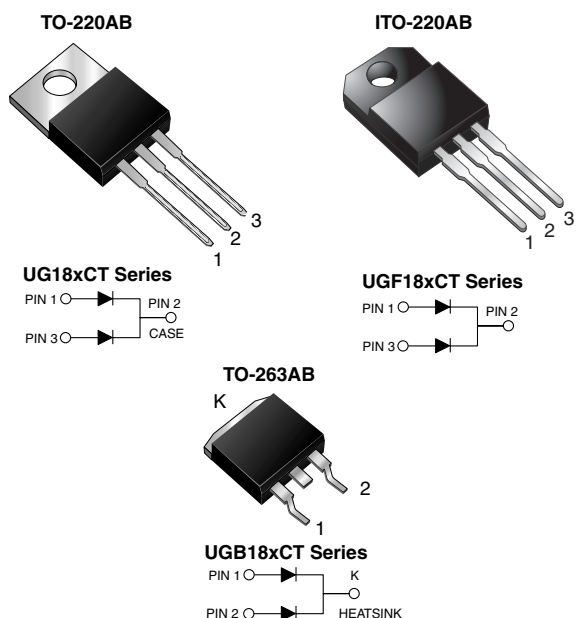


## Dual Common-Cathode Ultrafast Plastic Rectifier



### FEATURES

- Glass passivated chip junction
- Ultrafast recovery time
- Low switching losses, high efficiency
- Low forward voltage drop
- 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 and ITO-220AB package)
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC



**RoHS**  
COMPLIANT

### TYPICAL APPLICATIONS

For use in high frequency rectifier of switching mode power supplies, inverters, freewheeling diodes, dc-to-dc converters, and other power switching application.

### PRIMARY CHARACTERISTICS

|                    |               |
|--------------------|---------------|
| $I_{F(AV)}$        | 18 A          |
| $V_{RRM}$          | 50 V to 200 V |
| $I_{FSM}$          | 175 A         |
| $t_{rr}$           | 20 ns         |
| $V_F$              | 0.95 V        |
| $T_J \text{ max.}$ | 150 °C        |

### MECHANICAL DATA

**Case:** TO-220AB, ITO-220AB, 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, HE3 suffix for high reliability grade (AEC Q101 qualified), meets JESD 201 class 2 whisker test

**Polarity:** As marked

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

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

| PARAMETER                                                                                    | SYMBOL         | UG18ACT       | UG18BCT | UG18CCT | UG18DCT | UNIT |
|----------------------------------------------------------------------------------------------|----------------|---------------|---------|---------|---------|------|
| Maximum repetitive peak reverse voltage                                                      | $V_{RRM}$      | 50            | 100     | 150     | 200     | V    |
| Maximum RMS voltage                                                                          | $V_{RMS}$      | 35            | 70      | 105     | 140     | V    |
| Maximum DC blocking voltage                                                                  | $V_{DC}$       | 50            | 100     | 150     | 200     | V    |
| Maximum average forward rectified current at $T_C = 105 \text{ °C}$                          | $I_{F(AV)}$    | 18            |         |         |         | A    |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode | $I_{FSM}$      | 175           |         |         |         | A    |
| Operating junction and storage temperature range                                             | $T_J, T_{STG}$ | - 65 to + 150 |         |         |         | °C   |
| Isolation voltage (ITO-220AB only) from terminal to heatsink $t = 1 \text{ min}$             | $V_{AC}$       | 1500          |         |         |         | V    |

