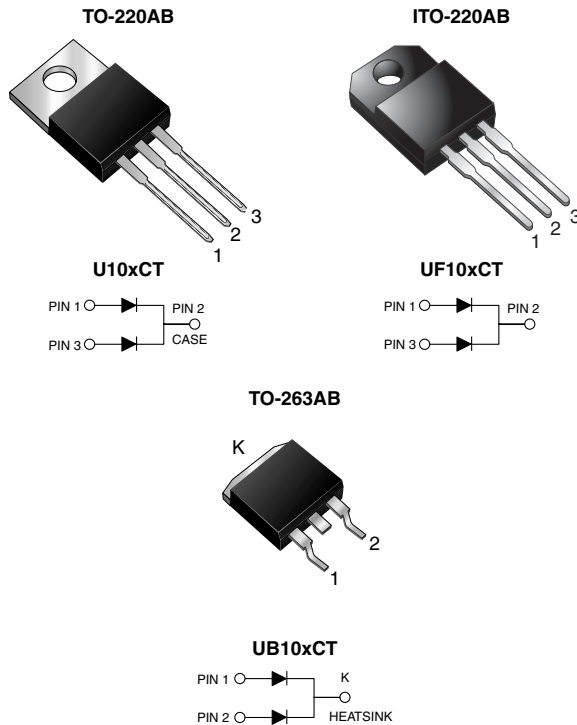


## Dual Common Cathode Ultrafast Rectifier



### FEATURES

- Power pack
- Oxide planar chip junction
- Ultrafast recovery time
- Soft recovery characteristics
- Low switching losses, high efficiency
- High forward surge capability
- High frequency operation
- Meets MSL level 1, per J-STD-020, LF max. peak of 245 °C (for TO-263AB package)
- Solder dip 275 °C max. 10 s, per JESD 22-B106 (for TO-220AB and ITO-220AB package)
- 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 low voltage, high frequency rectifier of switching power supplies, freewheeling diodes, DC/DC converters or polarity protection application.

### MECHANICAL DATA

**Case:** TO-220AB, ITO-220AB and TO-263AB

Molding compound meets UL 94 V-0 flammability rating Base P/N-E3 - RoHS-compliant, and commercial grade

**Terminals:** Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

E3 suffix for consumer grade, meets JESD 201 class 1A whisker test

**Polarity:** As marked

**Mounting Torque:** 10 in-lbs max.

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	2 x 5.0 A
$V_{RRM}$	100 V to 200 V
$I_{FSM}$	55 A
$t_{rr}$	25 ns
$V_F$	0.89 V
$T_J$ max.	150 °C
Package	TO-220AB, ITO-220AB, TO-263AB
Diode variations	Dual Common Cathode

MAXIMUM RATINGS ( $T_C = 25\text{ °C}$ unless otherwise noted)					
PARAMETER	SYMBOL	U(F,B)10BCT	U(F,B)10CCT	U(F,B)10DCT	UNIT
Max. repetitive peak reverse voltage	$V_{RRM}$	100	150	200	V
Max. average forward rectified current (Fig. 1)	$I_{F(AV)}$	total device	10		A
		per diode	5.0		
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode	$I_{FSM}$	55		A	
Electrostatic discharge capacitor voltage, human body model: C = 150 pF, R = 1.5 kΩ (contact mode)	$V_C$	8		kV	
Isolation voltage (ITO-220AB only) from terminal to heatsink t = 1 min per diode	$V_{AC}$	1500		V	
Operating junction and storage temperature range	$T_J, T_{STG}$	-55 to +150		°C	



ELECTRICAL CHARACTERISTICS ( $T_C = 25\text{ }^\circ\text{C}$ unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Max. instantaneous forward voltage per diode <sup>(1)</sup>	$I_F = 3.0\text{ A}$	$T_J = 25\text{ }^\circ\text{C}$	$V_F$	0.97	-	V
	$I_F = 5.0\text{ A}$			1.05	1.10	
	$I_F = 3.0\text{ A}$	$T_J = 150\text{ }^\circ\text{C}$		0.79	-	
	$I_F = 5.0\text{ A}$			0.89	0.95	
Max. reverse current per diode <sup>(2)</sup>	rated $V_R$	$T_J = 25\text{ }^\circ\text{C}$	$I_R$	0.5	5.0	$\mu\text{A}$
		$T_J = 100\text{ }^\circ\text{C}$		100	200	
Max. reverse recovery time per diode	$I_F = 0.5\text{ A}, I_R = 1.0\text{ A}, I_{rr} = 0.25\text{ A}$		$t_{rr}$	13	20	ns
	$I_F = 1.0\text{ A}, di/dt = 100\text{ A}/\mu\text{s}, V_R = 30\text{ V}, I_{rr} = 0.1\text{ IRM}$			19.7	25	
Max. stored charge per diode	$I_F = 2\text{ A}, di/dt = 20\text{ A}/\mu\text{s}, V_R = 30\text{ V}, I_{rr} = 0.1\text{ IRM}$		$Q_{rr}$	3	9	nC

