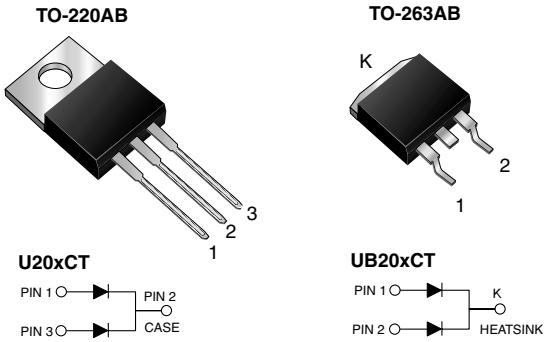
Dual Common-Cathode Ultrafast Plastic Rectifier



FEATURES

- Oxide planar chip junction
- Ultrafast recovery time
- Soft recovery characteristics
- 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 260 °C, 40 s (for TO-220AB package)
- 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 specifically for DCM application.

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	10 A x 2
V_{RRM}	100 V, 150 V, 200 V
I_{FSM}	100 A
t_{rr}	26 ns
V_F at I_F = 10 A	0.834 V
T_J max.	150 °C

MECHANICAL DATA

Case: TO-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

MAXIMUM RATINGS (T_C = 25 °C unless otherwise noted)

PARAMETER	SYMBOL	U(B)20BCT	U(B)20CCT	U(B)20DCT	UNIT
Maximum repetitive peak reverse voltage	V_{RRM}	100	150	200	V
Max. average forward rectified current (Fig. 1) total device per diode	$I_{F(AV)}$	20 10			A
Peak forward surge current 10 ms single half sine-wave superimposed on rated load per diode	I_{FSM}	100			A
Electrostatic discharge capacitor voltage, human body model: C = 150 pF, R = 1.5 kΩ (contact mode)	V_C	8			kV
Operating junction and storage temperature range	T_J, T_{STG}	- 55 to + 150			°C

ELECTRICAL CHARACTERISTICS (T_C = 25 °C unless otherwise noted)						
PARAMETER	**TEST CONDITIONS**		**SYMBOL**	**TYP.**	**MAX.**	**UNIT**
Instantaneous forward voltage per diode (1)	I_F = 5.0 A I_F = 10 A	T_J = 25 °C	V_F	0.854 0.931	- 1.00	V
	I_F = 5.0 A I_F = 10 A	T_J = 100 °C		0.760 0.834	- 0.91	
Reverse current per diode (2)	rated V_R	T_J = 25 °C T_J = 100 °C	I_R	1.2 120	15 500	µA
Reverse recovery time per diode	I_F = 0.5 A, I_R = 1.0 A, I_{rr} = 0.25 A		t_{rr}	26	35	ns
Reverse recovery time per diode	I_F = 10 A, dIdt = 20 A/µs, V_R = 200 V, I_{rr} = 0.1 I_{RM}		t_{rr}	73	80	ns
Stored charge per diode			Q_{rr}	30	-	nC
Forward recovery time per diode	I_F = 10 A, dI/dt = 80 A/µs, V_F = 1.1 x V_F max.		t_{fr}	160	-	ns
Peak forward voltage per diode			V_{FP}	2.6	-	V

Notes:

(1) Pulse test: 300 µs pulse width, 1 % duty cycle

(2) Pulse test: Pulse width ≤ 40 ms

THERMAL CHARACTERISTICS (T_C = 25 °C unless otherwise noted)				
PARAMETER	**SYMBOL**	**U20xCT**	**UB20xCT**	**UNIT**
Typical thermal resistance per diode	$R_{\theta JC}$	3.0		°C/W

ORDERING INFORMATION (Example)					
PACKAGE	**PREFERRED P/N**	**UNIT WEIGHT**	**PACKAGE CODE**	**BASE QUANTITY**	**DELIVERY MODE**
TO-220AB	U20DCT-E3/4W	1.87	4W	50/tube	Tube
TO-263AB	UB20DCT-E3/4W	1.37	4W	50/tube	Tube
TO-263AB	UB20DCT-E3/8W	1.37	8W	800/reel	Tape and reel

RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

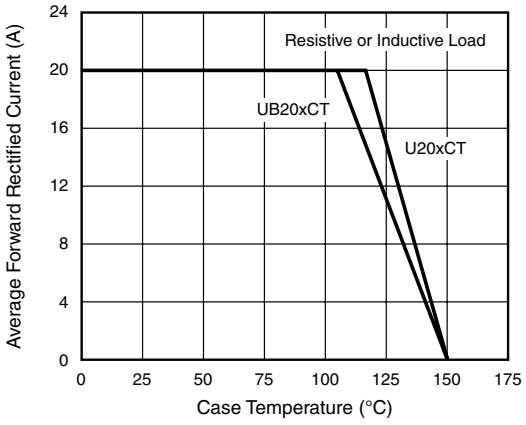


Figure 1. Maximum Forward Current Derating Curve

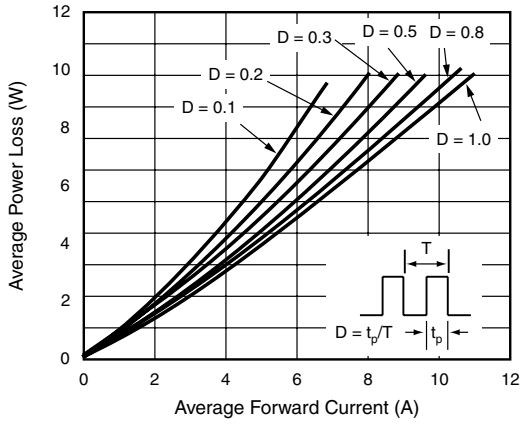


Figure 2. Forward Power Loss Characteristics Per Diode

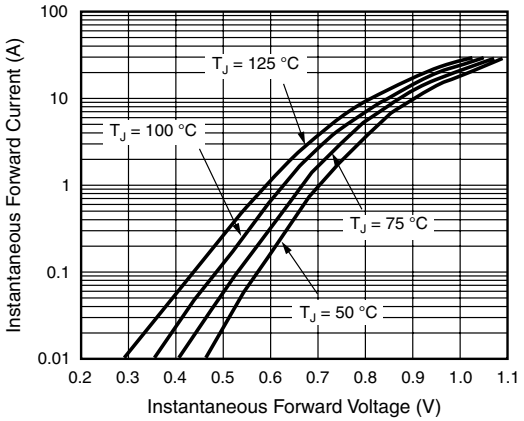


Figure 3. Typical Instantaneous Forward Characteristics Per Diode

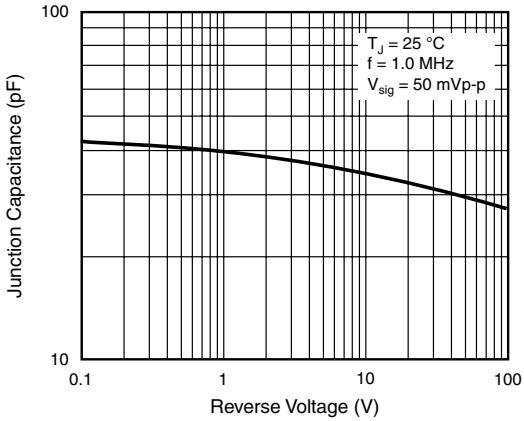


Figure 5. Typical Junction Capacitance Per Diode

