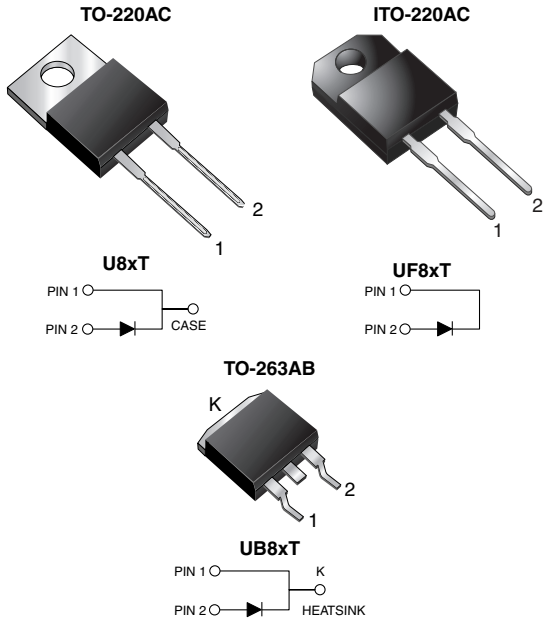
Ultrafast Rectifier



FEATURES

- Power pack
- Oxide planar chip junction
- Ultrafast recovery time
- Low switching losses, high efficiency
- High forward surge capability
- Meets MSL level 1, per J-STD-020, LF maximum peak of 245 °C (for TO-263AB package)
- Solder dip 275 °C max., 10 s per JESD 22-B106 (for TO-220AC and ITO-220AC package)
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912

RoHS COMPLIANT

TYPICAL APPLICATIONS

For use in high frequency rectification and freewheeling application in switching mode converters and inverters for consumer computer, automotive and telecommunication applications.

MECHANICAL DATA

Case: TO-220AC, ITO-220AC, TO-263AB

Molding compound meets UL 94V-0 flammability rating
Base P/N-E3 - 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 max.

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	8.0 A
V_{RRM}	100 V to 200 V
I_{FSM}	100 A
t_{rr}	20 ns
V_F at I_F = 8 A	0.79 V
T_J max.	150 °C
Package	TO-220AC, ITO-220AC, TO-263AB
Diode variations	Single die

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

PARAMETER	SYMBOL	U8BT	U8CT	U8DT	UNIT
Max. repetitive peak reverse voltage	V_{RRM}	100	150	200	V
Max. average forward rectified current (Fig. 1)	$V_{F(AV)}$	8.0			V
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I_{FSM}	100			A
Isolation voltage (ITO-220AC only) from terminals to heatsink t = 1 min	V_{AC}	1500			V
Operating junction and storage temperature range	T_J, T_{STG}	-55 to +150			°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	T_A = 25 °C	V_F	0.90	-	V
	I_F = 8 A			0.96	1.02	
	I_F = 20 A			1.12	-	
	I_F = 5 A	T_A = 150 °C		0.72	-	
	I_F = 8 A			0.79	0.86	
	I_F = 20 A			0.99	-	
Reverse current (2)	Rated V_R	T_A = 25 °C	I_R	-	10	µA
		T_A = 100 °C		200	500	
Reverse recovery time	I_F = 0.5 A, I_R = 1.0 A, I_{rr} = 0.25 A		t_{rr}	15	20	ns
Reverse recovery time	I_F = 1.0 A, dI/dt = 100 A/µs, V_R = 30 V, I_{rr} = 0.1 I_{RM}		t_{rr}	19	-	ns
Storage charge			Q_{rr}	7.1	-	nC
Reverse recovery time	I_F = 8 A, dI/dt = 50 A/µs, V_R = 30 V, I_{rr} = 0.1 I_{RM}		t_{rr}	23	-	ns
Storage charge			Q_{rr}	6.5	-	nC
Typical junction capacitance	4.0 V, 1 MHz		C_J	25	-	pF

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**	**U8xT**	**UF8xT**	**UB8xT**	**UNIT**
Typical thermal resistance from junction to case	$R_{\theta JC}$	4.0	5.0	4.0	°C/W

