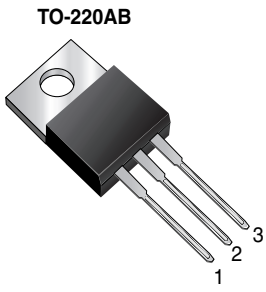
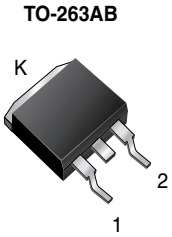
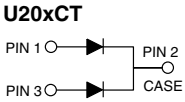
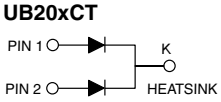
Dual Common Cathode Ultrafast Plastic Rectifier









FEATURES

- Power pack
- 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 bath temperature 275 °C maximum, 10 s per JESD 22-B106 (for TO-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 specifically for DCM application.

MECHANICAL DATA

Case: TO-220AB, 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	
$I_{F(AV)}$	2 x 10 A
V_{RRM}	100 V to 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
Package	TO-220AB, TO-263AB
Diode variation	Dual Common Cathode

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

PARAMETER		SYMBOL	U(B)20BCT	U(B)20CCT	U(B)20DCT	UNIT
Max. repetitive peak reverse voltage		V_{RRM}	100	150	200	V
Max. average forward rectified current (fig. 1)	total device	$I_{F(AV)}$	20			A
	per diode		10			
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	T_J = 25 °C	V_F	0.854	-	V
	I_F = 10 A			0.931	1.00	
	I_F = 5.0 A	T_J = 100 °C		0.760	-	
	I_F = 10 A			0.834	0.91	
Reverse current per diode (2)	rated V_R	T_J = 25 °C	I_R	1.2	15	µA
		T_J = 100 °C		120	500	
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 (g)**	**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)

