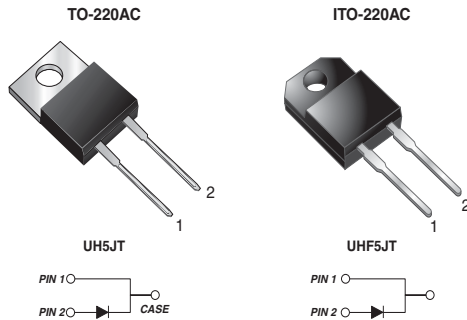


High Voltage Ultrafast Rectifier



FEATURES

- Oxide planar chip junction
- Ultrafast recovery time
- Soft recovery characteristics
- Low switching losses, high efficiency
- High forward surge capability
- Solder bath temperature 275 °C maximum, 10 s per JESD 22-B106
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912


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/DC rectification application.

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

MECHANICAL DATA

Case: TO-220AC, ITO-220AC

Molding compound meets UL 94V-0 flammability rating
Base P/N - RoHS-compliant, commercial grade

Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD22-B102

E3 suffix meets JESD 201 class 1A whisker test

Polarity: As marked

Mounting Torque: 10 in-lbs maximum

MAXIMUM RATINGS ($T_A = 25$ °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)	$I_{F(AV)}$	5		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 ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)

PARAMETER	TEST CONDITIONS	SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage ⁽¹⁾	$I_F = 2.5\text{ A}$	$T_A = 25\text{ }^\circ\text{C}$	1.71	-	V
	$I_F = 5.0\text{ A}$		2.3	3.0	
	$I_F = 2.5\text{ A}$	$T_A = 125\text{ }^\circ\text{C}$	1.13	-	
	$I_F = 5.0\text{ A}$		1.39	1.8	
Reverse current ⁽²⁾	$V_R = 600\text{ V}$	$T_A = 25\text{ }^\circ\text{C}$	-	5.0	μA
		$T_A = 125\text{ }^\circ\text{C}$	-	100	
Maximum reverse recovery time	$I_F = 0.5\text{ A}, I_R = 1.0\text{ A}, I_{rr} = 0.25\text{ A}$	t_{rr}	-	25	ns
	$I_F = 1.0\text{ A}, di/dt = 50\text{ A}/\mu\text{s}, V_R = 30\text{ V}, I_{rr} = 0.1 I_{RM}$		-	40	
Typical softness factor (t_p/t_a)		S	0.55	-	-
Typical reverse recovery current	$I_F = 5\text{ A}, di/dt = 200\text{ A}/\mu\text{s}, V_R = 400\text{ V}, T_J = 125\text{ }^\circ\text{C}$	I_{RM}	5.8	7.0	A
Typical stored charge		Q_{rr}	140	-	nC
Typical forward recovery time	$I_F = 5\text{ A}, di/dt = 40\text{ A}/\mu\text{s}, V_F = 1.1 \times V_F \text{ max.}$	t_{fr}	160	-	ns

Notes

- (1) Pulse test: 300 μs 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	UH5JT	UHF5JT	UNIT
Typical thermal resistance from junction to case	$R_{\theta JC}$	3.0	6.6	$^\circ\text{C}/\text{W}$

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

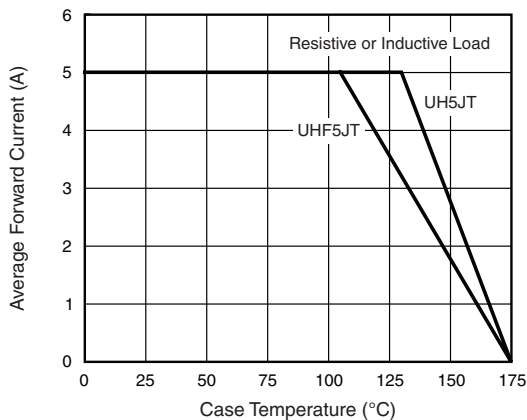
RATINGS AND CHARACTERISTICS CURVES ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)