**Notes**

- (1) Pulse test: 300  $\mu\text{s}$  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	U10XCT	UF10XCT	UB10XCT	UNIT
Typical thermal resistance per diode	$R_{\theta JA}$	25	25	25	$^\circ\text{C}/\text{W}$
	$R_{\theta JC}$	5.3	7.5	5.3	

ORDERING INFORMATION (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AB	U10DCT-E3/4W	1.87	4W	50/tube	Tube
ITO-220AB	UF10DCT-E3/4W	1.77	4W	50/tube	Tube
TO-263AB	UB10DCT-E3/4W	1.31	4W	50/tube	Tube
TO-263AB	UB10DCT-E3/8W	1.31	8W	800/reel	Tape and reel

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

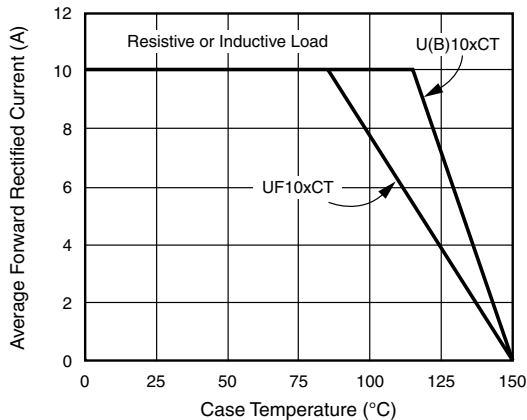


Fig. 1 - Max. Forward Current Derating Curve

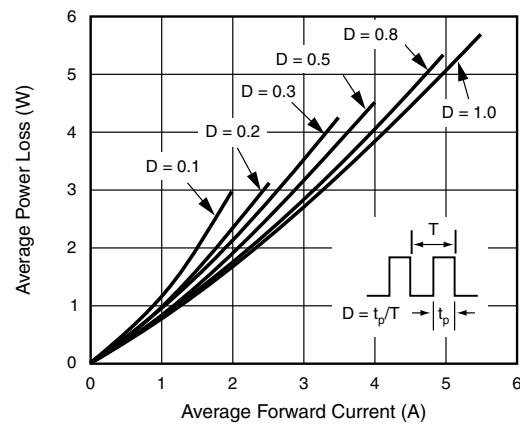


Fig. 2 - Forward Power Loss Characteristics Per Diode

