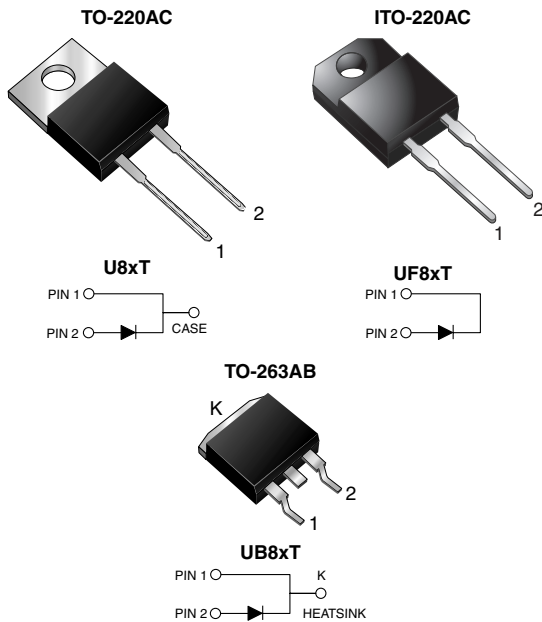


Ultrafast Rectifier



FEATURES

- 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 260 °C, 40 s (for TO-220AC and ITO-220AC package)
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC



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

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	
$I_{F(AV)}$	8.0 A
V_{RRM}	100 V to 200 V
I_{FSM}	100 A
t_{tr}	20 ns
V_F at $I_F = 8$ A	0.79 V
T_J max.	150 °C

MAXIMUM RATINGS ($T_C = 25$ °C unless otherwise noted)					
PARAMETER	SYMBOL	U8BT	U8CT	U8DT	UNIT
Maximum repetitive peak reverse voltage	V_{RRM}	100	150	200	V
Maximum 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

U(F,B)8BT thru U(F,B)8DT

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ELECTRICAL CHARACTERISTICS ($T_C = 25\text{ }^\circ\text{C}$ unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage ⁽¹⁾	$I_F = 5\text{ A}$ $I_F = 8\text{ A}$ $I_F = 20\text{ A}$	$T_A = 25\text{ }^\circ\text{C}$	V_F	0.90 0.96 1.12	- 1.02 -	V
	$I_F = 5\text{ A}$ $I_F = 8\text{ A}$ $I_F = 20\text{ A}$	$T_A = 150\text{ }^\circ\text{C}$		0.72 0.79 0.99	- 0.86 -	
Reverse current ⁽²⁾	rated V_R	$T_A = 25\text{ }^\circ\text{C}$ $T_A = 100\text{ }^\circ\text{C}$	I_R	- 200	10 500	μA mA
Reverse recovery time	$I_F = 0.5\text{ A}$, $I_R = 1.0\text{ A}$, $I_{rr} = 0.25\text{ A}$		t_{rr}	15	20	ns
Reverse recovery time	$I_F = 1.0\text{ A}$, $dI/dt = 100\text{ A}/\mu\text{s}$, $V_R = 30\text{ V}$, $I_{rr} = 0.1 I_{RM}$		t_{rr}	19	-	ns
Storage charge			Q_{rr}	7.1	-	nC
Reverse recovery time	$I_F = 8\text{ A}$, $dI/dt = 50\text{ A}/\mu\text{s}$, $V_R = 30\text{ V}$, $I_{rr} = 0.1 I_{RM}$		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 $\leq 40\text{ ms}$

THERMAL CHARACTERISTICS ($T_C = 25\text{ }^\circ\text{C}$ 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	$^\circ\text{C}/\text{W}$

