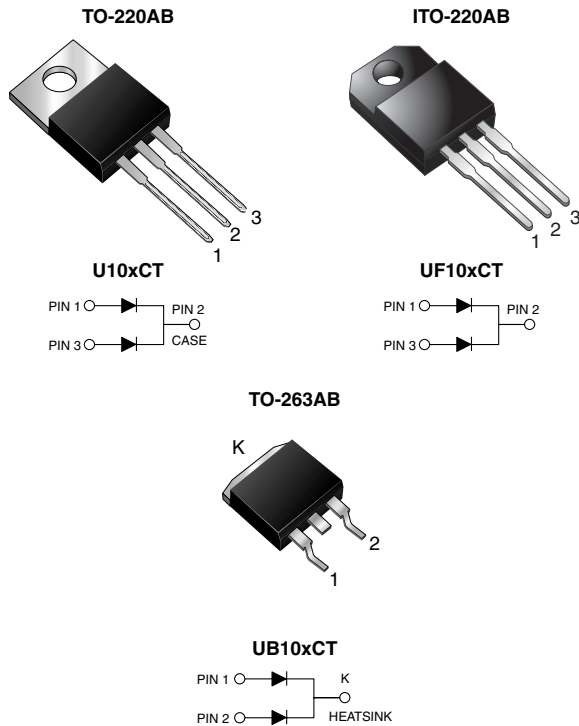




Dual Common-Cathode Ultrafast Rectifier



FEATURES

- 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 maximum peak of 245 °C (for TO-263AB package)
- Solder dip 260 °C, 40 s (for TO-220AB, IT-220AB)
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC



RoHS COMPLIANT

TYPICAL APPLICATIONS

For use in low voltage, high frequency rectifier of switching power supplies, freewheeling diodes, dc-to-dc converters or polarity protection application.

MECHANICAL DATA

Case: TO-220AB, ITO-220AB and 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	
$I_{F(AV)}$	5 A x 2
V_{RRM}	100 V, 150 V, 200 V
I_{FSM}	55 A
t_{tr}	25 ns
V_F	0.89 V
$T_J \text{ max.}$	150 °C

MAXIMUM RATINGS ($T_C = 25 \text{ }^\circ\text{C}$ unless otherwise noted)					
PARAMETER	SYMBOL	U(F,B)10BCT	U(F,B)10CCT	U(F,B)10DCT	UNIT
Maximum repetitive peak reverse voltage	V_{RRM}	100	150	200	V
Max. average forward rectified current (Fig. 1) total device per diode	$I_{F(AV)}$	10		5	A
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 k Ω (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

U(F,B)10BCT thru U(F,B)10DCT

New Product



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ELECTRICAL CHARACTERISTICS ($T_C = 25\text{ }^\circ\text{C}$ unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Maximum instantaneous forward voltage per diode ⁽¹⁾	$I_F = 3.0\text{ A}$ $I_F = 5.0\text{ A}$	$T_J = 25\text{ }^\circ\text{C}$	V_F	0.97 1.05	- 1.10	V
	$I_F = 3.0\text{ A}$ $I_F = 5.0\text{ A}$	$T_J = 150\text{ }^\circ\text{C}$		0.79 0.89	- 0.95	
Maximum reverse current per diode ⁽²⁾	rated V_R	$T_J = 25\text{ }^\circ\text{C}$ $T_J = 100\text{ }^\circ\text{C}$	I_R	0.5 100	5.0 200	μA
Maximum 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
	$I_F = 1.0\text{ A}, dI/dt = 100\text{ A}/\mu\text{s},$ $V_R = 30\text{ V}, I_{rr} = 0.1 I_{RM}$			19.7	25	
Maximum stored charge per diode	$I_F = 2\text{ A}, dI/dt = 20\text{ A}/\mu\text{s},$ $V_R = 30\text{ V}, I_{rr} = 0.1 I_{RM}$		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	$R_{\theta JA}$ $R_{\theta JC}$	25 5.3	25 7.5	25 5.3	$^\circ\text{C}/\text{W}$

ORDERING INFORMATION (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT	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)

