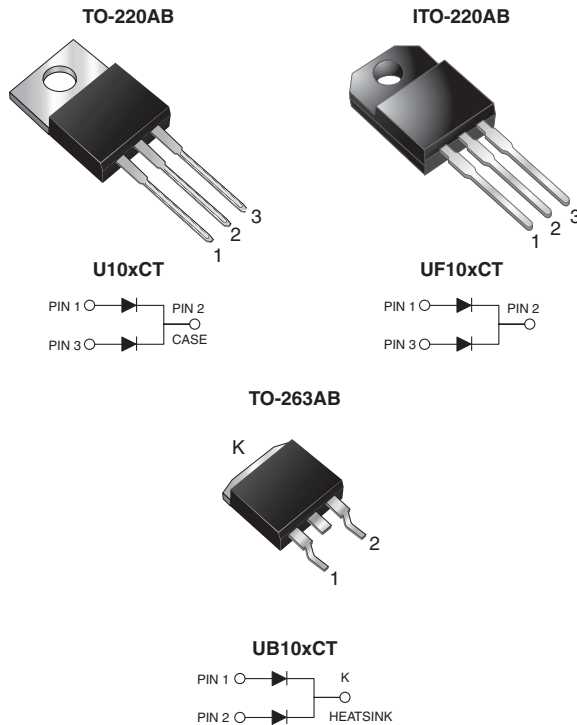




**THE DATASHEET OF
U10DCT-E3/4W**



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



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 ⁽¹⁾	$I_F = 3.0\text{ A}$	$T_J = 25\text{ }^\circ\text{C}$	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 ⁽²⁾	rated V_R	$T_J = 25\text{ }^\circ\text{C}$	I_R	0.5	5.0	μA
		$T_J = 100\text{ }^\circ\text{C}$		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 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	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)

