

8A, 600V Ultrafast Single Diode
Features

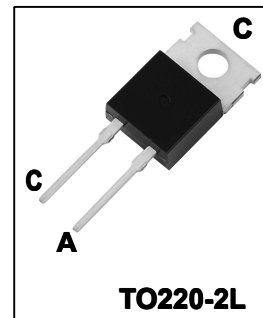
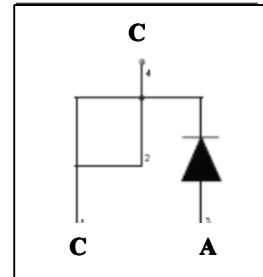
- Ultrafast recovery time $t_r < 23\text{ns}$
- Low forward voltage drop
- Low leakage current
- High reliability by planer design
- Maximum Junction Temperature Range(150°C)

General Description

Winsemi's FRD.. 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 | 80 | A |
| P_D | Power Dissipation | 42 | 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 | $I_F=8\text{A}$ | - | 1.3 | 1.7 | V |
| | | $I_F=8\text{A}, T_c=125^\circ\text{C}$ | - | 1.0 | - | V |
| I_{RRM} | Reverse Current | $V_R=600\text{V}$ | - | - | 15 | μA |
| | | $V_R=600\text{V}, T_c=125^\circ\text{C}$ | - | - | 250 | μA |
| t_r | Reverse Recovery Time | $I_F=1.0\text{A}, V_R=30\text{V}, di_F/dt=200\text{A}/\mu\text{s}$ | - | 30 | - | ns |
| | | $I_F=8.0\text{A}, V_R=300\text{V}$ | - | 50 | - | |
| $R_{th(J-C)}$ | Thermal Resistance | | - | - | 2.5 | $^\circ\text{C}/\text{W}$ |

