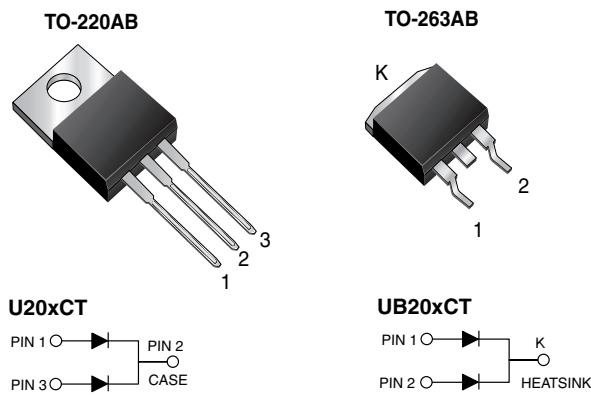


Dual Common Cathode Ultrafast Plastic Rectifier



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)	I _{F(AV)}	20			A
		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 ($T_C = 25^\circ\text{C}$ unless otherwise noted)							
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT	
Instantaneous forward voltage per diode ⁽¹⁾	$I_F = 5.0 \text{ A}$	$T_J = 25^\circ\text{C}$	V_F	0.854	-	V	
	$I_F = 10 \text{ A}$			0.931	1.00		
	$I_F = 5.0 \text{ A}$	$T_J = 100^\circ\text{C}$		0.760	-		
	$I_F = 10 \text{ A}$			0.834	0.91		
Reverse current per diode ⁽²⁾	rated V_R	$T_J = 25^\circ\text{C}$	I_R	1.2	15	μA	
		$T_J = 100^\circ\text{C}$		120	500		
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}		26	35	ns	
Reverse recovery time per diode	$I_F = 10 \text{ A}, dI/dt = 20 \text{ A}/\mu\text{s}$	t_{rr}		73	80	ns	
Stored charge per diode	$V_R = 200 \text{ V}, I_{rr} = 0.1 I_{RM}$	Q_{rr}		30	-	nC	
Forward recovery time per diode	$I_F = 10 \text{ A}, dI/dt = 80 \text{ A}/\mu\text{s}$	t_{fr}		160	-	ns	
Peak forward voltage per diode	$V_F = 1.1 \times V_F \text{ max.}$	V_{FP}		2.6	-	V	

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

⁽²⁾ Pulse test: Pulse width $\leq 40 \text{ ms}$

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

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

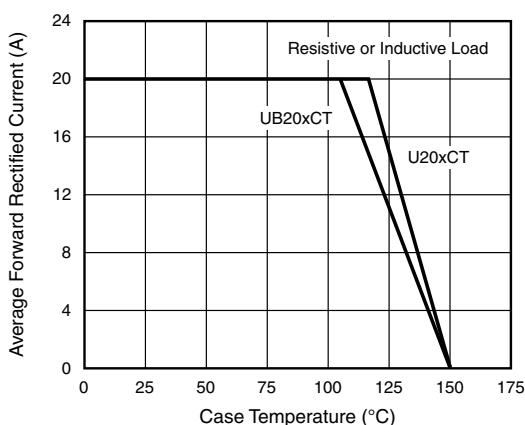
RATINGS AND CHARACTERISTICS CURVES ($T_A = 25^\circ\text{C}$ unless otherwise noted)