Fig. 1 - Maximum Forward Current Derating Curve

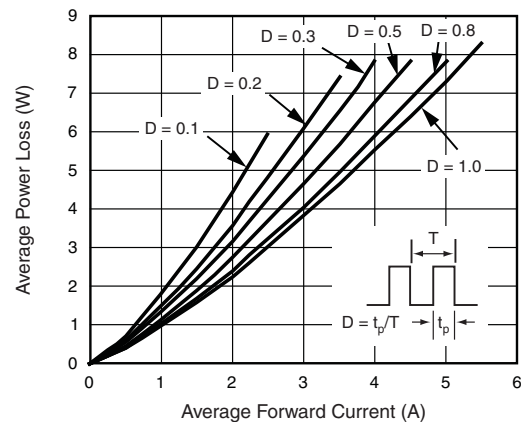


Fig. 2 - Forward Power Loss Characteristics

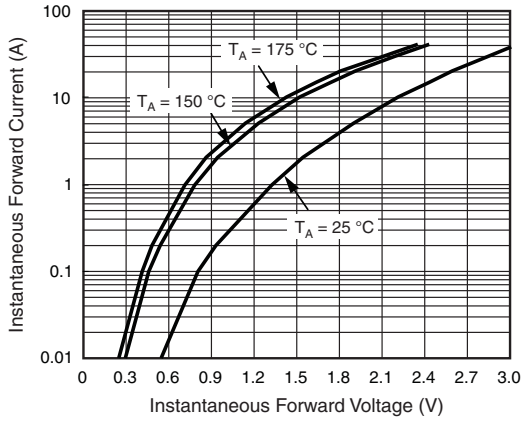


Fig. 3 - Typical Instantaneous Forward Characteristics

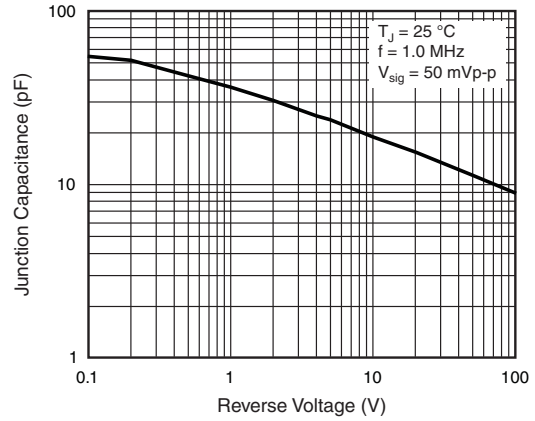


Fig. 5 - Typical Junction Capacitance

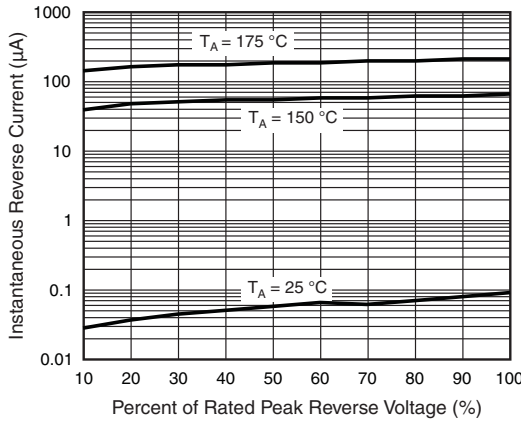


Fig. 4 - Typical Reverse Leakage Characteristics

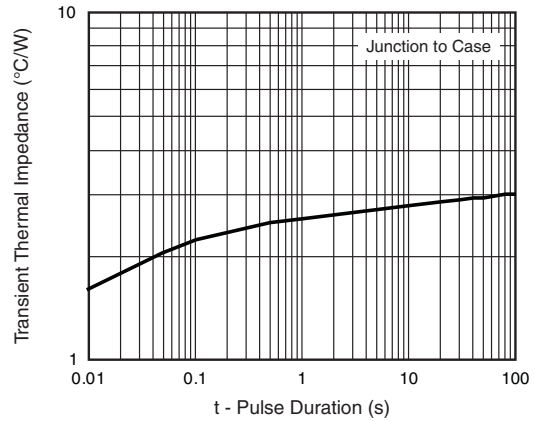
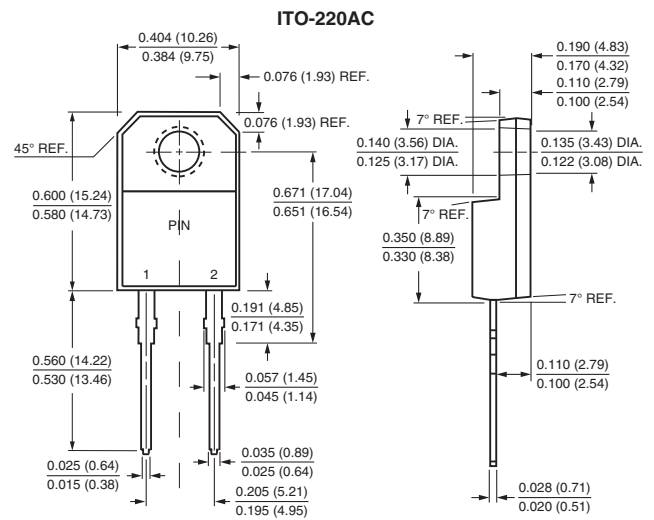
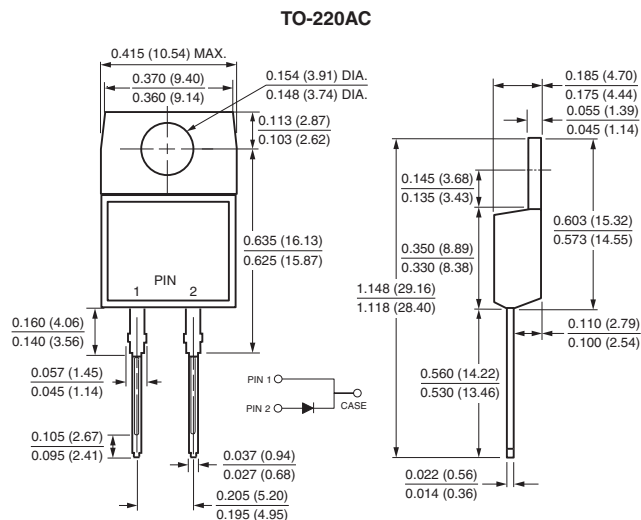


Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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