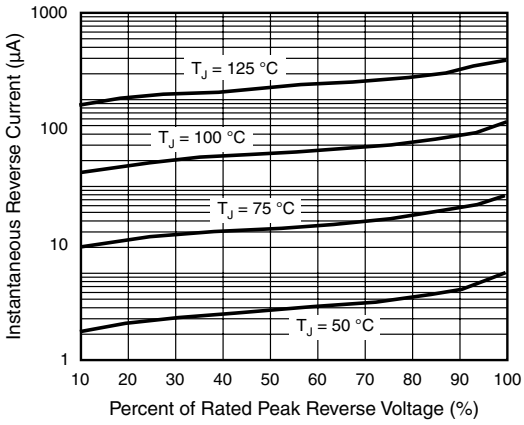


Figure 4. Typical Reverse Characteristics Per Diode

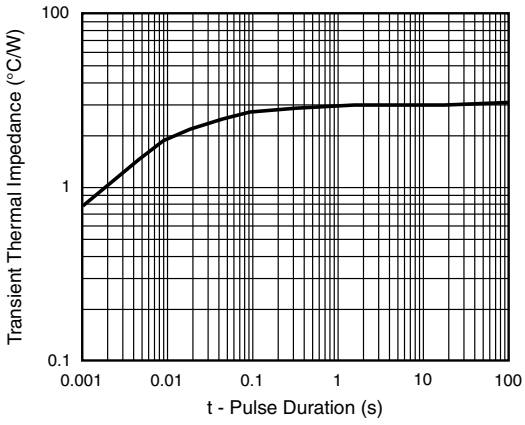
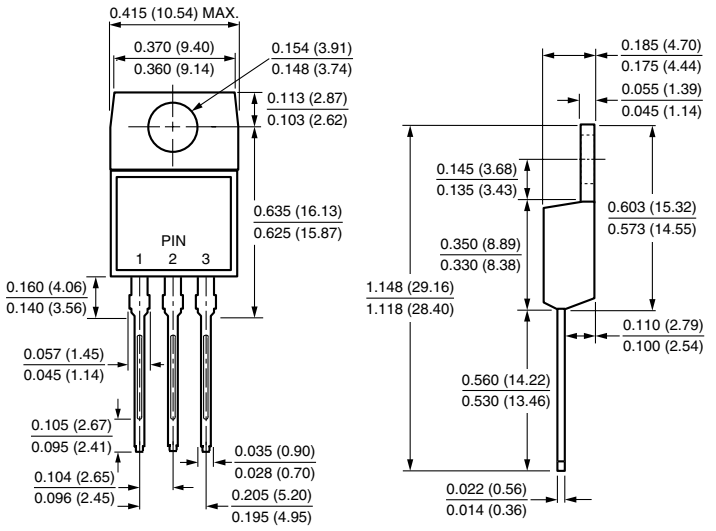


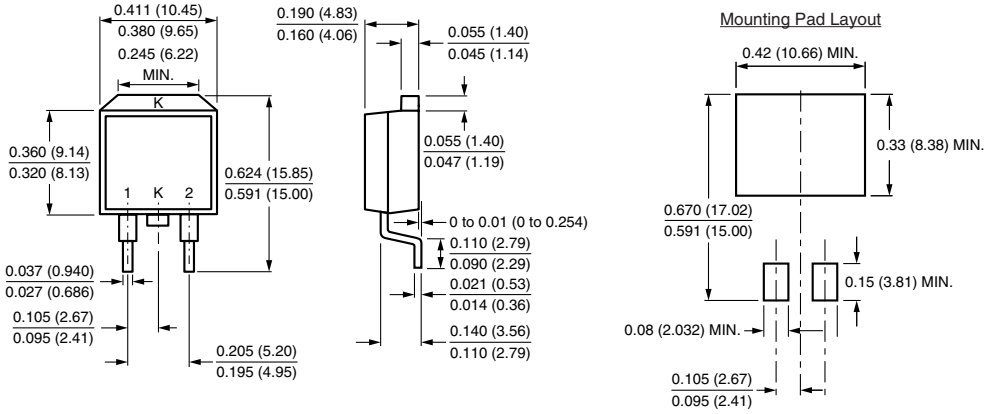
Figure 6. Typical Junction Capacitance Per Diode

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-220AB



TO-263AB



For technical questions within your region, please contact one of the following:
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