| ELECTRICAL CHARACTERISTICS (T <sub>C</sub> = 25 °C unless otherwise noted) |                                                                                                              |                                                   |                 |                    |         |         |         |      |
|----------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|---------------------------------------------------|-----------------|--------------------|---------|---------|---------|------|
| PARAMETER                                                                  | TEST CONDITIONS                                                                                              |                                                   | SYMBOL          | UG18ACT            | UG18BCT | UG18CCT | UG18DCT | UNIT |
| Maximum instantaneous forward voltage per diode <sup>(1)</sup>             | 9.0 A<br>20 A<br>5.0 A                                                                                       | T <sub>J</sub> = 100 °C                           | V <sub>F</sub>  | 1.1<br>1.2<br>0.95 |         |         |         | V    |
| Maximum DC reverse current at rated DC blocking voltage per diode          |                                                                                                              | T <sub>A</sub> = 25 °C<br>T <sub>A</sub> = 100 °C | I <sub>R</sub>  | 10<br>300          |         |         |         | μA   |
| Maximum 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> | 20                 |         |         |         | ns   |
| Maximum reverse recovery time per diode                                    | I <sub>F</sub> = 9.0 A, V <sub>R</sub> = 30 V,<br>dI/dt = 50 A/μs,<br>I <sub>rr</sub> = 10 % I <sub>RM</sub> | T <sub>J</sub> = 25 °C<br>T <sub>J</sub> = 100 °C | t <sub>rr</sub> | 30<br>50           |         |         |         | ns   |
| Maximum stored charge per diode                                            | I <sub>F</sub> = 9.0 A, V <sub>R</sub> = 30 V,<br>dI/dt = 50 A/μs,<br>I <sub>rr</sub> = 10 % I <sub>RM</sub> | T <sub>J</sub> = 25 °C<br>T <sub>J</sub> = 100 °C | Q <sub>rr</sub> | 20<br>45           |         |         |         | nC   |
| Typical junction capacitance per diode                                     | at 4.0 V, 1 MHz                                                                                              |                                                   | C <sub>J</sub>  | 30                 |         |         |         | pF   |

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

| <b>THERMAL CHARACTERISTICS</b> ( $T_C = 25\text{ }^{\circ}\text{C}$ unless otherwise noted) |                 |      |       |       |                             |
|---------------------------------------------------------------------------------------------|-----------------|------|-------|-------|-----------------------------|
| PARAMETER                                                                                   | SYMBOL          | UG18 | UGF18 | UGB18 | UNIT                        |
| Typical thermal resistance from junction to case per diode                                  | $R_{\theta JC}$ | 4.0  | 6.0   | 4.0   | $^{\circ}\text{C}/\text{W}$ |

| <b>ORDERING INFORMATION</b> (Example) |                               |                 |              |               |               |
|---------------------------------------|-------------------------------|-----------------|--------------|---------------|---------------|
| PACKAGE                               | PREFERRED P/N                 | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| TO-220AB                              | UG18DCT-E3/45                 | 1.85            | 45           | 50/tube       | Tube          |
| ITO-220AB                             | UGF18DCT-E3/45                | 2.00            | 45           | 50/tube       | Tube          |
| TO-263AB                              | UGB18DCT-E3/45                | 1.35            | 45           | 50/tube       | Tube          |
| TO-263AB                              | UGB18DCT-E3/81                | 1.35            | 81           | 800/reel      | Tape and reel |
| TO-220AB                              | UG18DCTHE3/45 <sup>(1)</sup>  | 1.85            | 45           | 50/tube       | Tube          |
| ITO-220AB                             | UGF18DCTHE3/45 <sup>(1)</sup> | 2.00            | 45           | 50/tube       | Tube          |
| TO-263AB                              | UGB18DCTHE3/45 <sup>(1)</sup> | 1.35            | 45           | 50/tube       | Tube          |
| TO-263AB                              | UGB18DCTHE3/81 <sup>(1)</sup> | 1.35            | 81           | 800/reel      | Tape and reel |

