

**8A,600V Ultrafast Single Diode**

**Features**

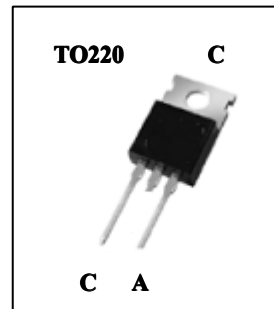
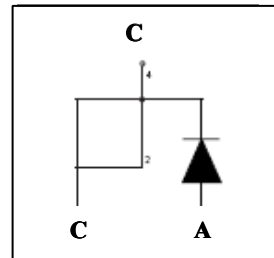
- Ultrafast recovery time  $t_{rr} < 17\text{ns}$
- Low forward voltage drop
- Low leakage current
- High reliability by planer design
- Maximum Junction Temperature Range(150°C)

**General Description**

Winsemi's SDP series are the state of the are Ultra fast recovery rectifiers specifically designed with optimized performance of forward voltage drop and ultra fast recovery time. The planar structure and the platinum doped life time control, guarantee the best overall performance, ruggedness and reliability characteristics.

**Applications**

- Freewheeling, Snubber, Clamp
- Inversion Welder
- PFC
- Plating Power Supply
- Ultrasonic Cleaner and Welder
- Converter & Chopper
- UPS



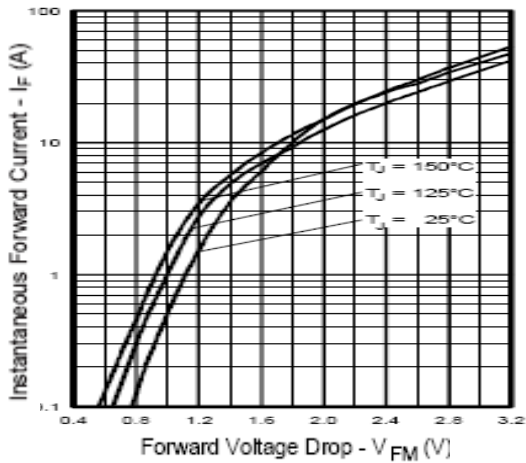
**Absolute Maximum Ratings**

| Symbol         | Parameter   | Value      | Units            |
|----------------|---|------------|------------------|
| $V_{RRM}$      | Peak Repetitive Reverse Voltage   | 600        | V                |
| $I_{F(AV)}$    | Average Forward Current Square wave, duty=1/2, $T_c=115^\circ\text{C}$      | 8          | A                |
| $I_{FM}$       | Repetitive Peak Forward Current Square wave, 20kHz, $T_c=115^\circ\text{C}$ | 16         | A                |
| $I_{FSM}$      | No-Repetitive Peak Surge Current  | 110        | A                |
| $P_D$          | Power Dissipation   | 50         | W                |
| $T_{STG}, T_J$ | Operating Junction Temperature & Storage Temperature                        | -40 to 150 | $^\circ\text{C}$ |
| Torque         | Module-to-Sink , Recommended (M3)   | 1.1        | N.m              |

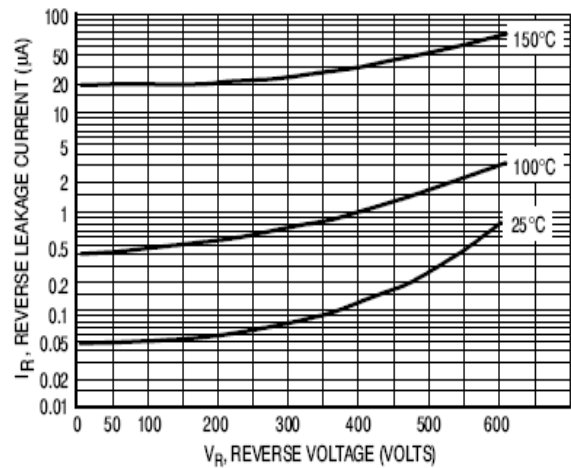
**Electrical Characteristics** ( $T_c=25^\circ\text{C}$  unless otherwise noted)

