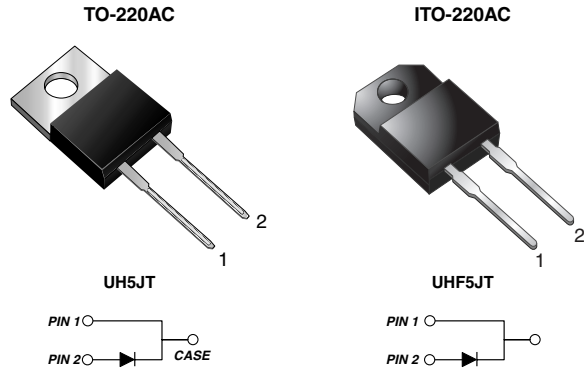


## High Voltage Ultrafast Rectifier



### 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	
$I_{F(AV)}$	5 A
$V_{RRM}$	600 V
$I_{FSM}$	60 A
$t_{rr}$	25 ns
$V_F$ at $I_F = 5.0$ A	1.39 V
$T_J$ max.	175 °C

MAXIMUM RATINGS ( $T_C = 25$ °C unless otherwise noted)				
PARAMETER	SYMBOL	UH5JT	UHF5JT	UNIT
Maximum repetitive peak reverse voltage	$V_{RRM}$	600		V
Maximum average forward rectified current (Fig. 1)	$I_{F(AV)}$	8		A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	$I_{FSM}$	60		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 <sup>(1)</sup>	$I_F = 2.5$ A	$T_A = 25$ °C	$V_F$	1.71	-	V
				$I_F = 5.0$ A	2.3	
	$I_F = 2.5$ A	$T_A = 125$ °C		1.13	-	
				$I_F = 5.0$ A	1.39	



ELECTRICAL CHARACTERISTICS (T <sub>C</sub> = 25 °C unless otherwise noted)					
PARAMETER	TEST CONDITIONS	SYMBOL	TYP.	MAX.	UNIT
Reverse current <sup>(2)</sup>	V <sub>R</sub> = 600 V T <sub>A</sub> = 25 °C T <sub>A</sub> = 125 °C	I <sub>R</sub>	- -	5.0 100	μA
Maximum reverse recovery time	I <sub>F</sub> = 0.5 A, I <sub>R</sub> = 1.0 A, I <sub>rr</sub> = 0.25 A	t <sub>rr</sub>	-	25	ns
	I <sub>F</sub> = 1.0 A, di/dt = 50 A/μs, V <sub>R</sub> = 30 V, I <sub>rr</sub> = 0.1 I <sub>RM</sub>		-	40	
Typical softness factor (t <sub>b</sub> /t <sub>a</sub> )	I <sub>F</sub> = 5 A, di/dt = 200 A/μs, V <sub>R</sub> = 400 V, T <sub>J</sub> = 125 °C	S	0.55	-	-
Typical reverse recovery current		I <sub>RM</sub>	5.8	7.0	A
Typical stored charge		Q <sub>rr</sub>	140	-	nC
Typical forward recovery time	I <sub>F</sub> = 5 A, di/dt = 40 A/μs, V <sub>F</sub> = 1.1 x V <sub>F max.</sub>	t <sub>fr</sub>	160	-	ns

Notes:

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

THERMAL CHARACTERISTICS (T <sub>C</sub> = 25 °C unless otherwise noted)				
PARAMETER	SYMBOL	UH5JT	UHF5JT	UNIT
Typical thermal resistance from junction to case	R <sub>θJC</sub>	3.0	6.6	°C/W

ORDERING INFORMATION (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AC	UH5JT-E3/4W	1.83	4W	50/tube	Tube
ITO-220AC	UHF5JT-E3/4W	1.70	4W	50/tube	Tube

RATINGS AND CHARACTERISTICS CURVES

(T<sub>A</sub> = 25 °C unless otherwise noted)

