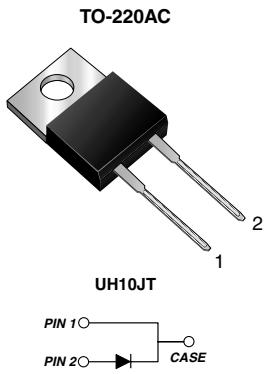
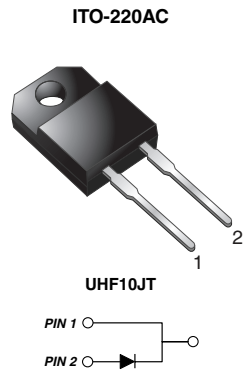
High Voltage Ultrafast Rectifier





FEATURES

- Oxide planar chip junction
- Ultrafast recovery time
- Soft recovery characteristics
- Low switching losses, high efficiency
- High forward surge capability
- Solder dip 260 °C, 40 s
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC

RoHS COMPLIANT

TYPICAL APPLICATIONS

For use in high voltage continuous mode power factor correctors (CCM PFC), switching mode power supplies, freewheeling diodes and secondary dc-to-dc rectification application.

MECHANICAL DATA

Case: TO-220AC, ITO-220AC
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}	600 V
I_{FSM}	90 A
t_{rr}	25 ns
V_F at I_F = 10 A	1.41 V
T_J max.	175 °C

MAXIMUM RATINGS (T_C = 25 °C unless otherwise noted)

PARAMETER	SYMBOL	UH10JT	UHF10JT	UNIT
Maximum repetitive peak reverse voltage	V_{RRM}	600		V
Maximum average forward rectified current (Fig. 1)	$I_{F(AV)}$	10		A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I_{FSM}	90		A
Isolation voltage (ITO-220AC only) from terminal to heatsink t = 1 min	V_{AC}	1500		V
Operating junction and storage temperature range	T_J, T_{STG}	- 55 to + 175		°C

ELECTRICAL CHARACTERISTICS (T_C = 25 °C unless otherwise noted)

PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage (1)	I_F = 5 A I_F = 10 A	T_A = 25 °C	V_F	1.70 2.5	- 3.0	V
	I_F = 5 A I_F = 10 A	T_A = 125 °C		1.15 1.41	- 1.80	

ELECTRICAL CHARACTERISTICS (T_C = 25 °C unless otherwise noted)						
PARAMETER	**TEST CONDITIONS**		**SYMBOL**	**TYP.**	**MAX.**	**UNIT**
Reverse current (2)	V_R = 600 V	T_A = 25 °C T_A = 125 °C	I_R	- 27	10 150	µA
Maximum reverse recovery time	I_F = 0.5 A, I_R = 1.0 A, I_{rr} = 0.25 A		t_{rr}	-	25	ns
	I_F = 1.0 A, dI/dt = 50 A/µs, V_R = 30 V, I_{rr} = 0.1 I_{RM}			-	45	
Typical softness factor (t_b/t_a)	I_F = 10 A, dI/dt = 200 A/µs, V_R = 400 V, T_J = 125 °C		S	0.45	-	-
Typical reverse recovery c urrent			I_{RM}	7.5	-	A
Typical stored charge			Q_{rr}	200	-	nC
Typical forward recovery time	I_F = 10 A, dI/dt = 80 A/µs, V_F = 1.1 x $V_{F\ max.}$		t_{fr}	160	-	ns

Notes:
(1) Pulse test: 300 µs pulse width, 1 % duty cycle
(2) Pulse test: Pulse width ≤ 40 ms

THERMAL CHARACTERISTICS (T_C = 25 °C unless otherwise noted)				
PARAMETER	**SYMBOL**	**UH10JT**	**UHF10JT**	**UNIT**
Typical thermal resistance from junction to case	$R_{\theta JC}$	2.0	4.0	°C/W

ORDERING INFORMATION (Example)					
PACKAGE	**PREFERRED P/N**	**UNIT WEIGHT (g)**	**PACKAGE CODE**	**BASE QUANTITY**	**DELIVERY MODE**
TO-220AC	UH10JT-E3/4W	1.84	4W	50/tube	Tube
ITO-220AC	UHF10JT-E3/45	1.73	45	50/tube	Tube

RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

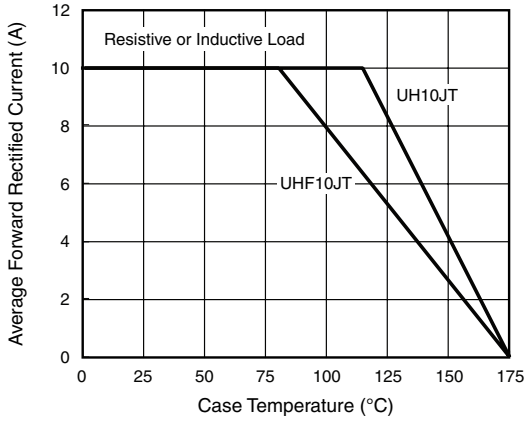


Figure 1. Maximum Forward Current Derating Curve

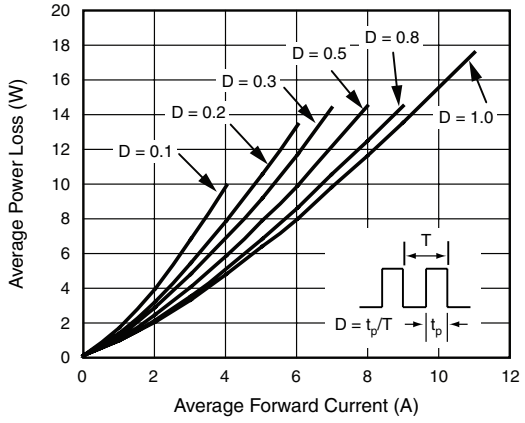


Figure 2. Forward Power Loss Characteristics

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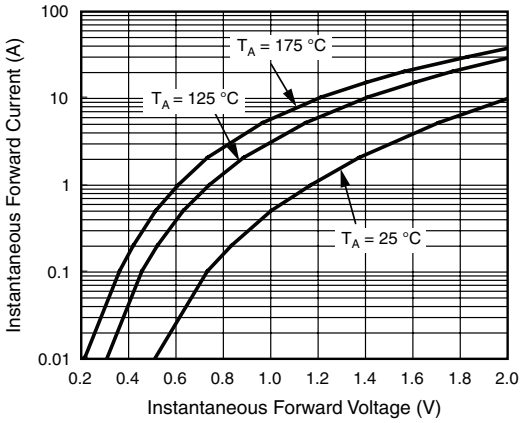