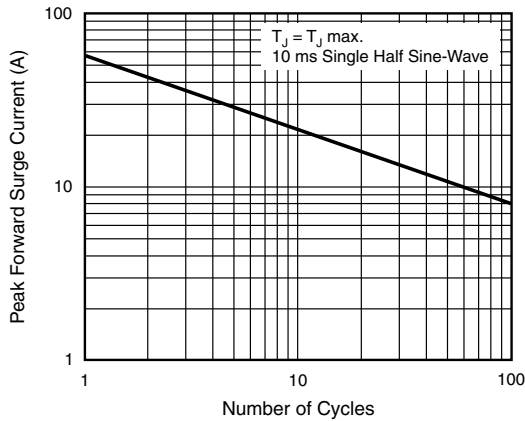


Fig. 3 - Max. Non-Repetitive Peak Forward Surge Current Per Diode

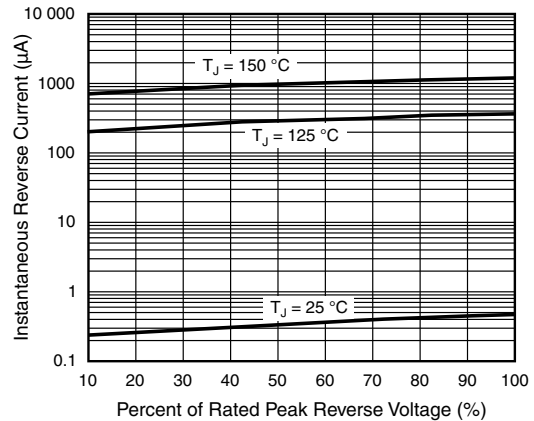


Fig. 5 - Typical Reverse Characteristics Per Diode

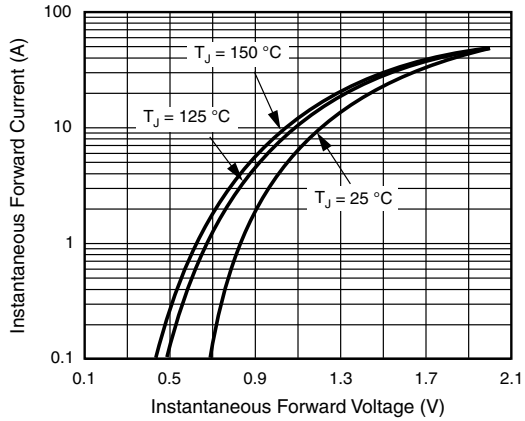


Fig. 4 - Typical Instantaneous Forward Characteristics Per Diode

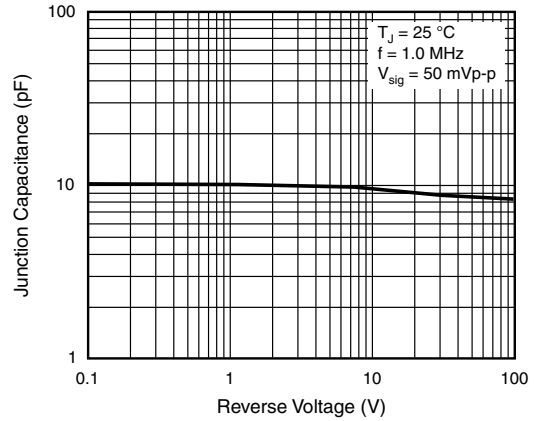
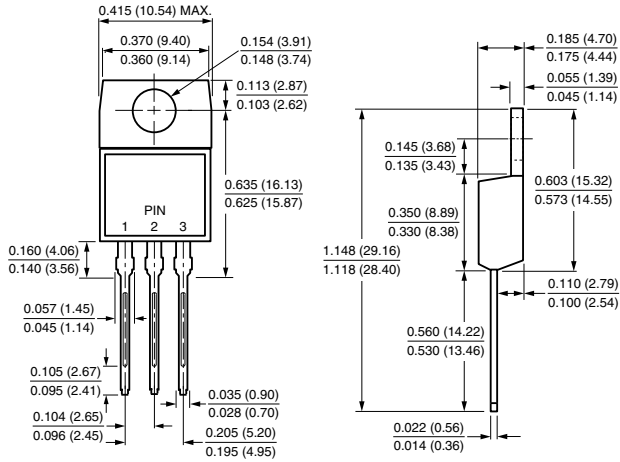


Fig. 6 - Typical Junction Capacitance Per Diode

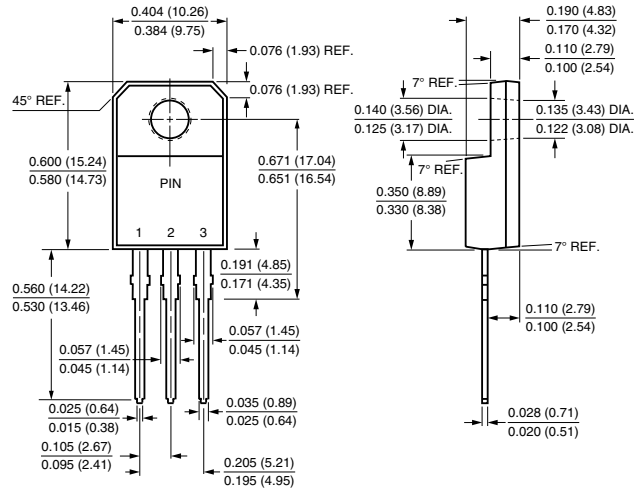


### PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

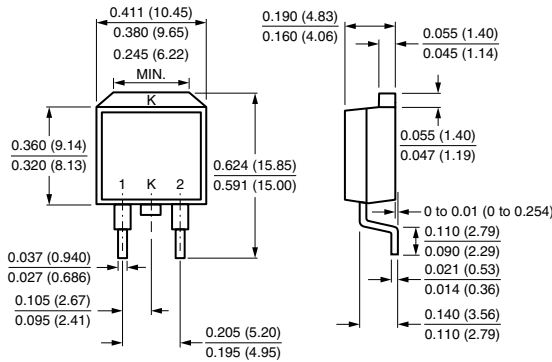
#### TO-220AB



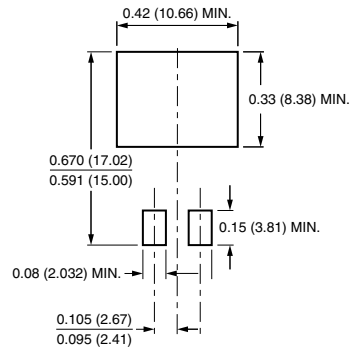
#### ITO-220AB



#### TO-263AB



#### Mounting Pad Layout





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