ORDERING INFORMATION (Example)					
PACKAGE	**PREFERRED P/N**	**UNIT WEIGHT (g)**	**PACKAGE CODE**	**BASE QUANTITY**	**DELIVERY MODE**
TO-220AC	U8DT-E3/4W	1.83	4W	50/tube	Tube
ITO-220AC	UF8DT-E3/4W	1.69	4W	50/tube	Tube
TO-263AB	UB8DT-E3/4W	1.37	4W	50/tube	Tube
TO-263AB	UB8DT-E3/8W	1.37	8W	800/reel	Tape and reel

RATINGS AND CHARACTERISTICS CURVES (T_A = 25 °C unless otherwise noted)

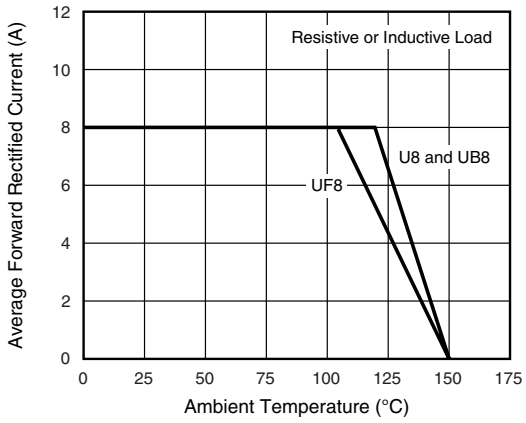


Fig. 1 - Max. Forward Current Derating Curve

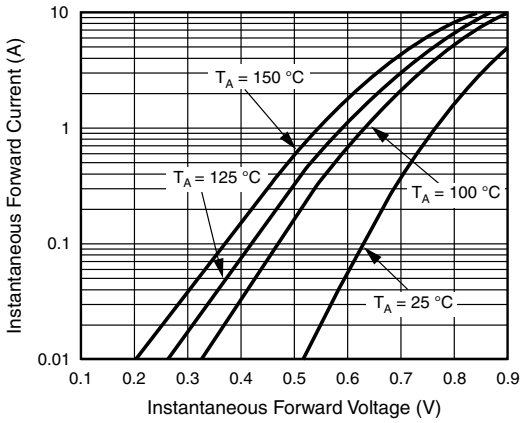


Fig. 3 - Typical Instantaneous Forward Charateristics

