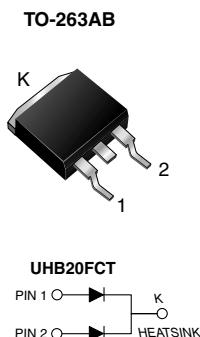
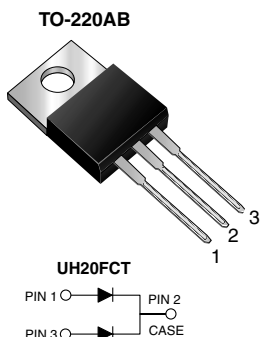


## Dual Common-Cathode Ultrafast Recovery Rectifier



### FEATURES

- Oxide planar chip junction
- Ultrafast recovery times
- Soft recovery characteristics
- Low switching losses, high efficiency
- High forward surge capability
- Meets MSL level 1, per J-STD-020C, LF max peak of 245 °C (for TO-263AB package)
- Solder Dip 260 °C, 40 seconds (for TO-220AB package)
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC



### TYPICAL APPLICATIONS

For use in high frequency power factor correctors, switching mode power supplies, free-wheeling diodes and secondary dc-to-dc rectification application.

### MECHANICAL DATA

**Case:** TO-220AB & TO-263AB

Epoxy meets UL 94V-0 flammability rating

**Terminals:** Matte tin plated leads, solderable per J-STD-002B and JESD22-B102D

E3 suffix for commercial grade

**Polarity:** As marked

**Mounting Torque:** 10 in-lbs maximum

### MAJOR RATINGS AND CHARACTERISTICS

|                   |          |
|-------------------|----------|
| $I_{F(AV)}$       | 10 A x 2 |
| $V_{RRM}$         | 300 V    |
| $I_{FSM}$         | 180 A    |
| $t_{rr}$          | 25 ns    |
| $V_F$             | 0.83 V   |
| $T_J \text{ max}$ | 175 °C   |

### MAXIMUM RATINGS ( $T_A = 25 \text{ °C}$ unless otherwise noted)

| PARAMETER                                                                          | SYMBOL         | UH20FCT       | UHB20FCT | UNIT |
|------------------------------------------------------------------------------------|----------------|---------------|----------|------|
| Maximum repetitive peak reverse voltage                                            | $V_{RRM}$      | 300           |          | V    |
| Maximum average forward rectified current (see Fig.1)                              | $I_{F(AV)}$    | 20            | 10       | A    |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | $I_{FSM}$      | 180           |          | A    |
| Operating junction and storage temperature range                                   | $T_J, T_{STG}$ | - 55 to + 175 |          | °C   |

### ELECTRICAL CHARACTERISTICS ( $T_A = 25 \text{ °C}$ unless otherwise noted)

| PARAMETER                                                      | TEST CONDITIONS                                                          | SYMBOL | TYP.      | MAX.     | UNIT          |
|----------------------------------------------------------------|--------------------------------------------------------------------------|--------|-----------|----------|---------------|
| Maximum instantaneous forward voltage per diode <sup>(1)</sup> | at $I_F = 5.0 \text{ A}$ , $T_J = 25 \text{ °C}$                         | $V_F$  | 0.96      | -        | V             |
|                                                                | $I_F = 5.0 \text{ A}$ , $T_J = 125 \text{ °C}$                           |        | 0.77      | -        |               |
|                                                                | at $I_F = 10 \text{ A}$ , $T_J = 25 \text{ °C}$                          |        | 1.0       | 1.2      |               |
|                                                                | $I_F = 10 \text{ A}$ , $T_J = 125 \text{ °C}$                            |        | 0.83      | 0.90     |               |
| Maximum reverse current per diode <sup>(1)</sup>               | at $V_R = 300 \text{ V}$ $T_J = 25 \text{ °C}$<br>$T_J = 125 \text{ °C}$ | $I_R$  | 0.5<br>25 | 5<br>150 | $\mu\text{A}$ |