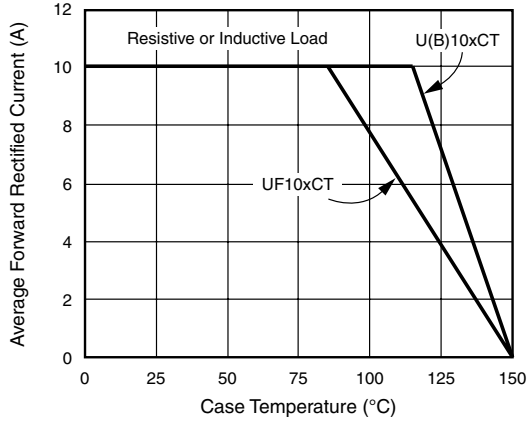


Figure 1. Maximum Forward Current Derating Curve

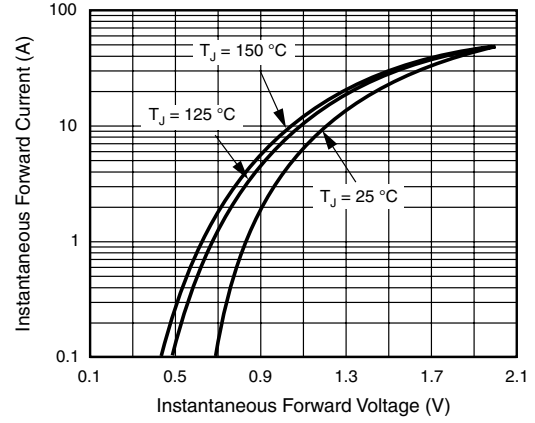


Figure 4. Typical Instantaneous Forward Characteristics Per Diode

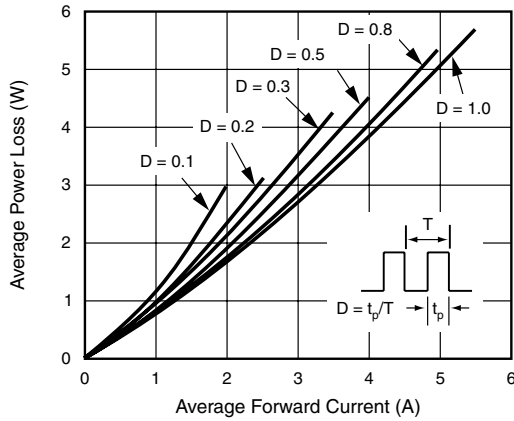


Figure 2. Forward Power Loss Characteristics Per Diode

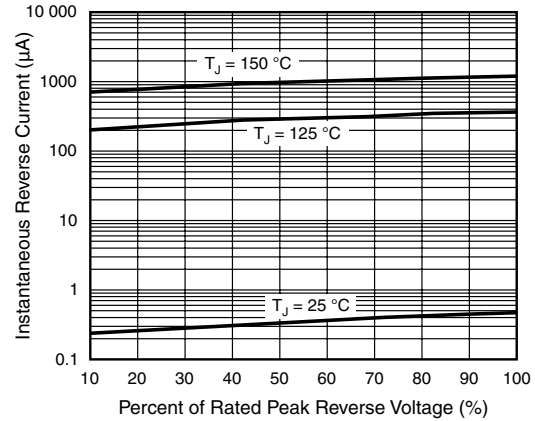


Figure 5. Typical Reverse Characteristics Per Diode

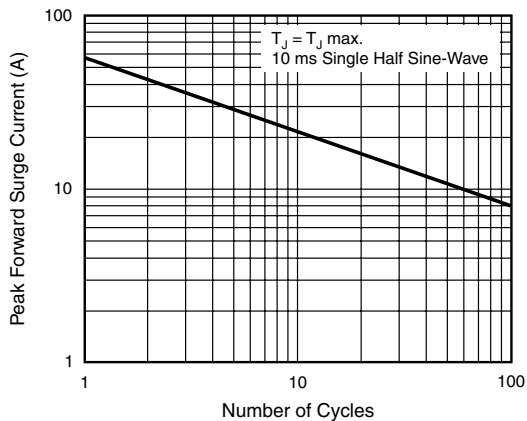


Figure 3. Maximum Non-Repetitive Peak Forward Surge Current Per Diode

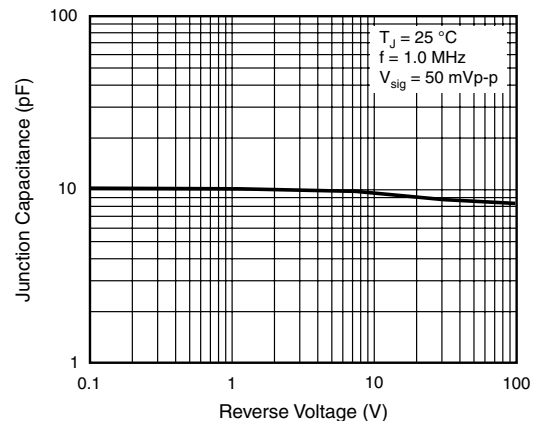