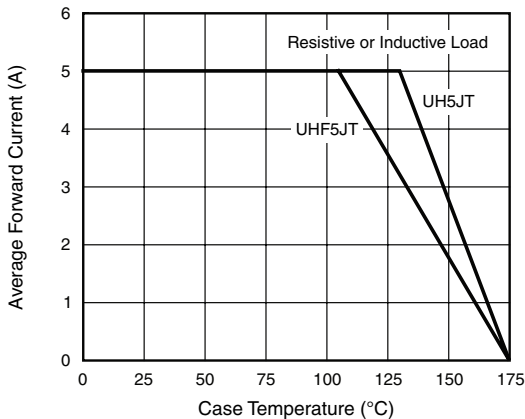


Figure 1. Maximum Forward Current Derating Curve

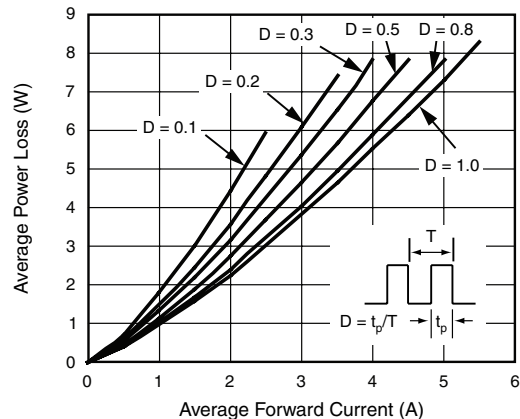


Figure 2. Forward Power Loss Characteristics

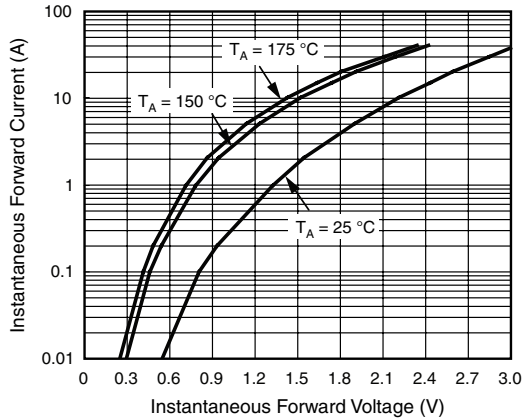


Figure 3. Typical Instantaneous Forward Characteristics

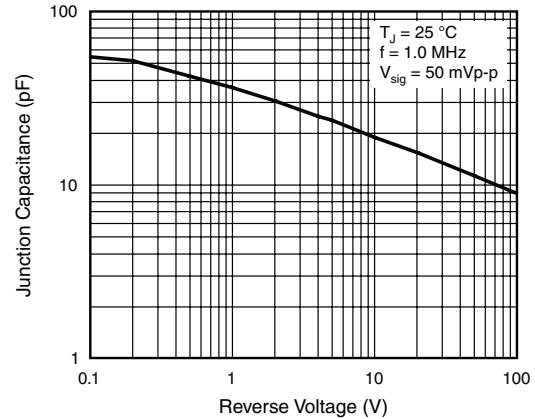


Figure 5. Typical Junction Capacitance

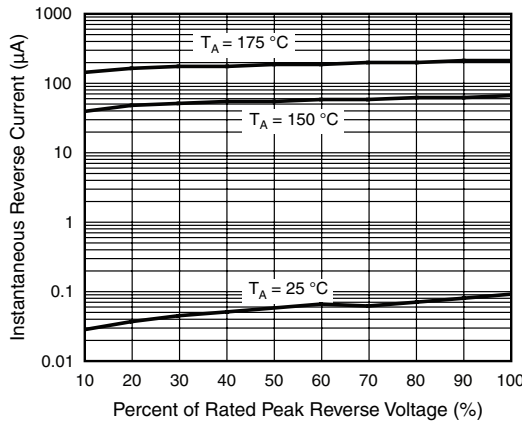


Figure 4. Typical Reverse Leakage Characteristics

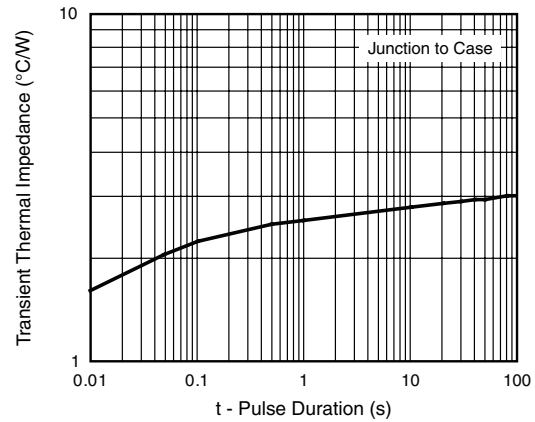
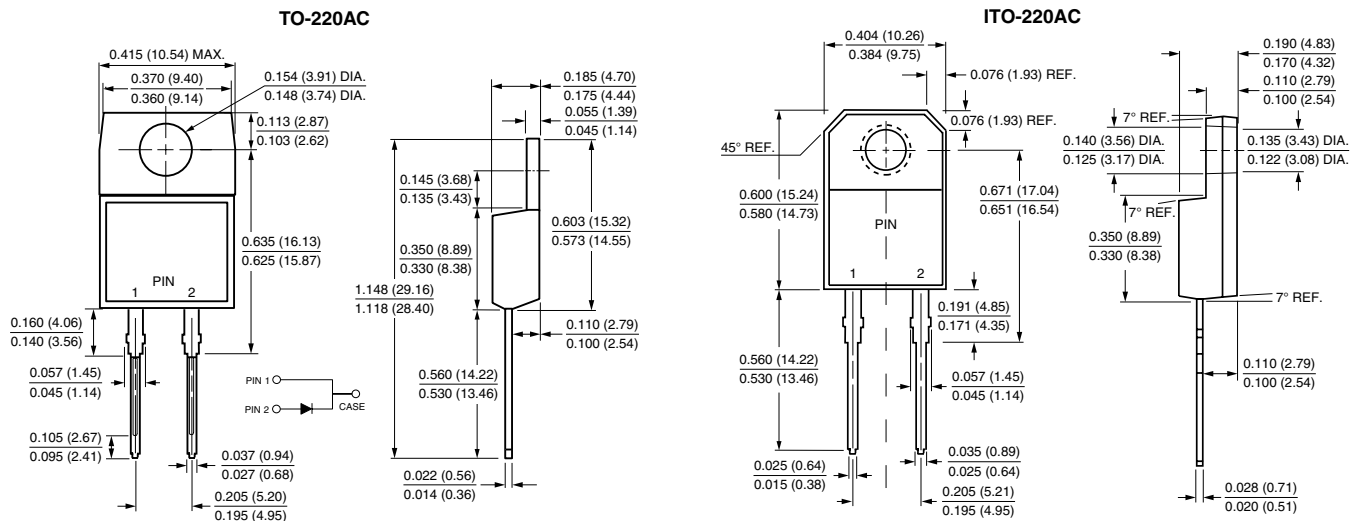


Figure 6. Typical Transient Thermal Impedance

**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)





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