| Symbol        | Parameter             | Test Conditions   | Value |     |     | Units                     |
|---------------|-----------------------|---|-------|-----|-----|---------------------------|
|               |                       |   | Min   | Typ | Max |                           |
| $V_F$         | Forward Voltage Drop  | $I_F=8\text{A}$   | -     | 1.4 | 1.7 | V                         |
|               |                       | $I_F=16\text{A}$  | -     | 1.7 | 2.1 | V                         |
| $I_{RRM}$     | Reverse Current       | $V_R=600\text{V}$   | -     | -   | 15  | $\mu\text{A}$             |
|               |                       | $V_R=600\text{V}, T_c=150^\circ\text{C}$                          | -     | -   | 500 | $\mu\text{A}$             |
| $t_{rr}$      | Reverse Recovery Time | $I_F=1.0\text{A}, V_R=30\text{V}, dI_F/dt=50\text{A}/\mu\text{s}$ | -     | 17  | -   | ns                        |
|               |                       | $I_F=8.0\text{A}, V_R=300\text{V}$ ,                              | -     | 30  | -   |                           |
| $R_{th(J-C)}$ | Thermal Resistance    |   | -     | -   | 2.5 | $^\circ\text{C}/\text{W}$ |

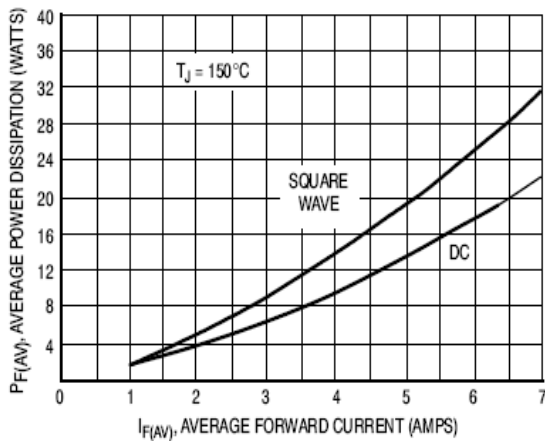
**Typical Performance Curves**



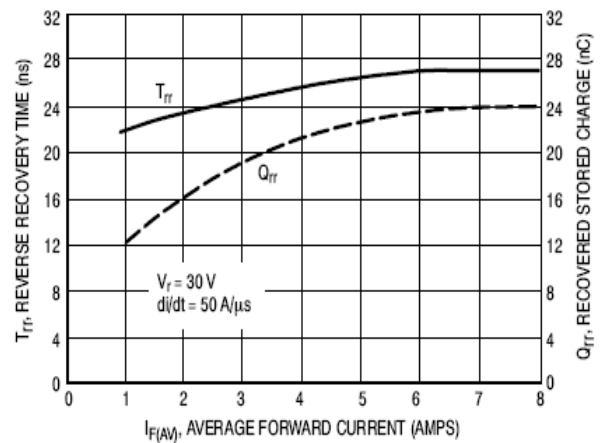
**Fig.1 Forward Characteristics**



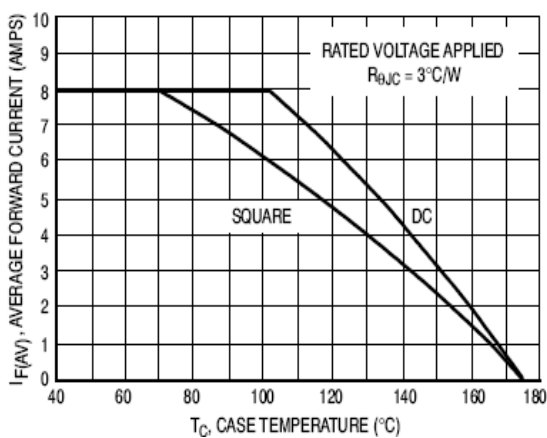
**Fig.2 Reverse Characteristics**



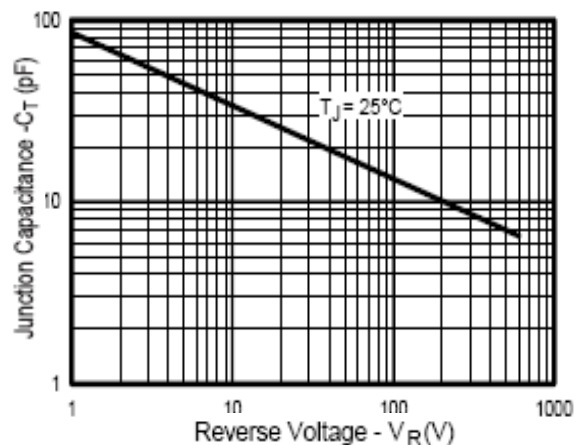
**Fig.3 Forward Power Dissipation**



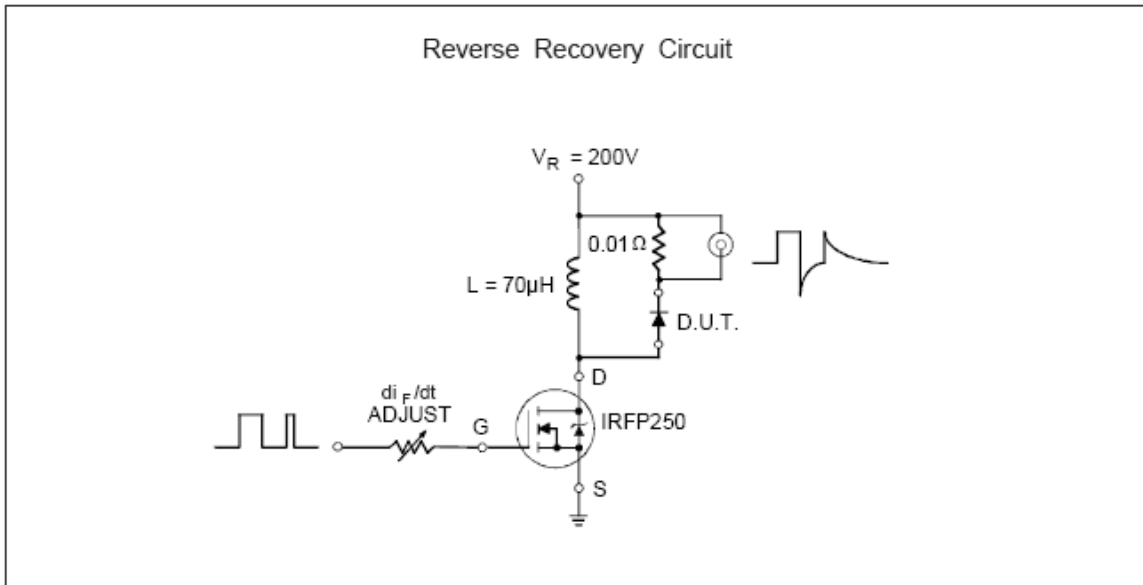
**Fig.4 Recovery Characteristics**



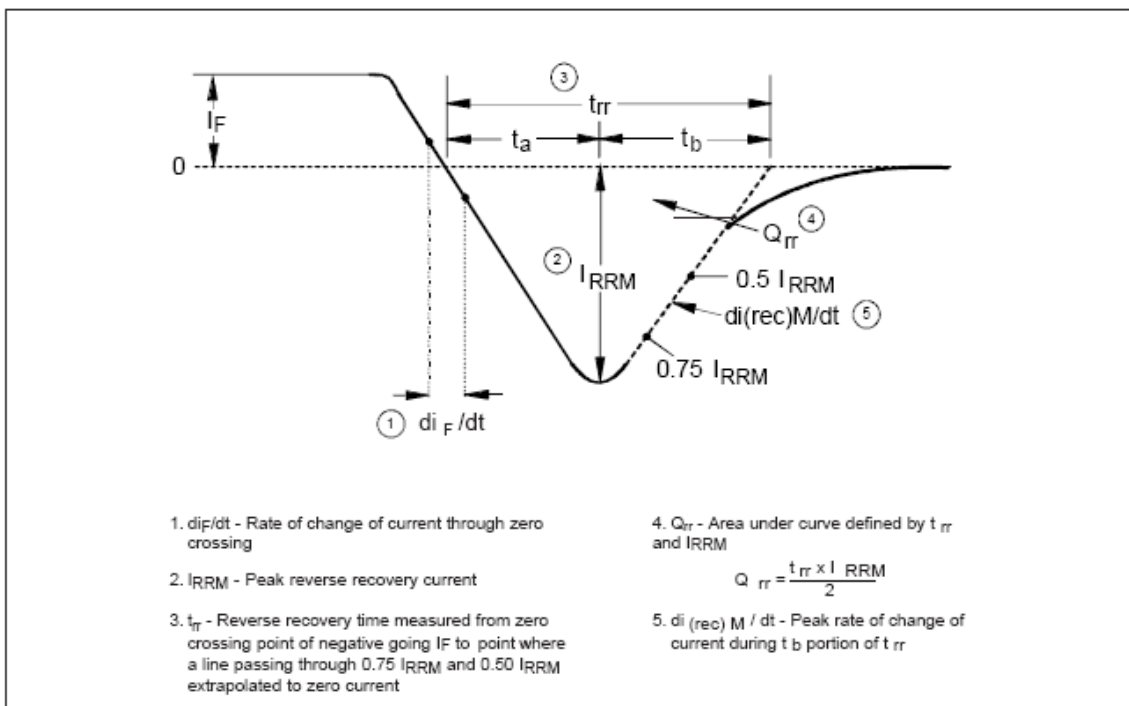
**Fig.5 Out Current VS Case Temperature**