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

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

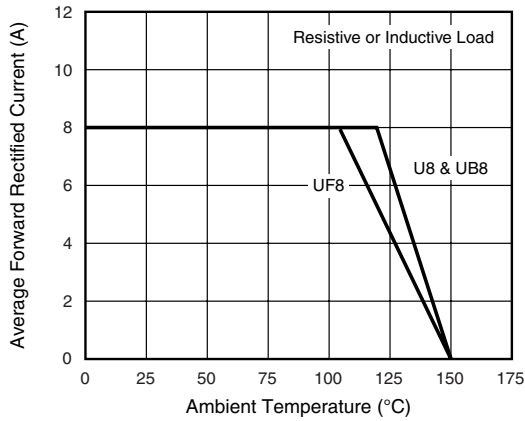


Figure 1. Maximum Forward Current Derating Curve

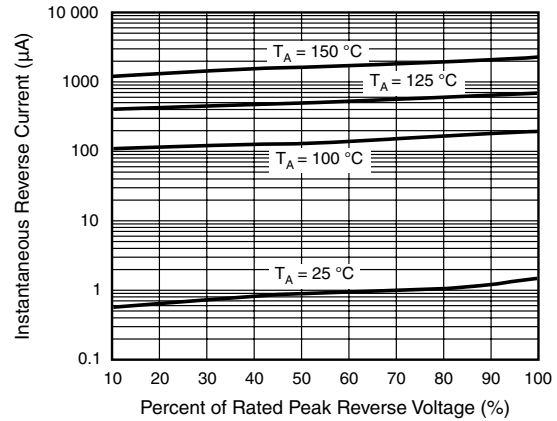


Figure 4. Typical Reverse Leakage Characteristics

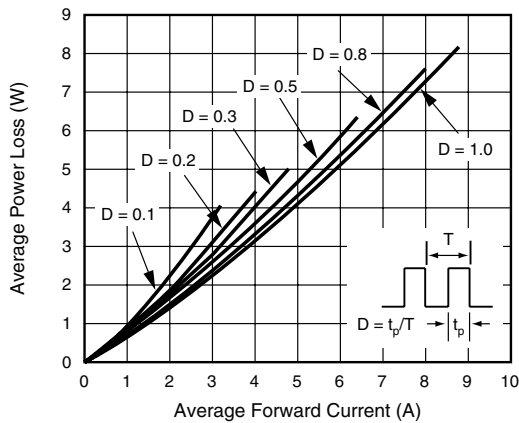


Figure 2. Forward Power Loss Characteristics