**Note:**

(1) Automotive grade AEC Q101 qualified

## RATINGS AND CHARACTERISTICS CURVES

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

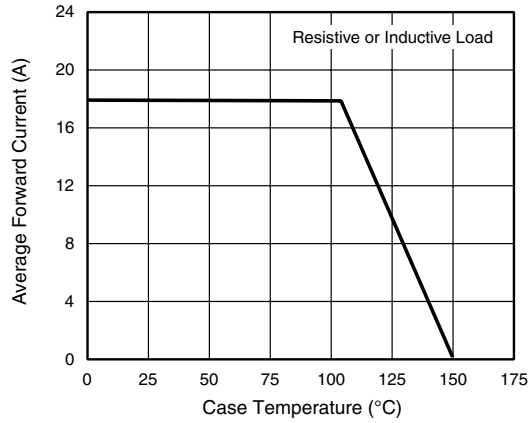


Figure 1. Forward Current Derating Curve

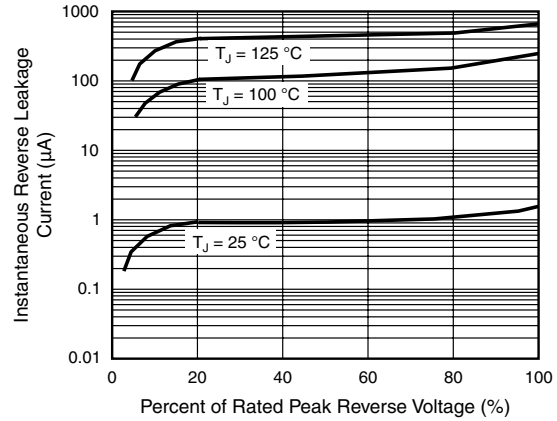


Figure 4. Typical Reverse Leakage Characteristics Per Diode

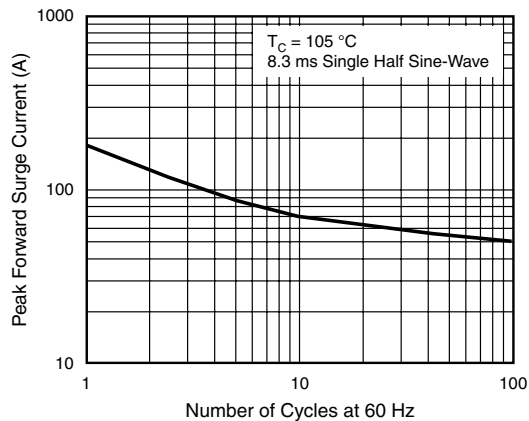


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current Per Diode

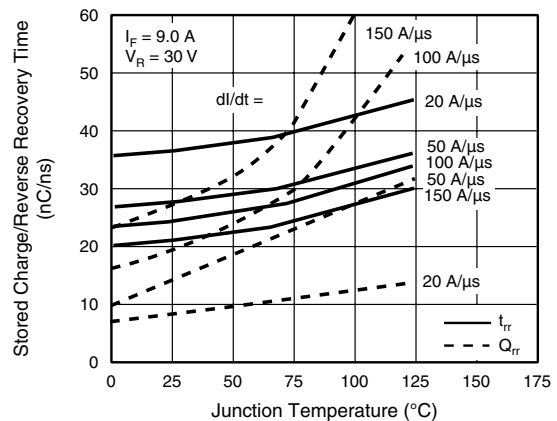


Figure 5. Reverse Switching Characteristics Per Diode

