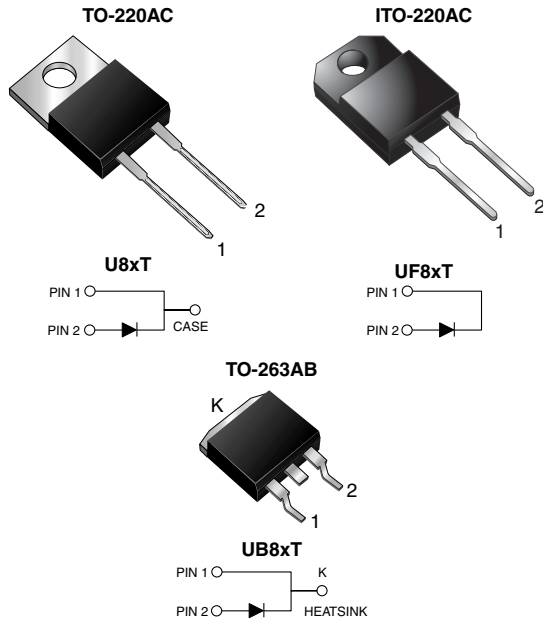


## Ultrafast Rectifier



### 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](http://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

<b>ELECTRICAL CHARACTERISTICS</b> ( $T_C = 25\text{ }^\circ\text{C}$ unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage <sup>(1)</sup>	$I_F = 5\text{ A}$	$T_A = 25\text{ }^\circ\text{C}$	$V_F$	0.90	-	V
	$I_F = 8\text{ A}$			0.96	1.02	
	$I_F = 20\text{ A}$			1.12	-	
	$I_F = 5\text{ A}$	$T_A = 150\text{ }^\circ\text{C}$		0.72	-	
	$I_F = 8\text{ A}$			0.79	0.86	
	$I_F = 20\text{ A}$			0.99	-	
Reverse current <sup>(2)</sup>	Rated $V_R$	$T_A = 25\text{ }^\circ\text{C}$	$I_R$	-	10	$\mu\text{A}$
		$T_A = 100\text{ }^\circ\text{C}$		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	$I_F = 1.0\text{ A}, dI/dt = 100\text{ A}/\mu\text{s}, V_R = 30\text{ V}, I_{rr} = 0.1 I_{RM}$		$t_{rr}$	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  $\mu\text{s}$  pulse width, 1 % duty cycle  
 (2) Pulse test: Pulse width  $\leq 40\text{ ms}$

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

<b>ORDERING INFORMATION</b> (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

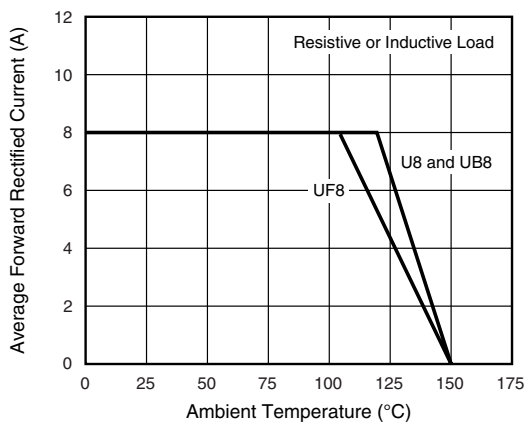
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25\text{ }^\circ\text{C}$  unless otherwise noted)