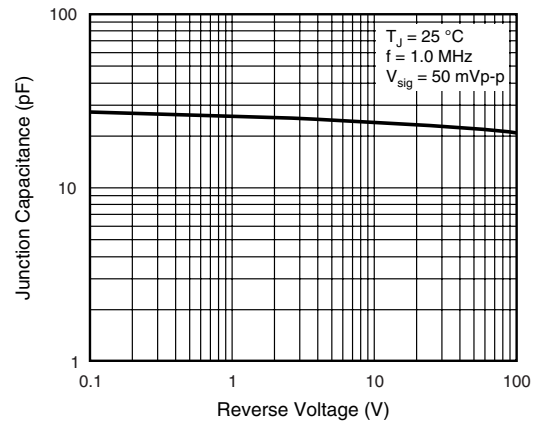


Figure 5. Typical Junction Capacitance

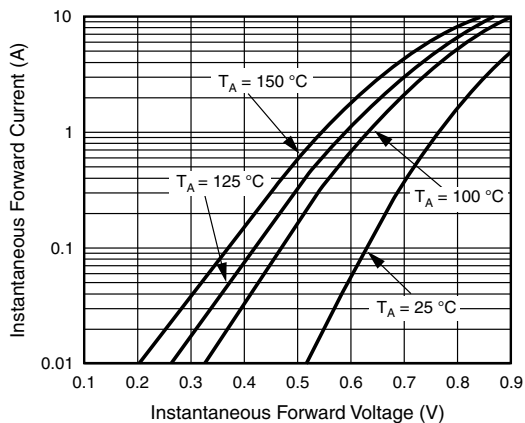


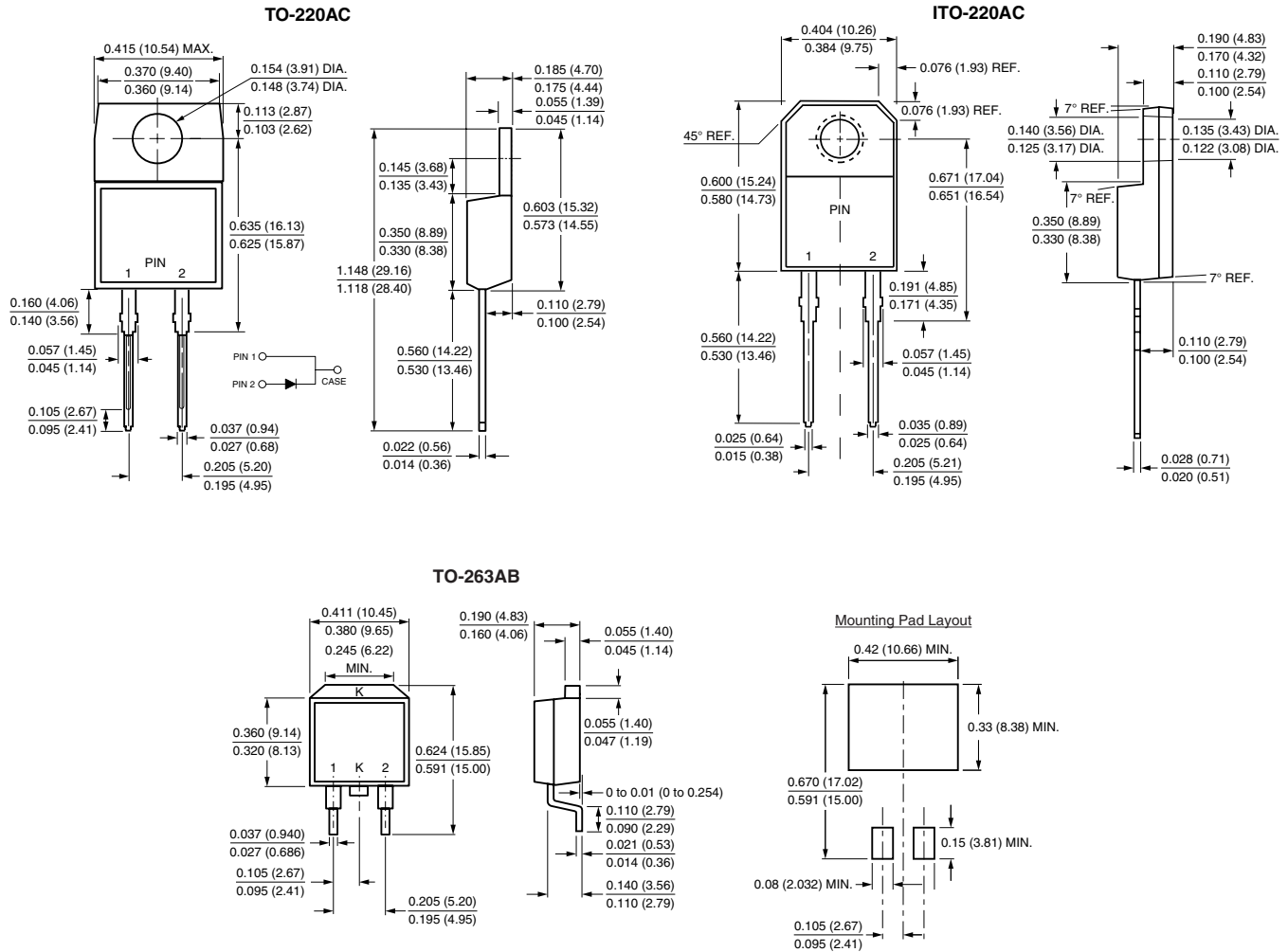
Figure 3. Typical Instantaneous Forward Characteristics

U(F,B)8BT thru U(F,B)8DT

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PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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