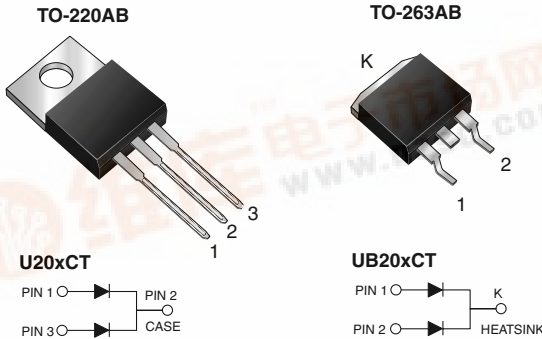




# U(B)20BCT thru U(B)20DCT

Vishay General Semiconductor

## 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
$t_{tr}$	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



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ELECTRICAL CHARACTERISTICS (T <sub>C</sub> = 25 °C unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage per diode <sup>(1)</sup>	I <sub>F</sub> = 5.0 A	T <sub>J</sub> = 25 °C	V <sub>F</sub>	0.854	-	V
	I <sub>F</sub> = 10 A			0.931	1.00	
Reverse current per diode <sup>(2)</sup>	rated V <sub>R</sub>	T <sub>J</sub> = 25 °C	I <sub>R</sub>	1.2	15	μA
		T <sub>J</sub> = 100 °C		120	500	
Reverse recovery time per diode	I <sub>F</sub> = 0.5 A, I <sub>R</sub> = 1.0 A, I <sub>rr</sub> = 0.25 A		t <sub>rr</sub>	26	35	ns
Reverse recovery time per diode	I <sub>F</sub> = 10 A, dI/dt = 20 A/μs,		t <sub>rr</sub>	73	80	ns
Stored charge per diode	V <sub>R</sub> = 200 V, I <sub>rr</sub> = 0.1 I <sub>RM</sub>		Q <sub>rr</sub>	30	-	nC
Forward recovery time per diode	I <sub>F</sub> = 10 A, dI/dt = 80 A/μs,		t <sub>fr</sub>	160	-	ns
Peak forward voltage per diode	V <sub>F</sub> = 1.1 x V <sub>F</sub> max.		V <sub>FP</sub>	2.6	-	V

**Notes:**

- (1) Pulse test: 300 μs pulse width, 1 % duty cycle
- (2) Pulse test: Pulse width ≤ 40 ms

THERMAL CHARACTERISTICS (T <sub>C</sub> = 25 °C unless otherwise noted)				
PARAMETER	SYMBOL	U20xCT	UB20xCT	UNIT
Typical thermal resistance per diode	R <sub>θJC</sub>	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<sub>A</sub> = 25 °C unless otherwise noted)

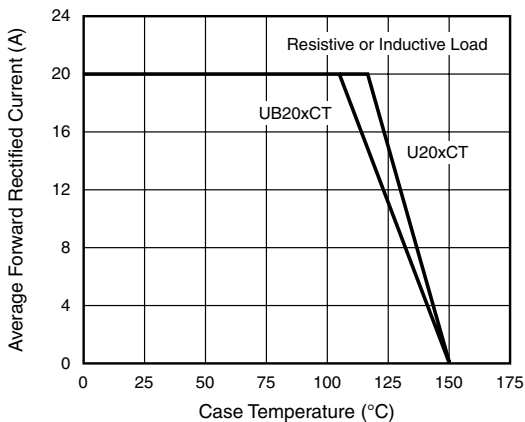


Figure 1. Maximum Forward Current Derating Curve

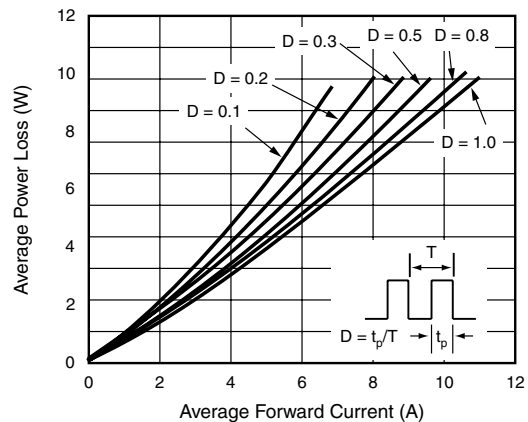


Figure 2. Forward Power Loss Characteristics Per Diode



New Product

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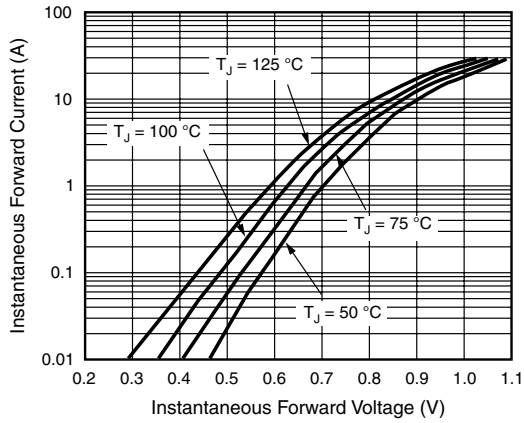


