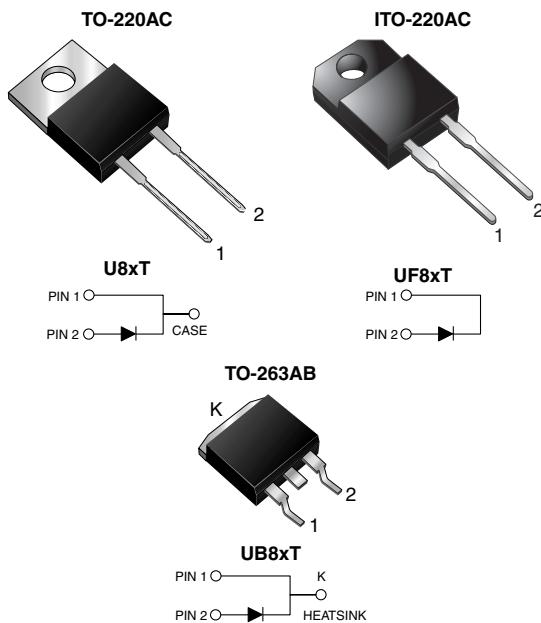


Ultrafast Rectifier



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)
- AEC-Q101 qualified
- 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 ($T_C = 25^\circ\text{C}$ unless otherwise noted)							
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT	
Instantaneous forward voltage ⁽¹⁾	$I_F = 5 \text{ A}$	$T_A = 25^\circ\text{C}$	V_F	0.90	-	V	
	$I_F = 8 \text{ A}$			0.96	1.02		
	$I_F = 20 \text{ A}$			1.12	-		
	$I_F = 5 \text{ A}$	$T_A = 150^\circ\text{C}$		0.72	-		
	$I_F = 8 \text{ A}$			0.79	0.86		
	$I_F = 20 \text{ A}$			0.99	-		
Reverse current ⁽²⁾	Rated V_R	$T_A = 25^\circ\text{C}$	I_R	-	10	μA	
		$T_A = 100^\circ\text{C}$		200	500		
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	$I_F = 1.0 \text{ A}, dI/dt = 100 \text{ A}/\mu\text{s}, V_R = 30 \text{ V}$	t_{rr}		19	-	ns	
Storage charge	$I_F = 1.0 \text{ A}, dI/dt = 100 \text{ A}/\mu\text{s}, V_R = 30 \text{ V}$	Q_{rr}		7.1	-	nC	
Reverse recovery time	$I_F = 8 \text{ A}, dI/dt = 50 \text{ A}/\mu\text{s}, V_R = 30 \text{ V}$	t_{rr}		23	-	ns	
Storage charge	$I_F = 8 \text{ A}, dI/dt = 50 \text{ A}/\mu\text{s}, V_R = 30 \text{ V}$	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 ($T_C = 25^\circ\text{C}$ 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

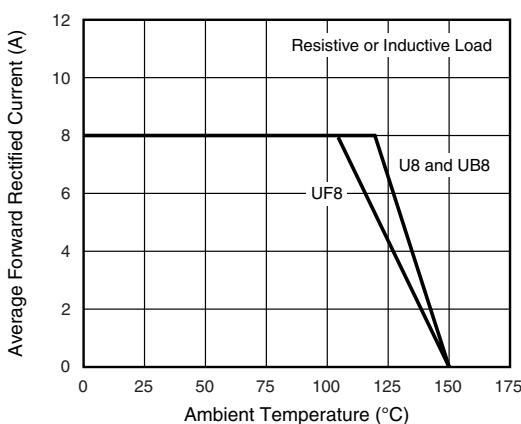
RATINGS AND CHARACTERISTICS CURVES ($T_A = 25^\circ\text{C}$ unless otherwise noted)