| <b>ELECTRICAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted) |                                                                                                                                    |          |      |      |      |
|------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|----------|------|------|------|
| PARAMETER                                                                                      | TEST CONDITIONS                                                                                                                    | SYMBOL   | TYP. | MAX. | UNIT |
| Maximum reverse recovery time                                                                  | at $I_F = 0.5\text{ A}$ , $I_R = 1.0\text{ A}$ , $I_{rr} = 0.25\text{ A}$                                                          | $t_{rr}$ | 20   | 25   | ns   |
| Maximum reverse recovery time per diode                                                        | at $I_F = 1.0\text{ A}$ , $di/dt = 50\text{ A}/\mu\text{s}$ , $V_R = 30\text{ V}$ , $I_{rr} = 0.1 I_{RM}$                          | $t_{rr}$ | 28   | 35   | ns   |
| Typical softness factor ( $t_b/t_a$ )                                                          | at $I_F = 10\text{ A}$ , $di/dt = 200\text{ A}/\mu\text{s}$ , $V_R = 200\text{ V}$ , $T_J = 125\text{ }^{\circ}\text{C}$ per diode | S        | 0.36 | -    | -    |
| Typical reverse recovery current                                                               |                                                                                                                                    | $I_{RM}$ | 7.0  | -    | A    |
| Typical stored charge                                                                          |                                                                                                                                    | $Q_{rr}$ | 160  | -    | nC   |
| Typical forward recovery time per diode                                                        | at $I_F = 10\text{ A}$ , $di/dt = 80\text{ A}/\mu\text{s}$ , $V_{FR} = 1.1 \times V_{Fmax}$                                        | $t_{fr}$ | 150  | -    | ns   |

**Note:**(1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle

| <b>THERMAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted) |                 |         |          |                             |
|---------------------------------------------------------------------------------------------|-----------------|---------|----------|-----------------------------|
| PARAMETER                                                                                   | SYMBOL          | UH20FCT | UHB20FCT | UNIT                        |
| Typical thermal resistance per diode                                                        | $R_{\theta JC}$ | 2.0     | 2.0      | $^{\circ}\text{C}/\text{W}$ |

| <b>ORDERING INFORMATION</b> |                |                 |              |               |               |
|-----------------------------|----------------|-----------------|--------------|---------------|---------------|
| PACKAGE                     | PREFERRED P/N  | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| TO-220AB                    | UH20FCT-E3/4W  | 1.88            | 4W           | 50/Tube       | Tube          |
| TO-263AB                    | UHB20FCT-E3/4W | 1.38            | 4W           | 50/Tube       | Tube          |
| TO-263AB                    | UHB20FCT-E3/8W | 1.38            | 8W           | 800/Reel      | Tape & Reel   |

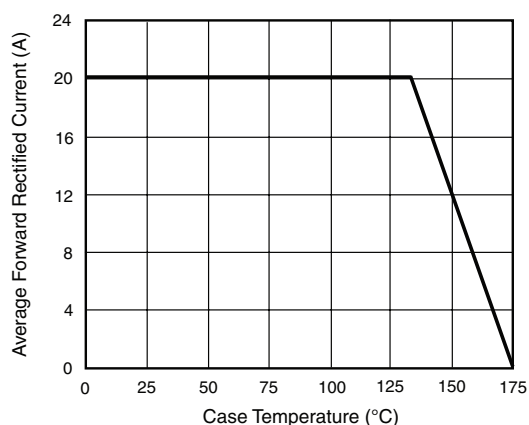
**RATINGS AND CHARACTERISTICS CURVES**( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)