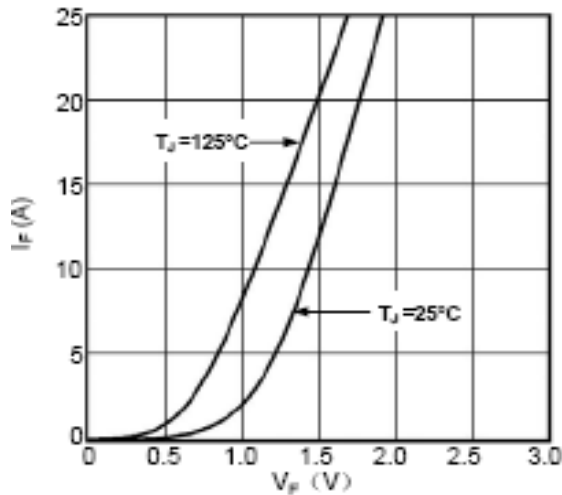


Fig1. Forward Voltage Drop vs Forward Current

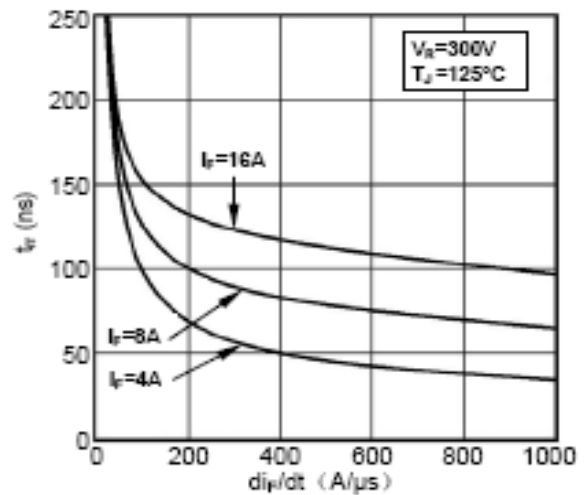


Fig2. Reverse Recovery Time vs di_F/dt

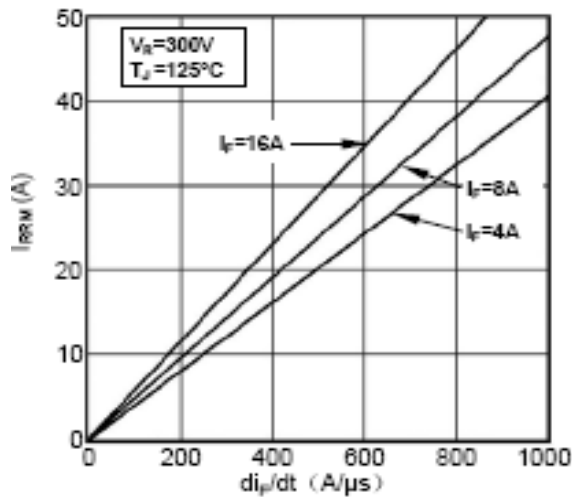


Fig3. Reverse Recovery Current vs di_F/dt

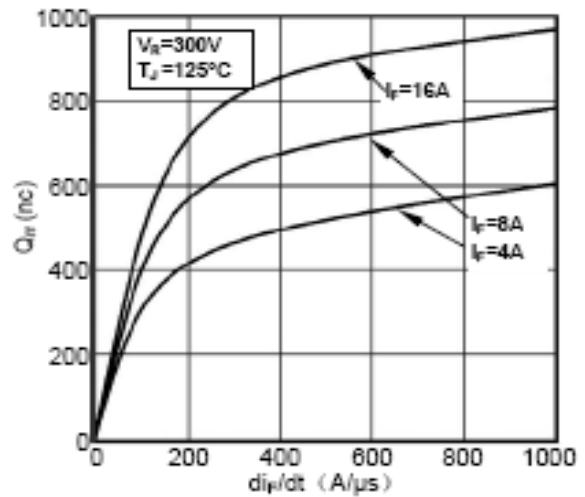


Fig4. Reverse Recovery Charge vs di_F/dt