**Fig.6 Junction Capacitance VS Reverse Voltage**



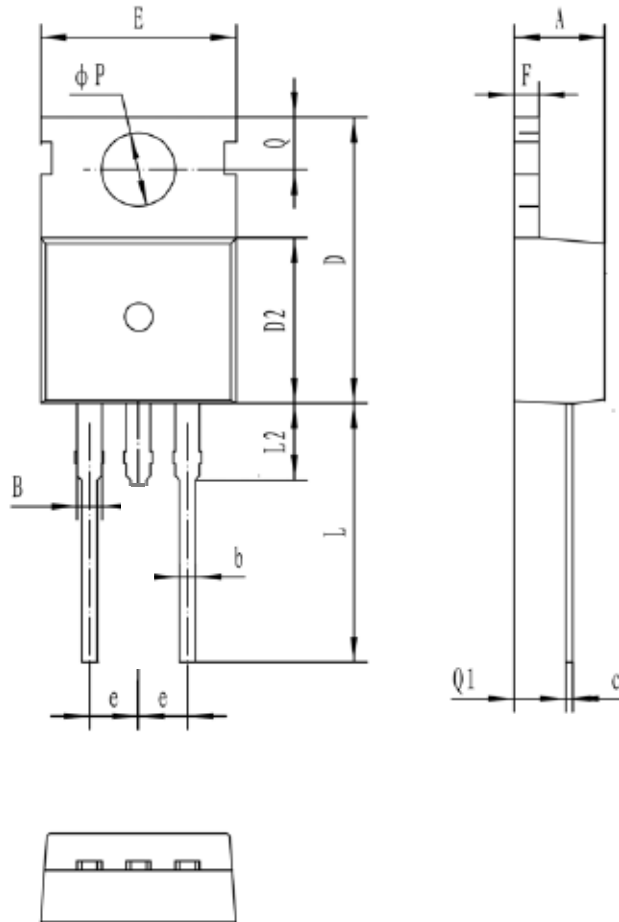
**Fig.7 Reverse Recovery Parameter Test Circuit**



**Fig.8 Reverse Recovery Waveform and Definitions**

## TO-220 Package Dimension

Unit: mm



| symbol | MIN   | MAX   |
|--------|-------|-------|
| A      | 4.30  | 4.70  |
| B      | 1.10  | 1.40  |
| b      | 0.70  | 0.95  |
| c      | 0.40  | 0.65  |
| D      | 15.20 | 16.20 |
| D2     | 9.00  | 9.40  |
| E      | 9.70  | 10.10 |
| e      | 2.39  | 2.69  |
| F      | 1.25  | 1.40  |
| L      | 12.60 | 13.60 |
| L2     | 2.80  | 3.20  |
| Q      | 2.60  | 3.00  |
| Q1     | 2.20  | 2.60  |
| P      | 3.50  | 3.80  |