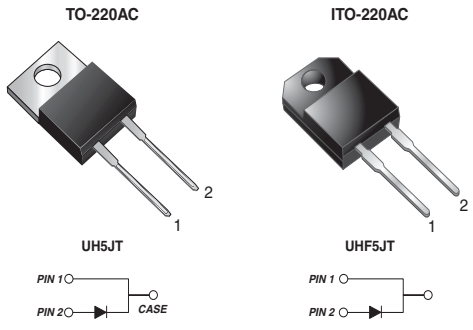
High Voltage Ultrafast Rectifier



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 °C unless otherwise noted)						
PARAMETER	**TEST CONDITIONS**		**SYMBOL**	**TYP.**	**MAX.**	**UNIT**
Instantaneous forward voltage (1)	I_F = 2.5 A	T_A = 25 °C	V_F	1.71	-	V
	I_F = 5.0 A			2.3	3.0	
	I_F = 2.5 A	T_A = 125 °C		1.13	-	
	I_F = 5.0 A			1.39	1.8	
Reverse current (2)	V_R = 600 V	T_A = 25 °C	I_R	-	5.0	µA
		T_A = 125 °C		-	100	
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}			-	40	
Typical softness factor (t_p/t_a)	I_F = 5 A, dI/dt = 200 A/µs, V_R = 400 V, T_J = 125 °C		S	0.55	-	-
Typical reverse recovery current			I_{RM}	5.8	7.0	A
Typical stored charge			Q_{rr}	140	-	nC
Typical forward recovery time	I_F = 5 A, dI/dt = 40 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_A = 25 °C unless otherwise noted)				
PARAMETER	**SYMBOL**	**UH5JT**	**UHF5JT**	**UNIT**
Typical thermal resistance from junction to case	$R_{\theta JC}$	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_A = 25 °C unless otherwise noted)