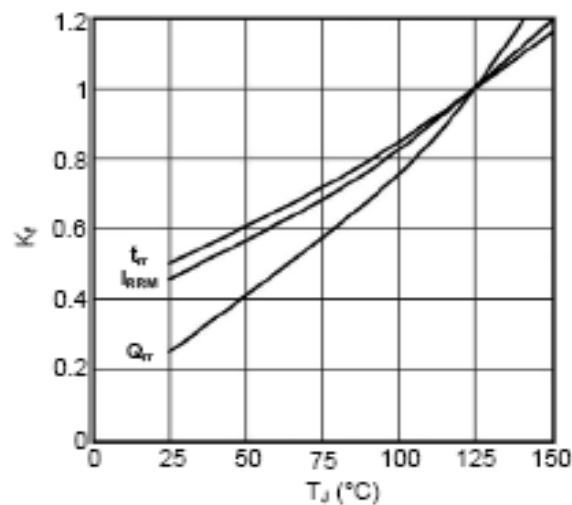


Fig5. Dynamic Parameters vs Junction Temperature

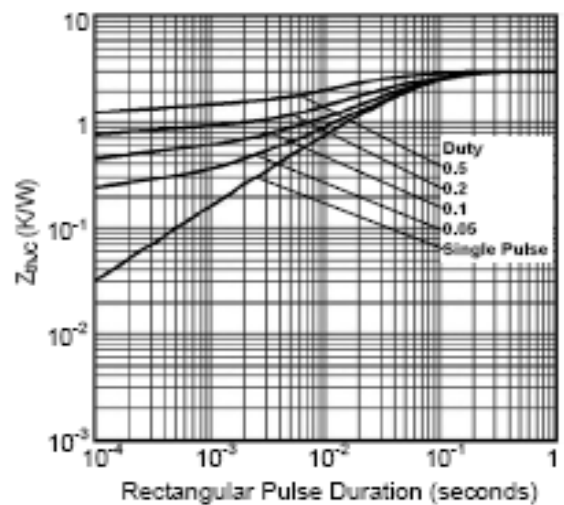


Fig6. Transient Thermal Impedance

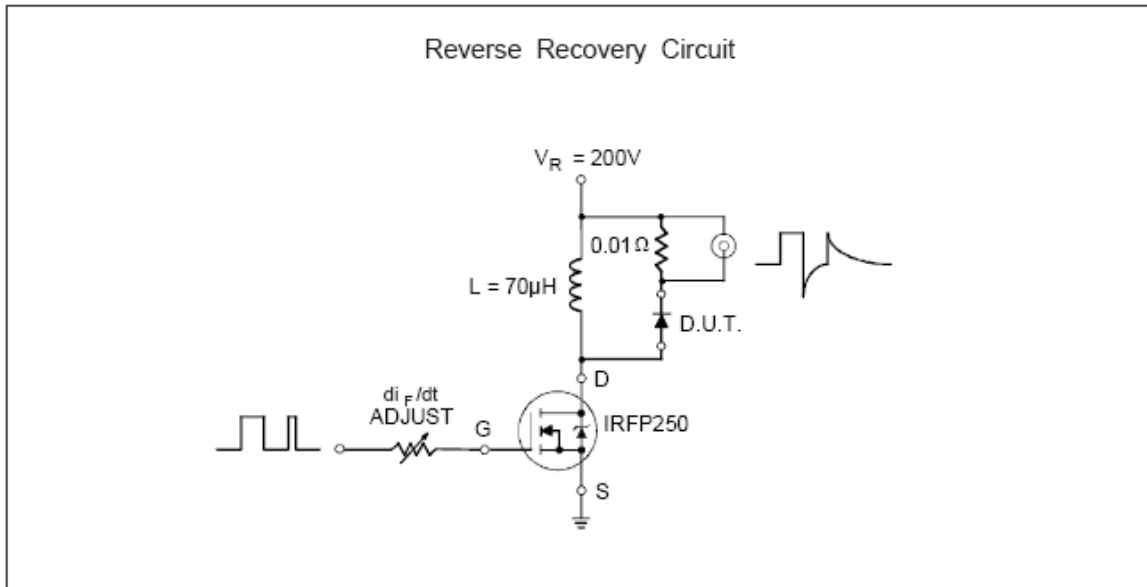


Fig.7 Reverse Recovery Parameter Test Circuit

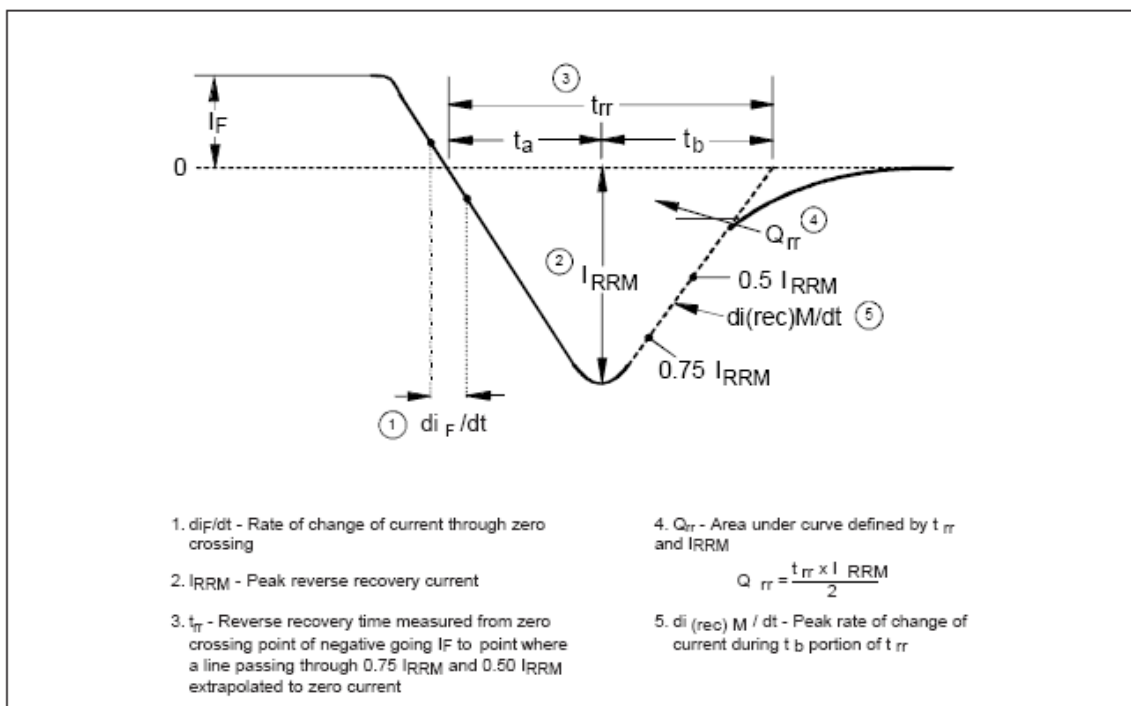


Fig.8 Reverse Recovery Waveform and Definitions

TO220-2L Package Dimension