Figure 1. Maximum Forward Current Derating Curve

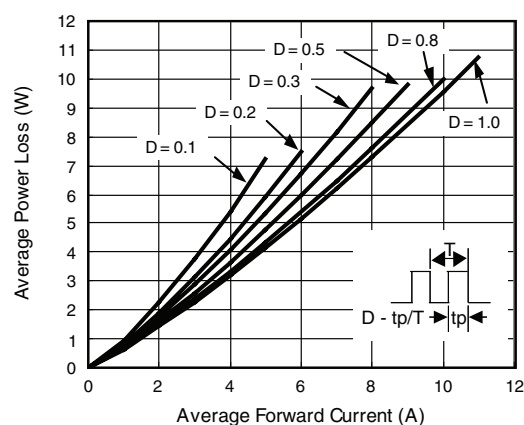


Figure 2. Forward Power Loss Characteristics Per Diode

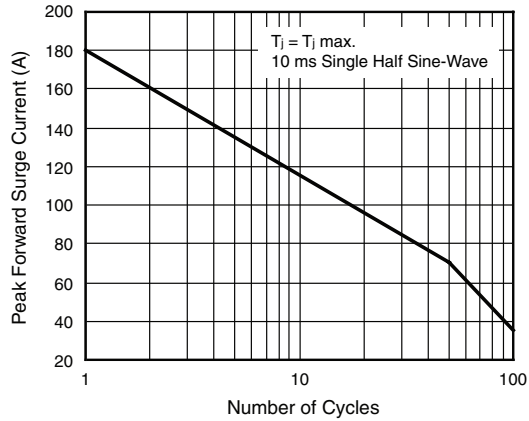


Figure 3. Maximum Non-Repetitive Peak Forward Surge Current Per Diode

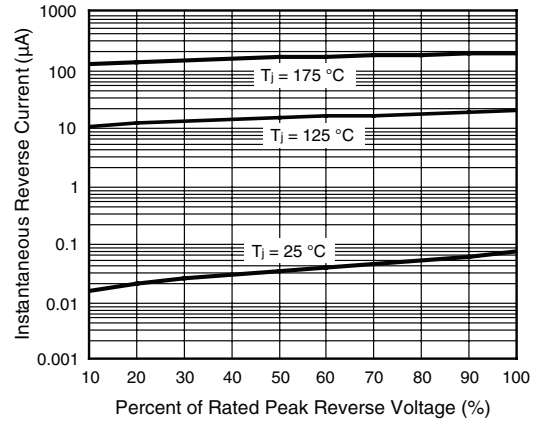


Figure 5. Typical Reverse Leakage Characteristics Per Diode

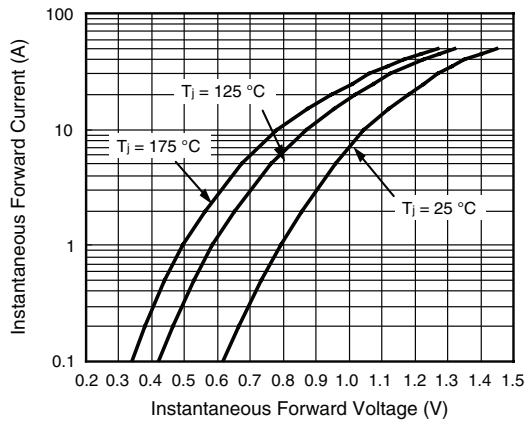


Figure 4. Typical Instantaneous Forward Characteristics Per Diode

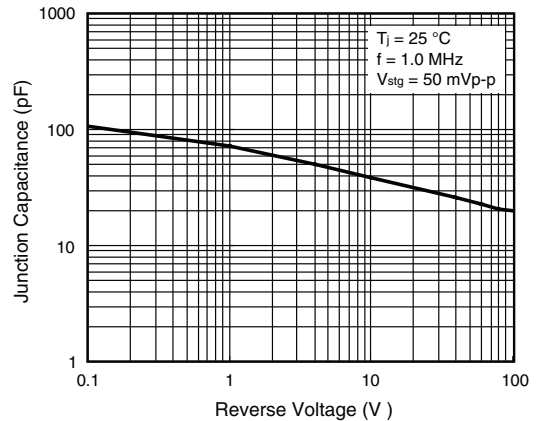
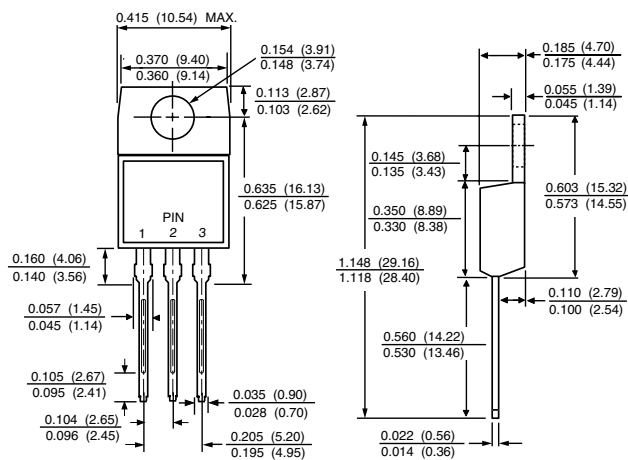


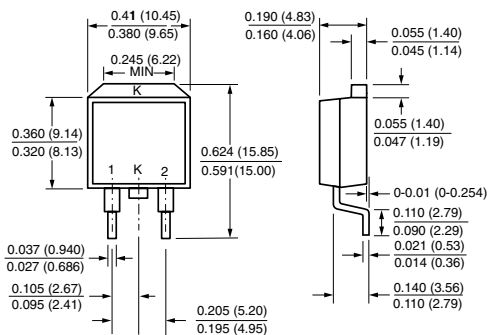
Figure 6. Typical Junction Capacitance Per Diode

## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

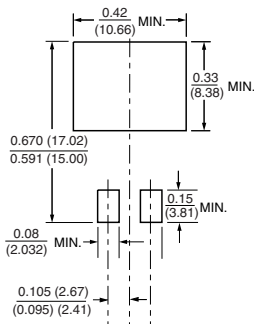
TO-220AB



TO-263AB



Mounting Pad Layout





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