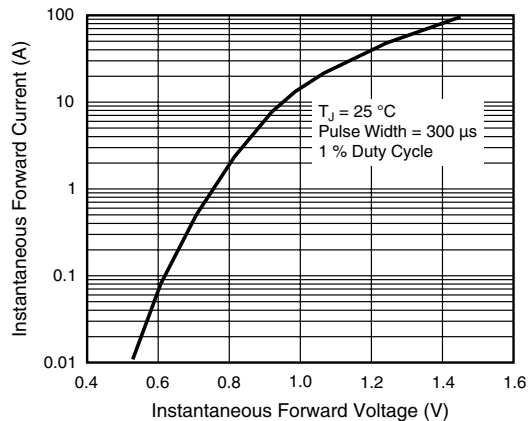


Figure 3. Typical Instantaneous Forward Characteristics Per Diode

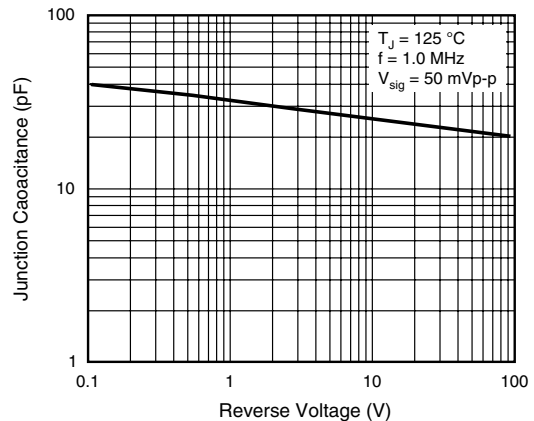
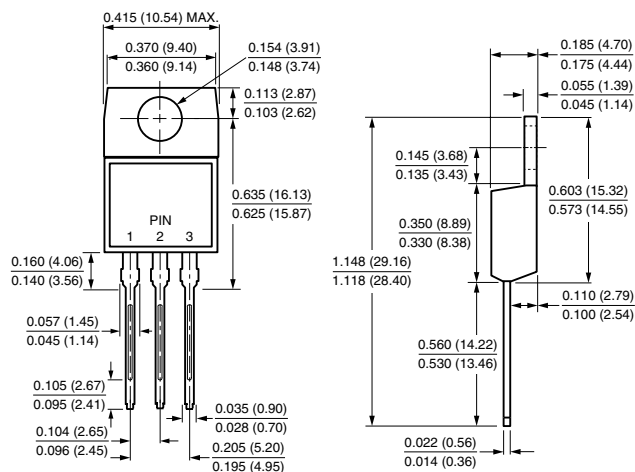


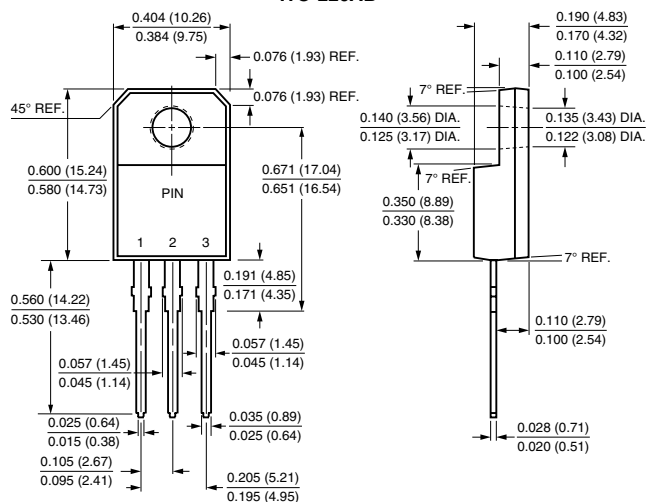
Figure 6. Typical Junction Capacitance Per Diode

**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)

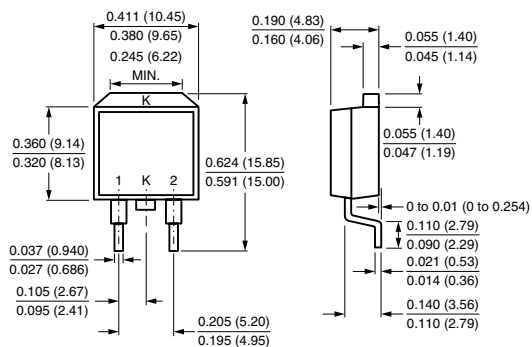
**TO-220AB**



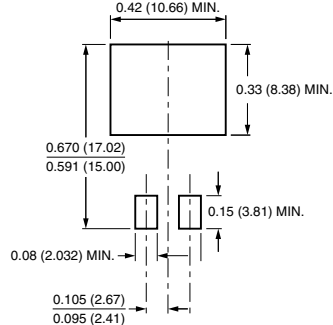
ITO-220AB



**TO-263AB**



### Mounting Pad Layout





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