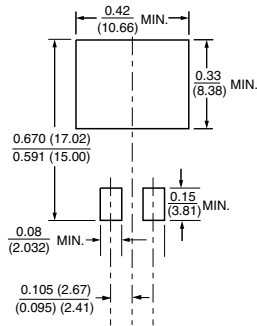
TO-220AC



TO-263AB



Mounting Pad Layout





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