Figure 3. Typical Instantaneous Forward Characteristics Per Diode

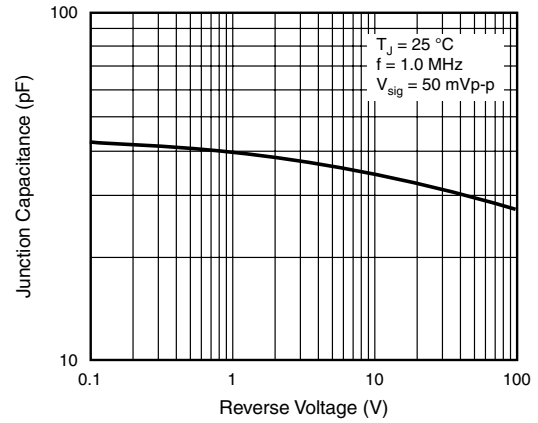


Figure 5. Typical Junction Capacitance Per Diode

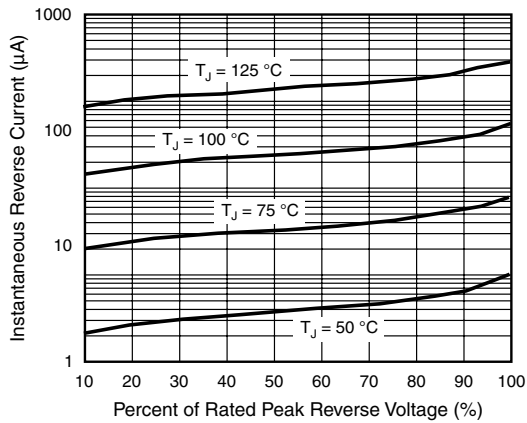


Figure 4. Typical Reverse Characteristics Per Diode

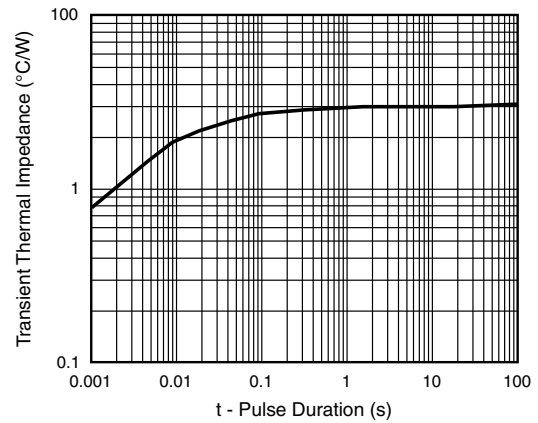


Figure 6. Typical Junction Capacitance Per Diode

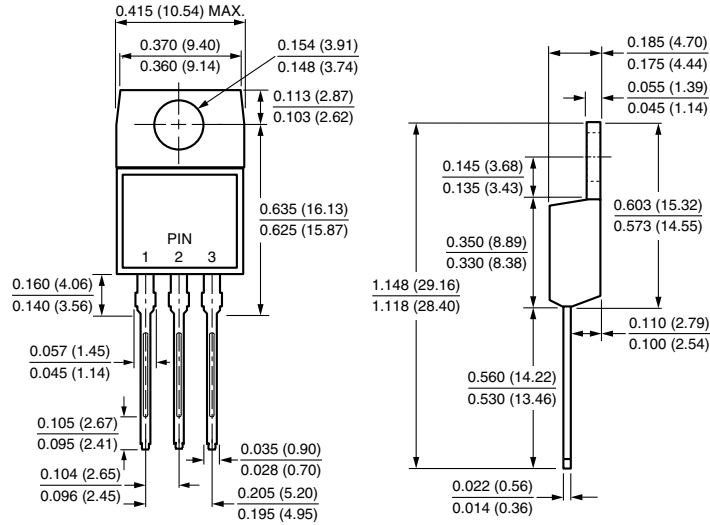
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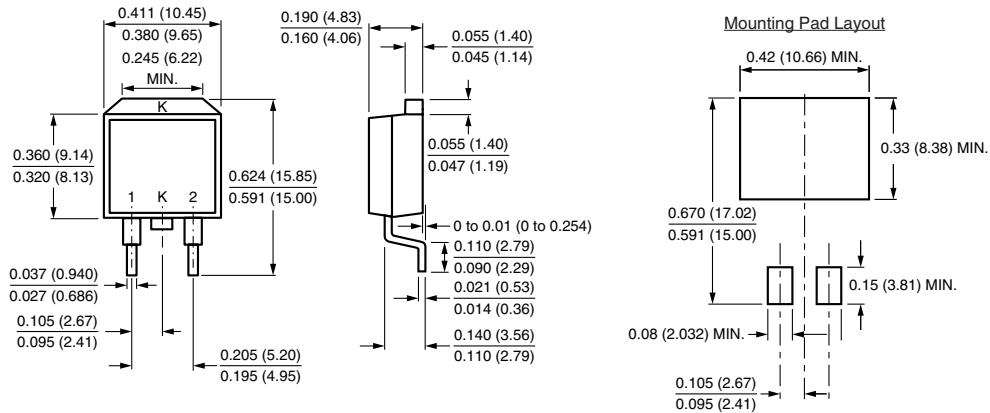


## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

### TO-220AB



### TO-263AB





### Disclaimer

All product specifications and data are subject to change without notice.

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