Fig. 1 - Max. Forward Current Derating Curve

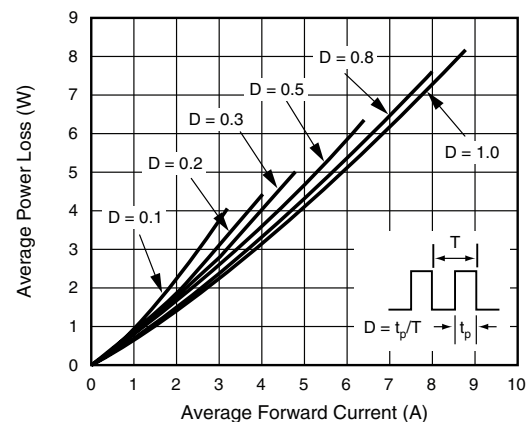


Fig. 2 - Forward Power Loss Characteristics

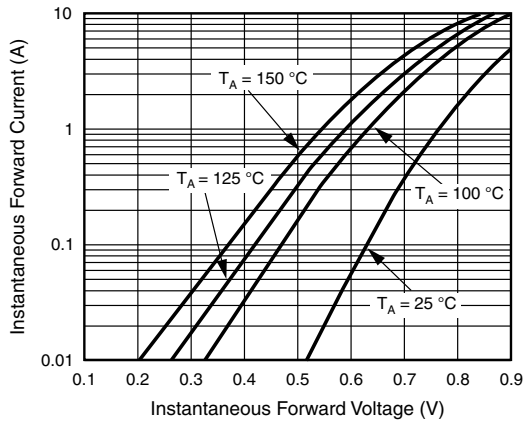


Fig. 3 - Typical Instantaneous Forward Characteristics

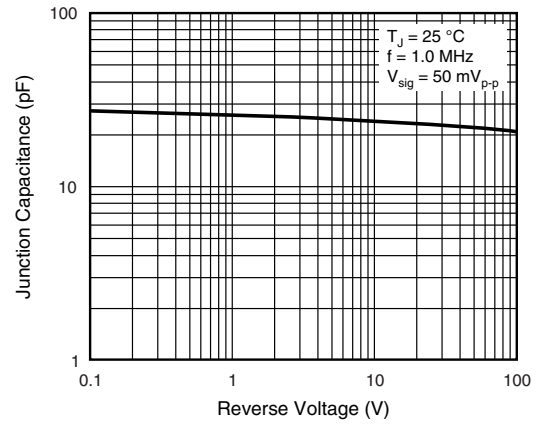
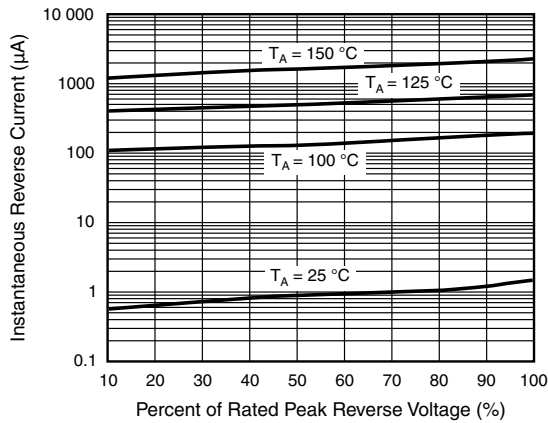


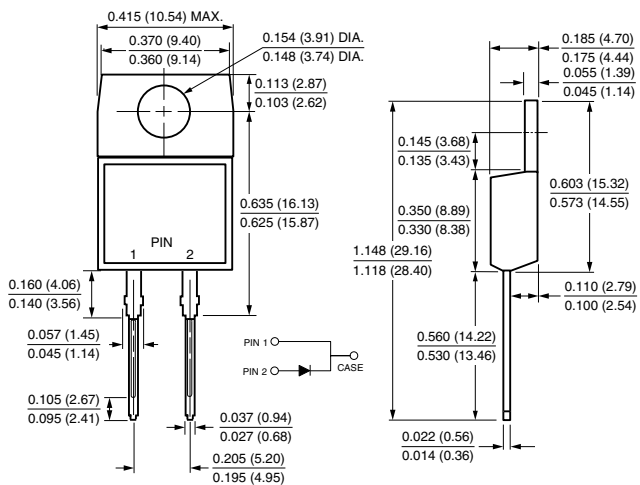
Fig. 5 - Typical Junction Capacitance



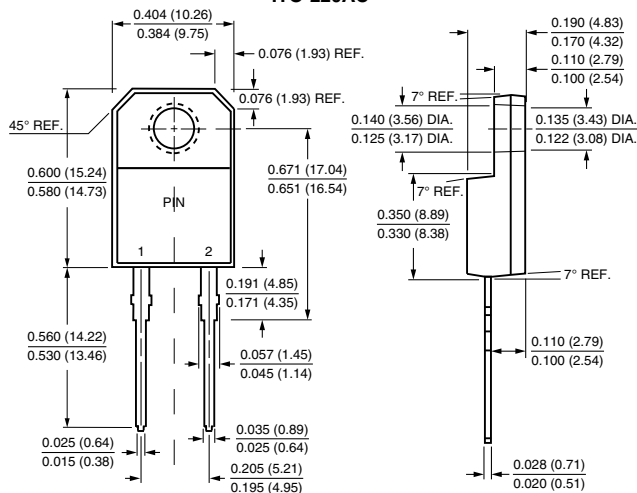


## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

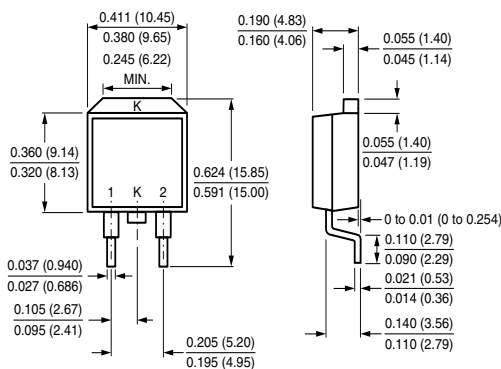
### TO-220AC



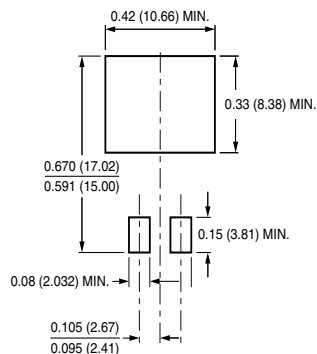
### ITO-220AC



### TO-263AB



### Mounting Pad Layout





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