Figure 3. Typical Instantaneous Forward Characteristics

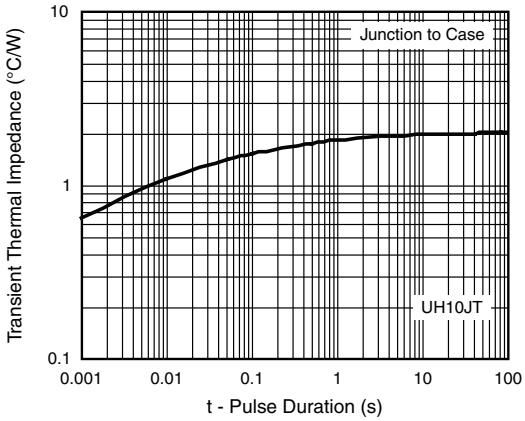


Figure 6. Typical Transient Thermal Impedance

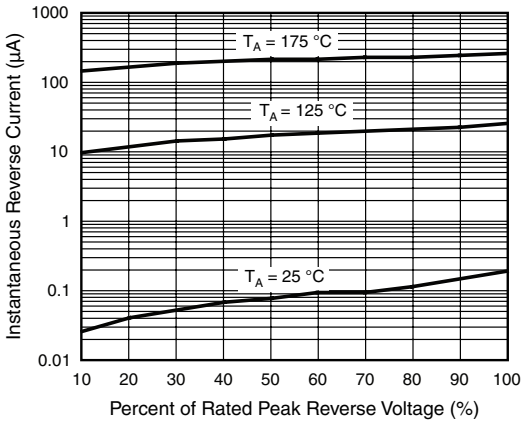


Figure 4. Typical Reverse Leakage Characteristics

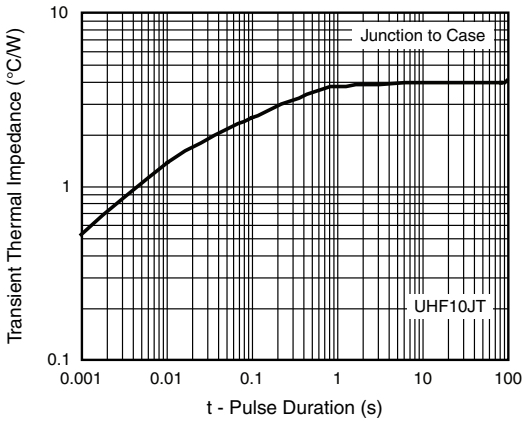


Figure 7. Typical Transient Thermal Impedance

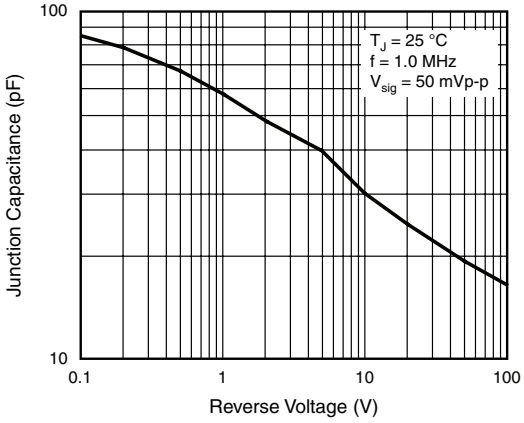
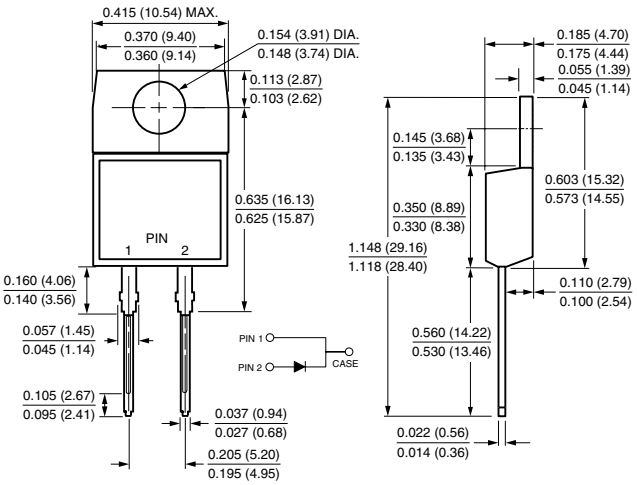


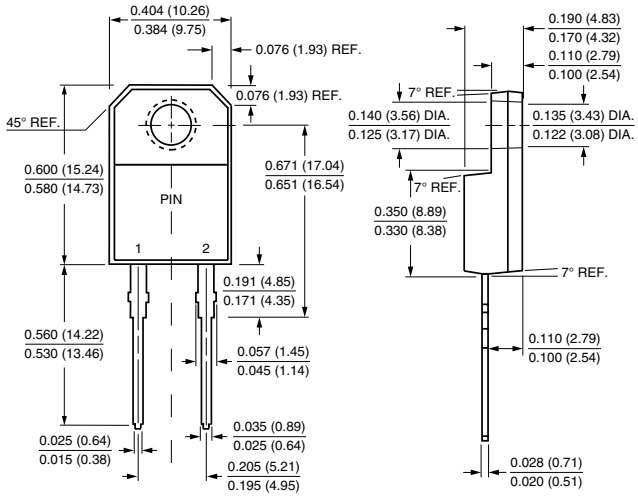
Figure 5. Typical Junction Capacitance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-220AC



ITO-220AC



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