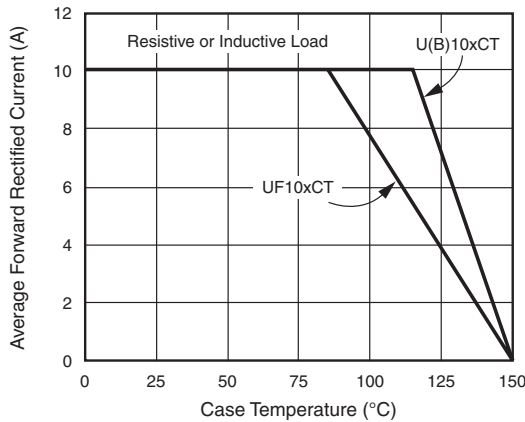


Fig. 1 - Max. Forward Current Derating Curve

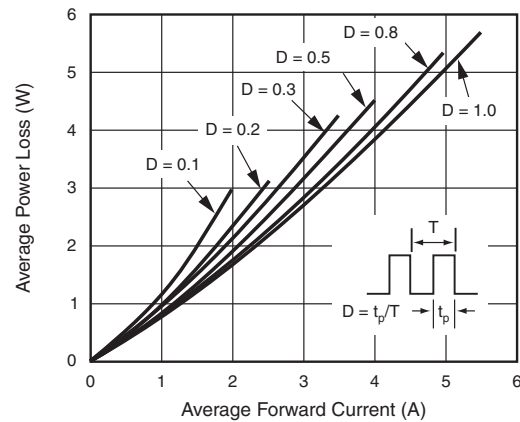


Fig. 2 - Forward Power Loss Characteristics Per Diode

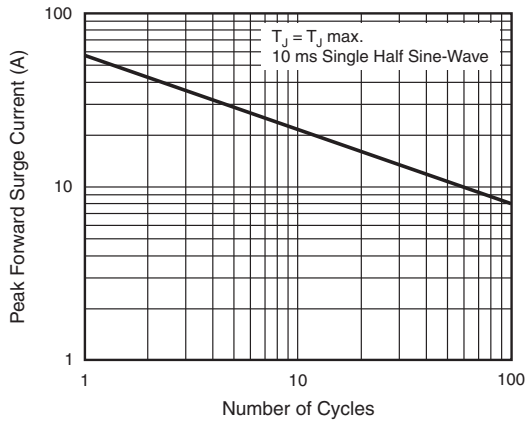


Fig. 3 - Max. Non-Repetitive Peak Forward Surge Current Per Diode

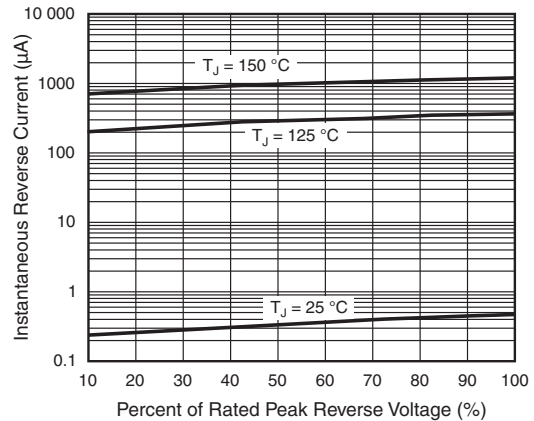


Fig. 5 - Typical Reverse Characteristics Per Diode

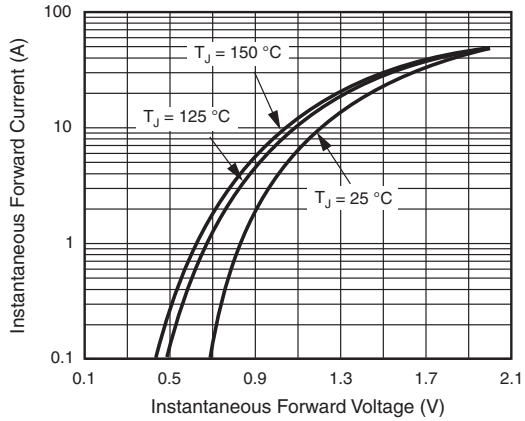


Fig. 4 - Typical Instantaneous Forward Characteristics Per Diode

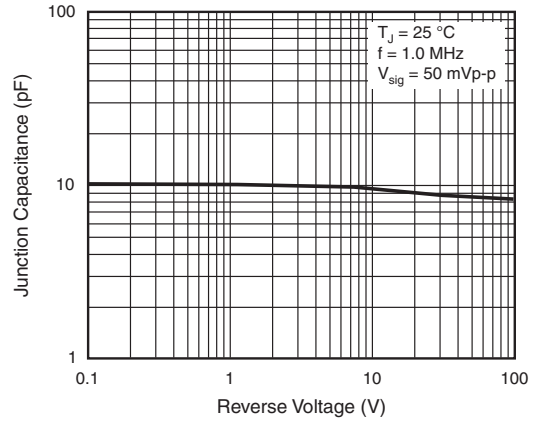
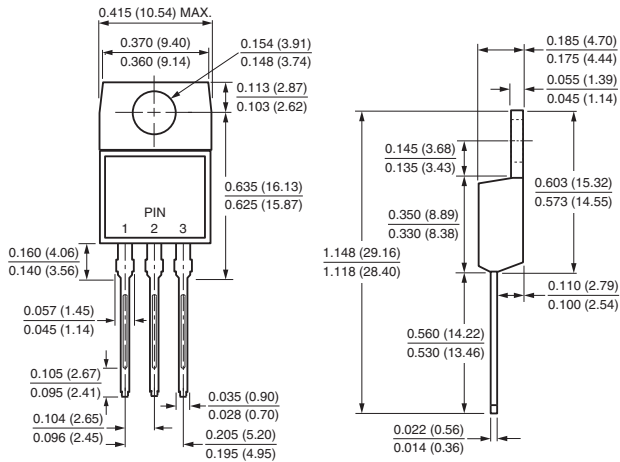


Fig. 6 - Typical Junction Capacitance Per Diode

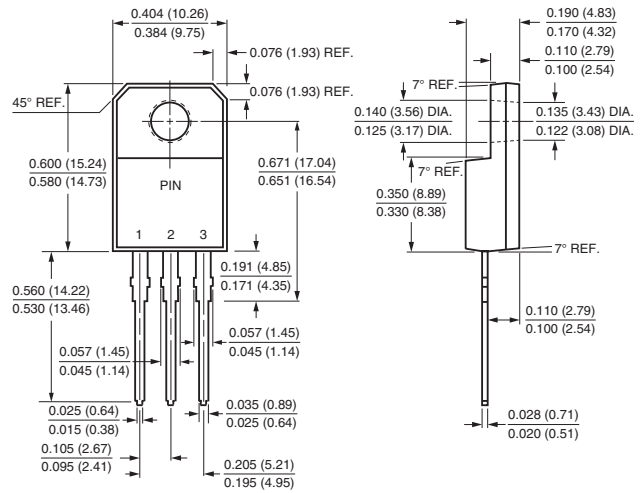


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

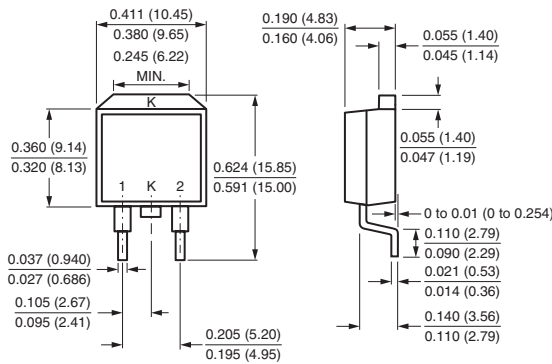
TO-220AB



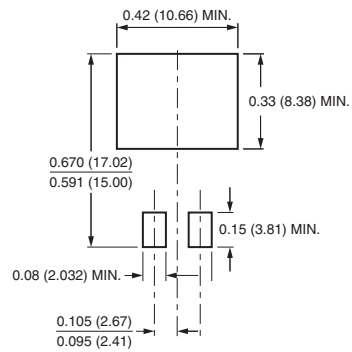
ITO-220AB



TO-263AB



Mounting Pad Layout





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