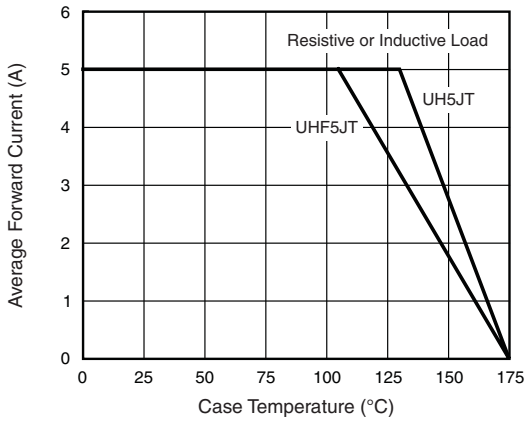


Fig. 1 - Maximum Forward Current Derating Curve

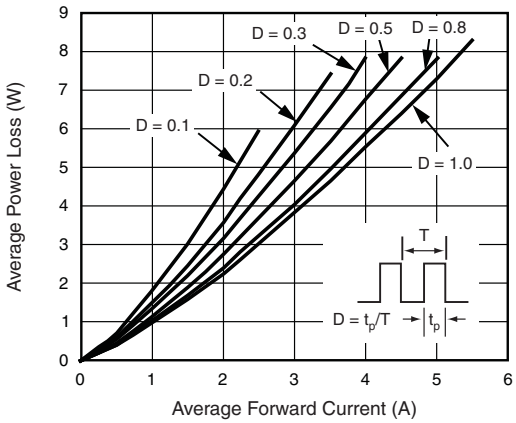


Fig. 2 - Forward Power Loss Characteristics

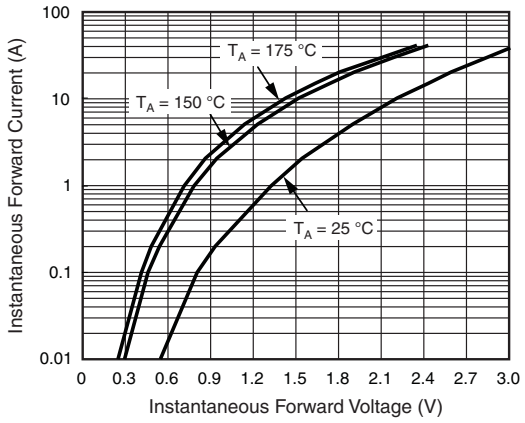


Fig. 3 - Typical Instantaneous Forward Characteristics

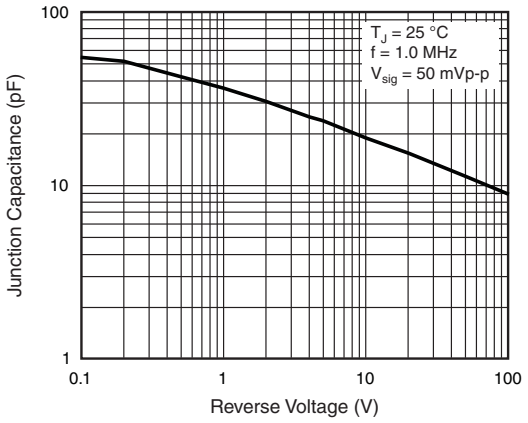


Fig. 5 - Typical Junction Capacitance

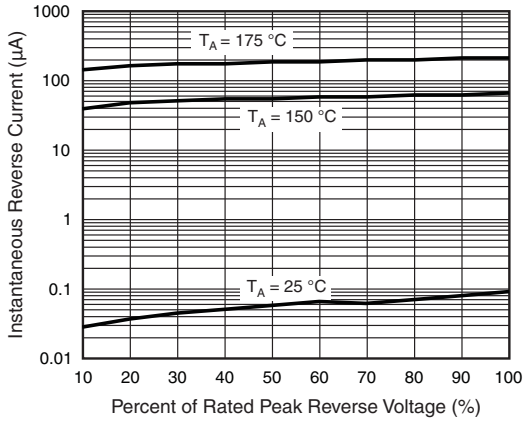


Fig. 4 - Typical Reverse Leakage Characteristics

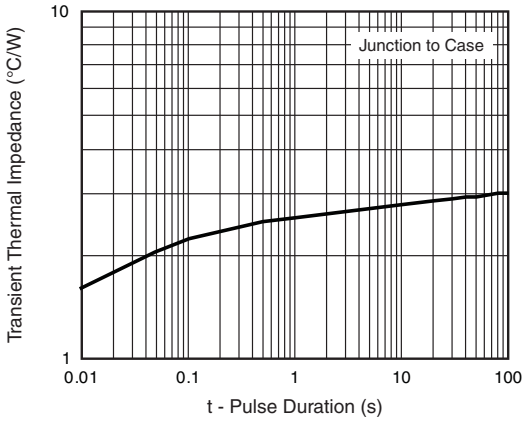
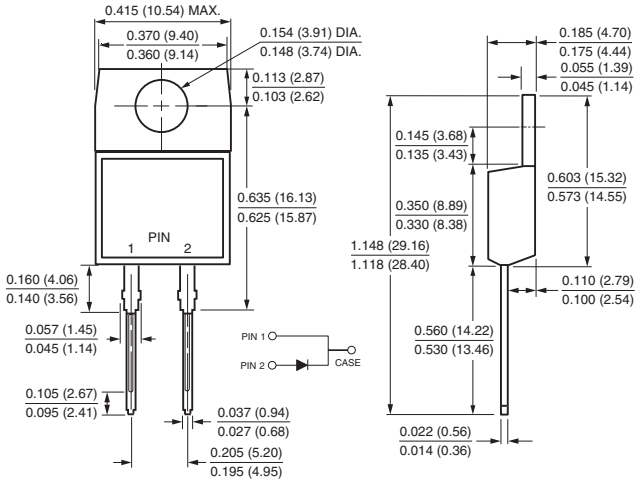


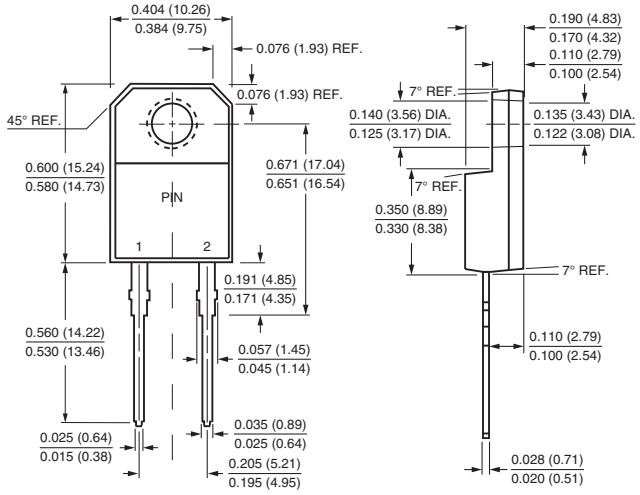
Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-220AC



ITO-220AC



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