Fig. 1 - Max. Forward Current Derating Curve

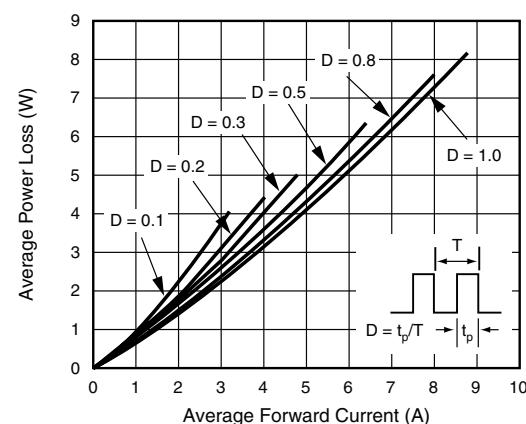


Fig. 2 - Forward Power Loss Characteristics

Fig. 4 - Typical Reverse Leakage Characteristics

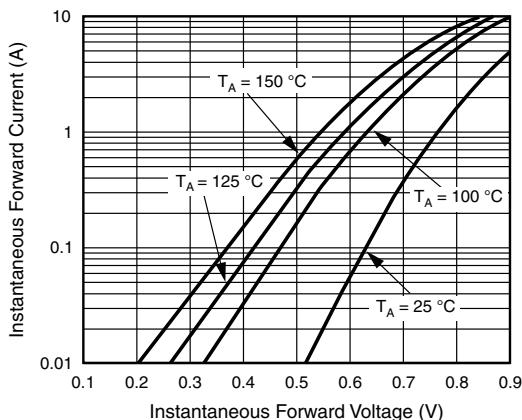


Fig. 3 - Typical Instantaneous Forward Charateristics

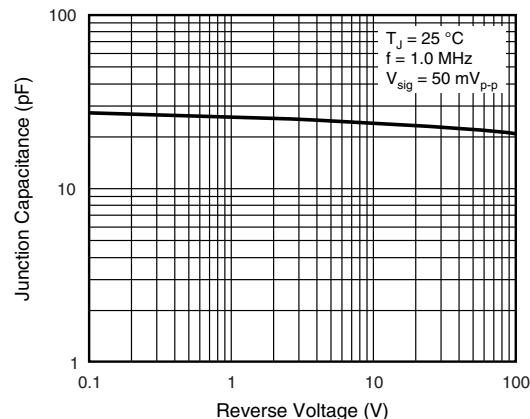
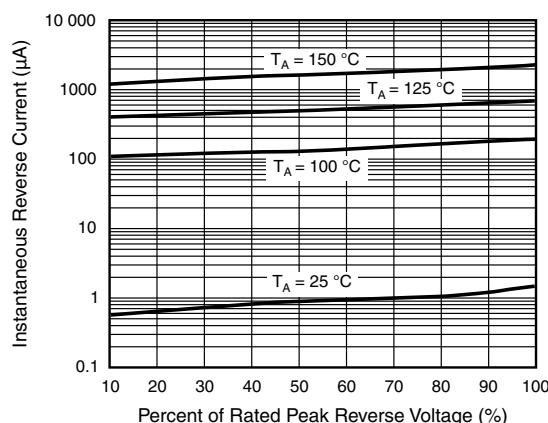
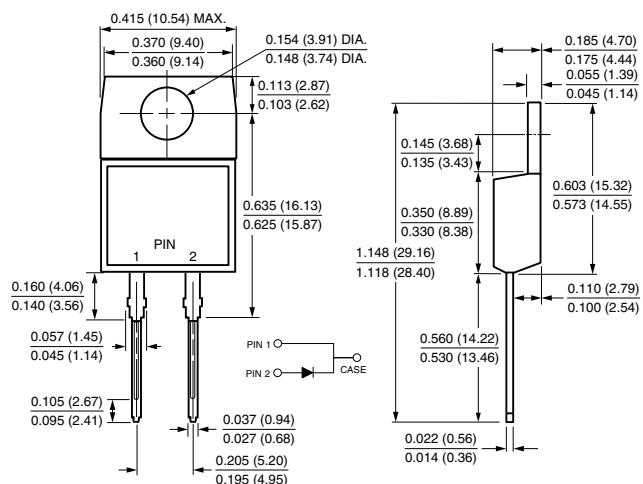
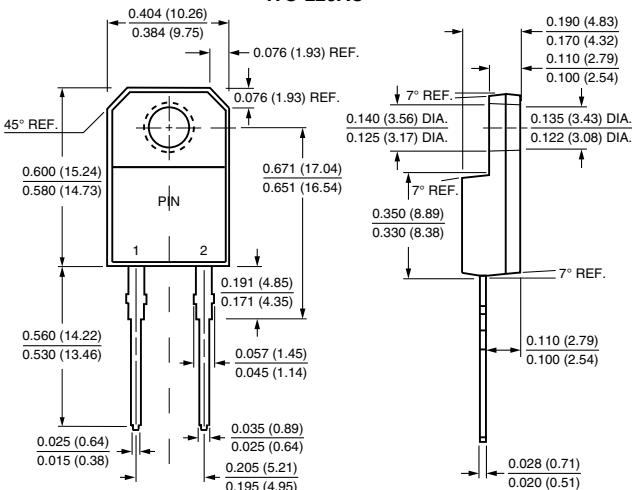
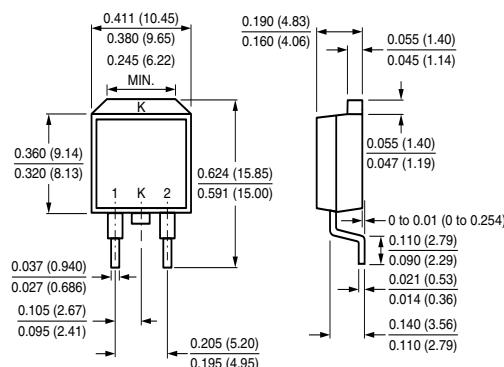
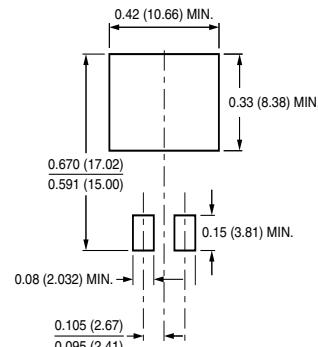


Fig. 5 - Typical Junction Capacitance



PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-220AC

ITO-220AC

TO-263AB

Mounting Pad Layout


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