

# FFA60UP30DN Ultrafast Recovery Power Rectifier

### **Features**

• Ultrafast with Soft Recovery : < 55ns

• High Reverse Voltage : V<sub>RRM</sub> = 300V

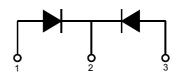
- · Avalanche Energy Rated
- · Planar Construction

## **Applications**

- · General purpose
- · Switching Mode Power Supply
- · Free-wheeling diode for motor application
- · Power switching circuits



1.Anode 2.Cathode 3.Anode



1. Anode 2. Cathode 3. Anode

## Absolute Maximum Ratings (per diode) T<sub>a</sub> = 25°C unless otherwise noted

| Symbol                           | Parameter   | Value        | Units |
|----------------------------------|---|--------------|-------|
| $V_{RRM}$                        | Peak Repetitive Reverse Voltage                                 | 300          | V     |
| $V_{RWM}$                        | Working Peak Reverse Voltage                                    | 300          | V     |
| V <sub>R</sub>                   | DC Blocking Voltage   | 300          | V     |
| I <sub>F(AV)</sub>               | Average Rectified Forward Current @ T <sub>C</sub> = 135°C      | 30           | A     |
| I <sub>FSM</sub>                 | Non-repetitive Peak Surge Current<br>60Hz Single Half-Sine Wave | 300          | А     |
| T <sub>J,</sub> T <sub>STG</sub> | Operating Junction and Storage Temperature                      | - 65 to +150 | °C    |

## Thermal Characteristics T<sub>a</sub> = 25°C unless otherwise noted

| Symbol         | Parameter                                    | Max  | Units |
|----------------|--|------|-------|
| $R_{	heta JC}$ | Maximum Thermal Resistance, Junction to Case | 0.53 | °C/W  |

## **Electrical Characteristics** (per diode) T<sub>a</sub> = 25°C unless otherwise noted

| Symbol  | Parameter   |  | Min.        | Тур.           | Max.        | Units                    |
|---|---|--|-------------|----------------|-------------|--------------------------|
| V <sub>FM</sub> *                                   | I <sub>F</sub> = 30A<br>I <sub>F</sub> = 30A  | T <sub>C</sub> = 25 °C<br>T <sub>C</sub> = 150 °C              | -           |                | 1.5<br>1.3  | V<br>V                   |
| I <sub>RM</sub> *                                   | V <sub>R</sub> = 300V<br>V <sub>R</sub> = 300V  | T <sub>C</sub> = 25 °C<br>T <sub>C</sub> = 150 °C              | -           |                | 100<br>500  | μ <b>Α</b><br>μ <b>Α</b> |
| t <sub>rr</sub>                                     | $I_F$ =1A, di/dt = 100A/ $\mu$ s, $V_{CC}$ = 30V $I_F$ =30A, di/dt = 200A/ $\mu$ s, $V_{CC}$ = 195V | T <sub>C</sub> = 25 °C<br>T <sub>C</sub> = 25 °C               |             |                | 45<br>55    | ns<br>ns                 |
| t <sub>a</sub><br>t <sub>b</sub><br>Q <sub>rr</sub> | $I_F = 30A$ , di/dt = 200A/ $\mu$ s, $V_{CC} = 195V$  | $T_C = 25 ^{\circ}C$ $T_C = 25 ^{\circ}C$ $T_C = 25 ^{\circ}C$ | -<br>-<br>- | 17<br>15<br>50 | -<br>-<br>- | ns<br>ns<br>nC           |
| W <sub>AVL</sub>                                    | Avalanche Energy (L = 20mH)   | *  | 20          | -              | -           | mJ                       |

 $<sup>^{\</sup>star}$  Pulse Test: Pulse Width=300  $\mu s,$  Duty Cycle=2%

## **Typical Performance Characteristics**

Figure 1. Typical Forward Voltage Drop

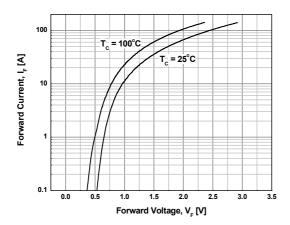


Figure 2. Typical Reverse Current

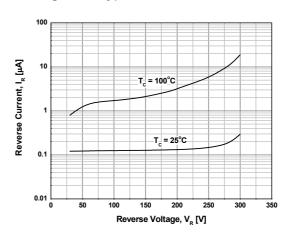


Figure 3. Typical Junction Capacitance

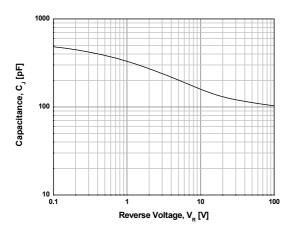


Figure 4. Typical Reverse Recovery Time

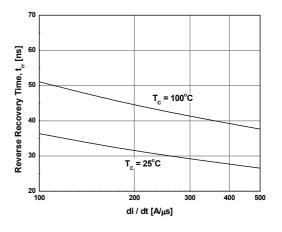
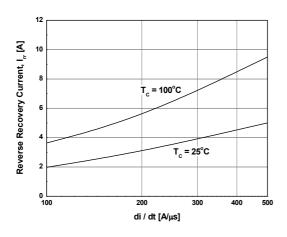
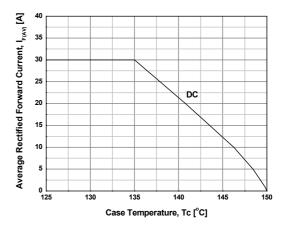


Figure 5. Typical Reverse Recovery Current

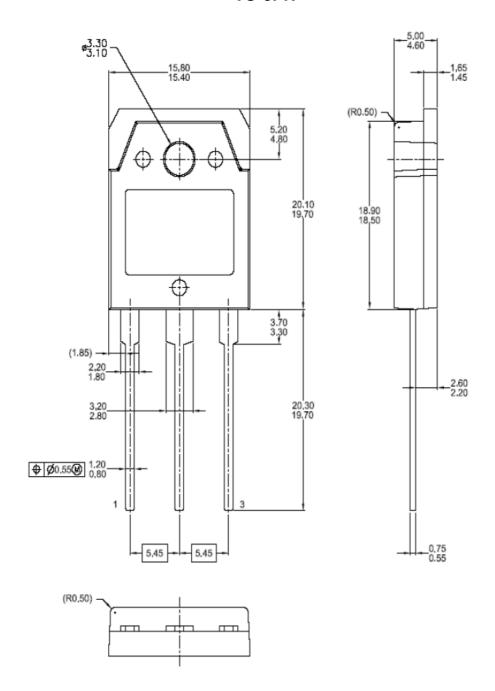


**Figure 6. Forward Current Deration Curve** 



## **Mechanical Dimensions**

TO-3PN



Dimensions in Millimeters

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Rev. I16