Fig. 1 - Max. Forward Current Derating Curve

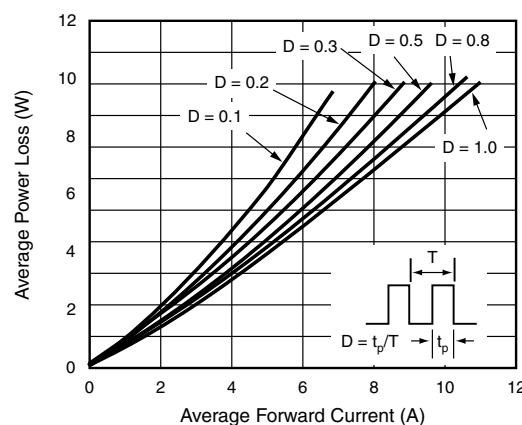


Fig. 2 - Forward Power Loss Characteristics Per Diode

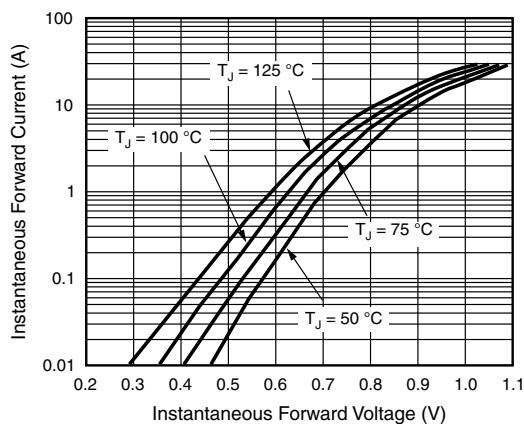


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

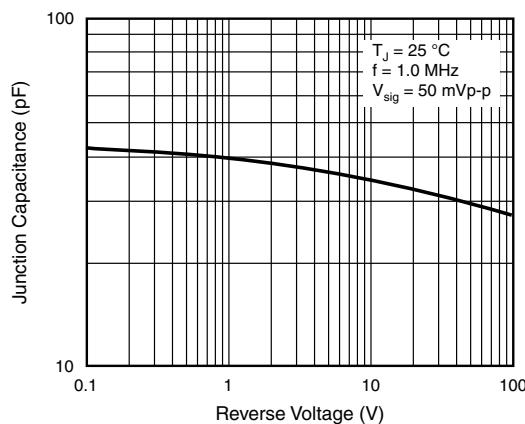


Fig. 5 - Typical Junction Capacitance Per Diode

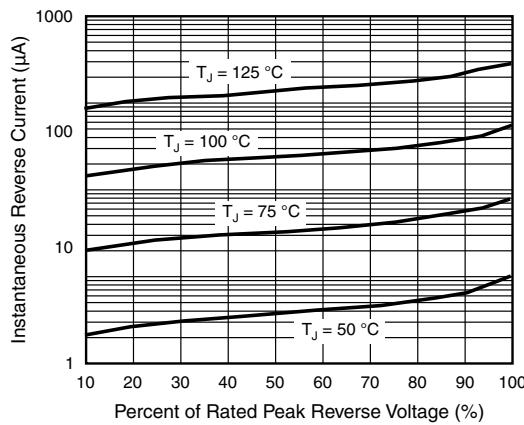


Fig. 4 - Typical Reverse Characteristics Per Diode

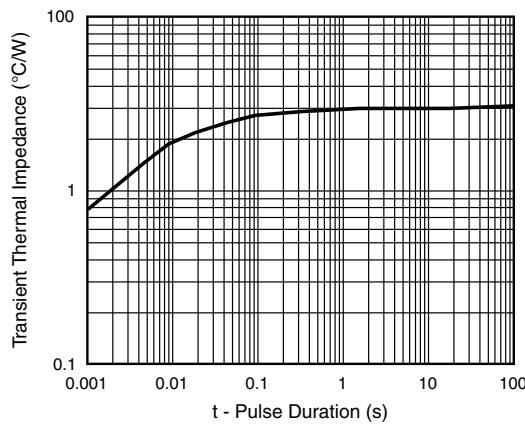
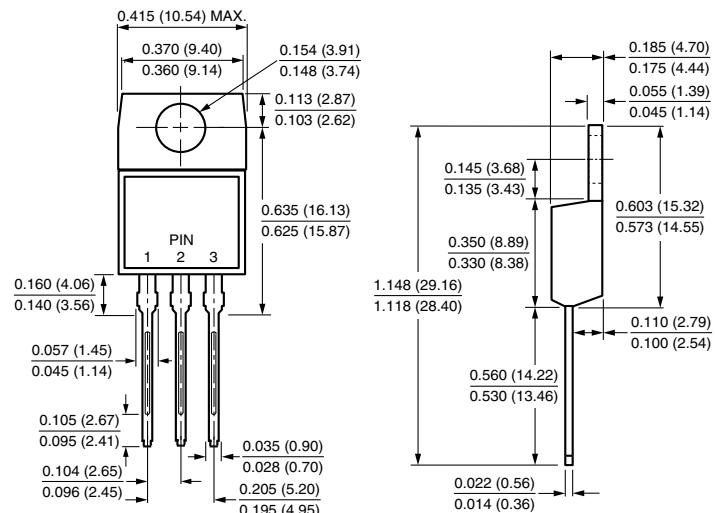
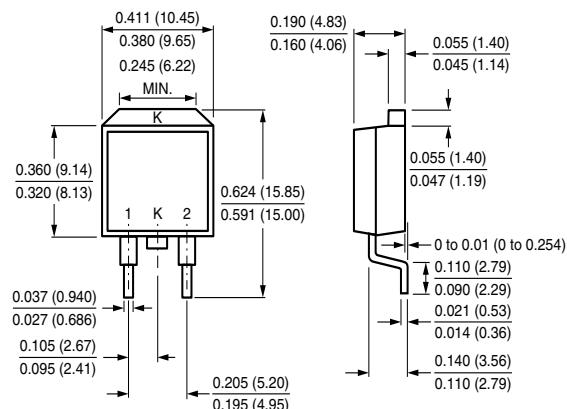
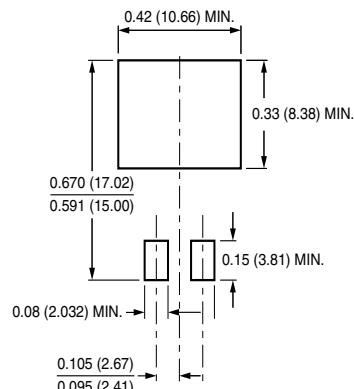


Fig. 6 - Typical Junction Capacitance Per Diode

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-220AB

TO-263AB

Mounting Pad Layout


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