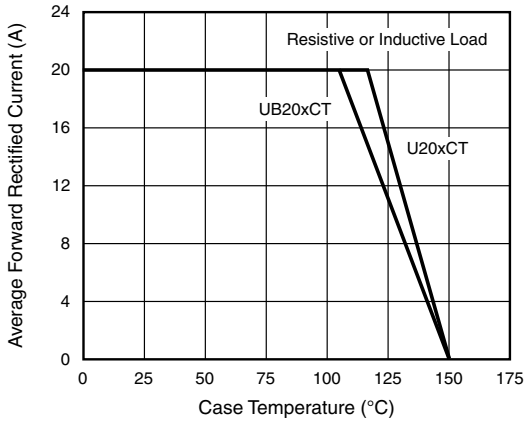


Fig. 1 - Max. Forward Current Derating Curve

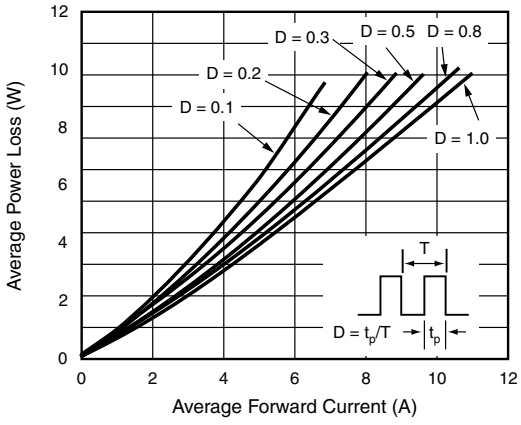


Fig. 2 - Forward Power Loss Characteristics Per Diode

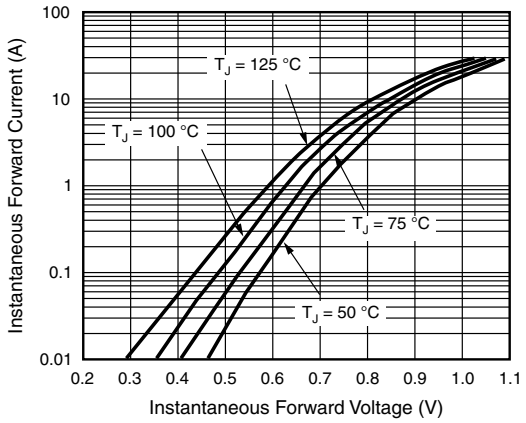


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

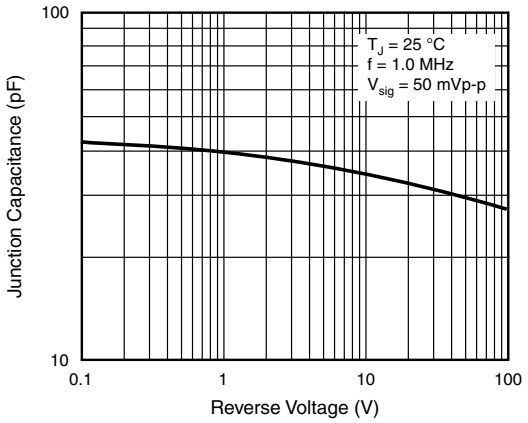


Fig. 5 - Typical Junction Capacitance Per Diode

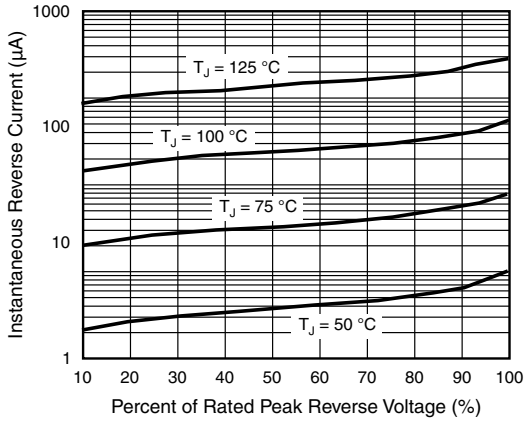


Fig. 4 - Typical Reverse Characteristics Per Diode

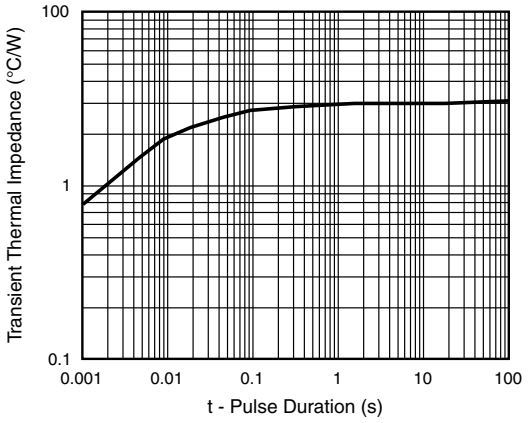
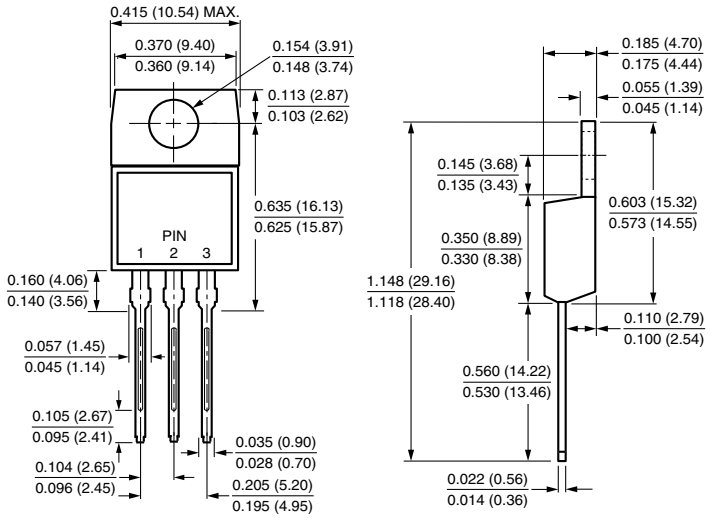


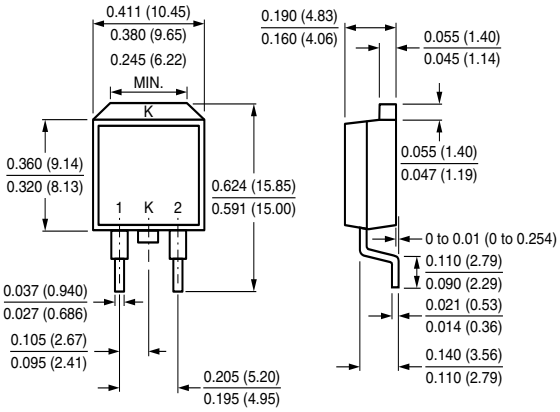
Fig. 6 - Typical Junction Capacitance Per Diode

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

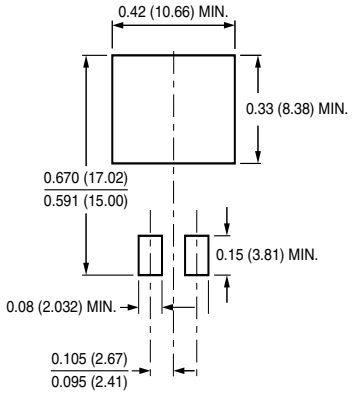
TO-220AB



TO-263AB



Mounting Pad Layout



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