Figure 6. Typical Junction Capacitance Per Diode

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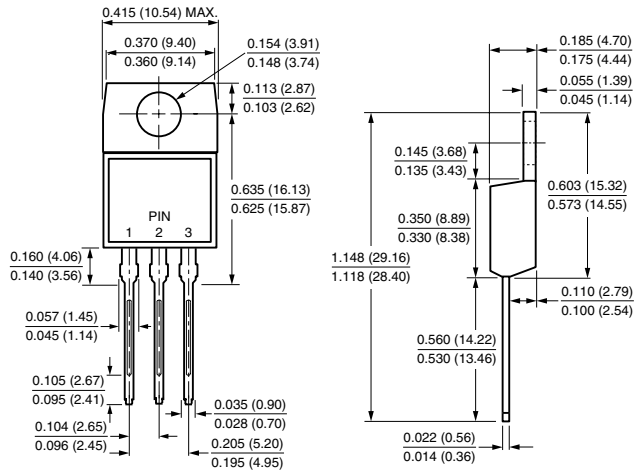
U(F,B)10BCT thru U(F,B)10DCT

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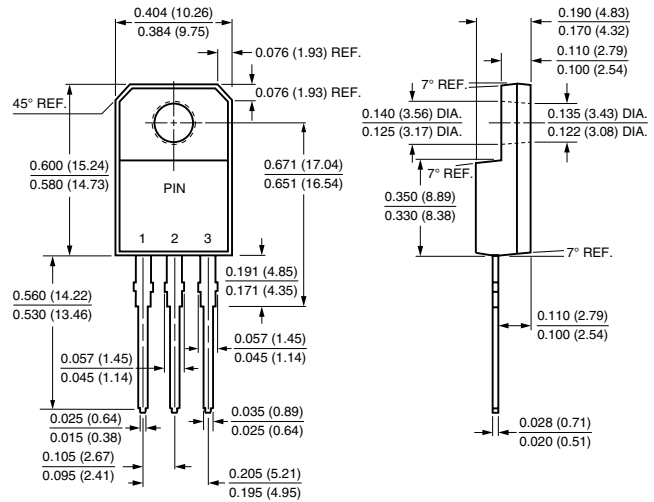


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

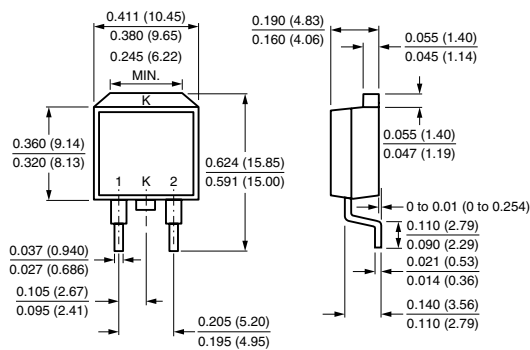
TO-220AB



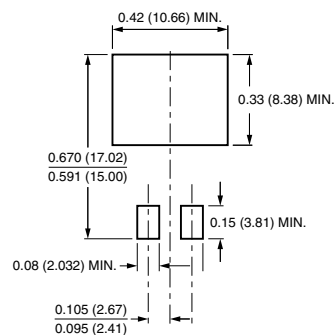
ITO-220AB



TO-263AB



Mounting Pad Layout





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