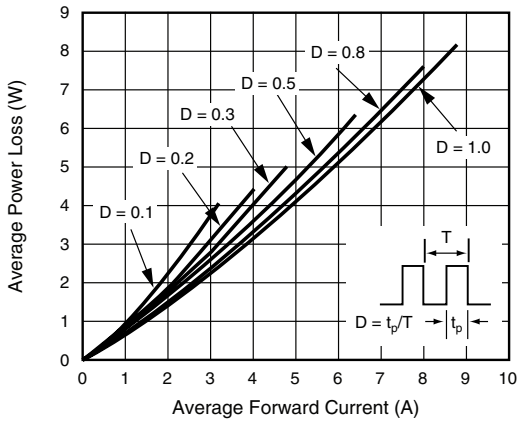


Fig. 2 - Forward Power Loss Characteristics

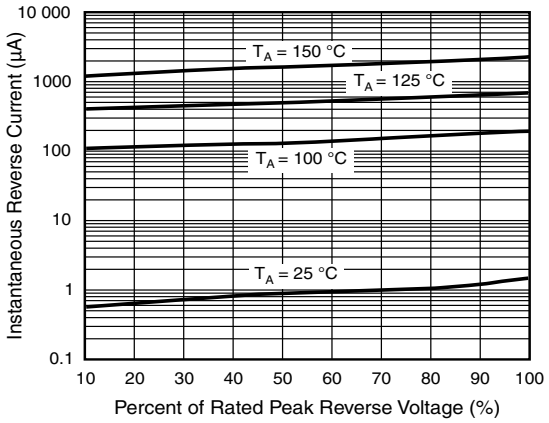


Fig. 4 - Typical Reverse Leakage Charateristics

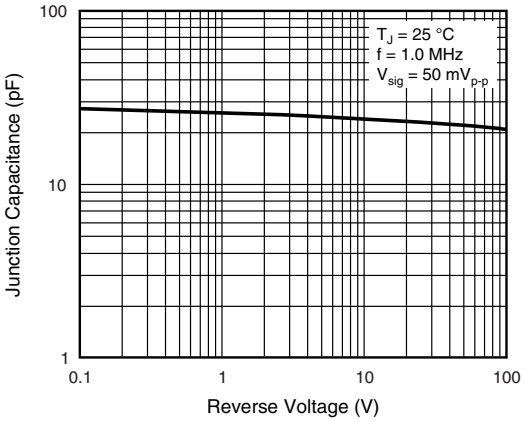
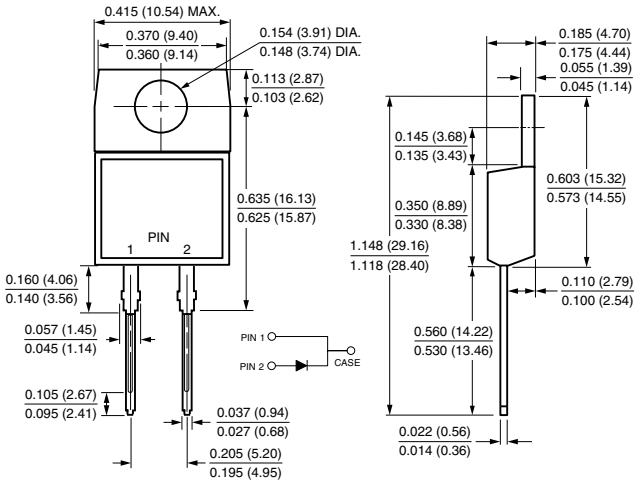


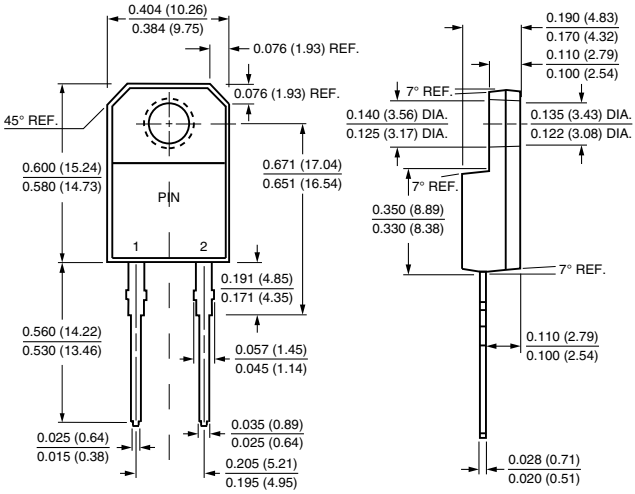
Fig. 5 - Typical Junction Capacitance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

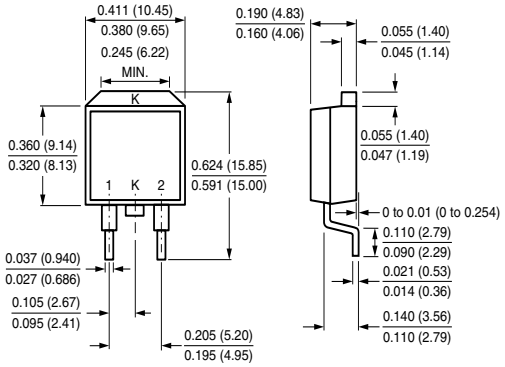
TO-220AC



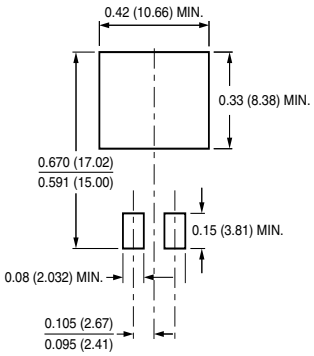
ITO-220AC



TO-263AB



Mounting Pad Layout



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