

## FRED Modules

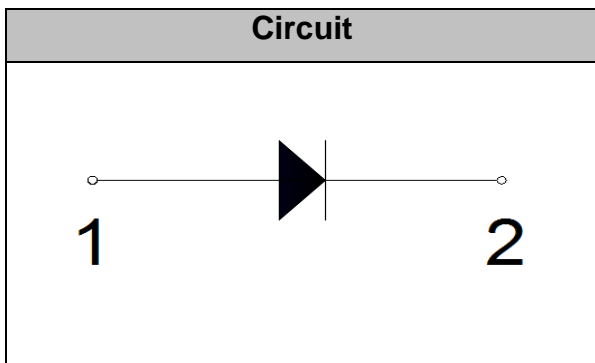


**V<sub>RRM</sub>** 500V

**I<sub>FAV</sub>** 300 A

### Applications

- Inversion Welder
- Uninterruptible Power Supply (UPS)
- Plating Power Supply
- Ultrasonic Cleaner and Welder
- Power Factor Correction (PFC) Circuit
- Converter & Chopper



### Features

- Soft Reverse Recovery Characteristics
- Ultrafast Reverse Recovery Time
- Low Reverse Recovery Loss
- Low Forward Voltage
- High Surge Current Capability
- Low Inductance Package

### Maximum Ratings

| Symbol       | Conditions                                     | Values      | Units                |
|--------------|--|-------------|----------------------|
| $V_R$        |  | 500         | V                    |
| $V_{RRM}$    |  | 500         | V                    |
| $I_{F(AV)}$  | $T_C=110^{\circ}\text{C}$ ,                    | 300         | A                    |
| $I_{F(RMS)}$ | $T_C=110^{\circ}\text{C}$ ,                    | 420         | A                    |
| $I_{FSM}$    | 1/2 Cycle , 50Hz, Sine                         | 5000        | A                    |
|              | 1/2 Cycle , 60Hz, Sine                         | 5500        | A                    |
| $I^2t$       | $T_J=45^{\circ}\text{C}$ , t=10ms, 50Hz, Sine  | 12500       | $\text{A}^2\text{s}$ |
|              | $T_J=45^{\circ}\text{C}$ , t=8.3ms, 60Hz, Sine | 15120       | $\text{A}^2\text{s}$ |
| $P_D$        |  | 1136        | W                    |
| $T_J$        |  | -40 to +150 | $^{\circ}\text{C}$   |
| $T_{STG}$    |  | -40 to +125 | $^{\circ}\text{C}$   |
| Torque       | Module-to-Sink Recommended (M6)                | 3~4.7       | N·m                  |
| Torque       | Module Electrodes Recommended (M6)             | 3~4.7       | N·m                  |
| Weight       |  | 92          | g                    |

### Thermal Characteristics

| Symbol        | Conditions | Values | Units                       |
|---------------|------------|--------|-----------------------------|
| $R_{th(j-c)}$ | Per Module | 0.11   | $^{\circ}\text{C}/\text{W}$ |



Electrical Characteristics

| Symbol    | Conditions   | Values |      |      | Units |
|-----------|--|--------|------|------|-------|
|           |  | Min.   | Typ. | Max. |       |
| $I_{RM}$  | $V_R=500V$   | --     | --   | 0.5  | mA    |
|           | $V_R=500V, T_J=125^\circ C$                                | --     | --   | 2    | mA    |
| $V_F$     | $I_F=300A$   | --     | 1.2  | 1.4  | V     |
|           | $I_F=300A, T_J=125^\circ C$                                | --     | 1.1  | 1.25 | V     |
| trr       | $I_F=1A, V_R=30V, di_F/dt=-200A/\mu s$                     | --     | 65   | --   | ns    |
| trr       | $V_R=250V, I_F=300A, di_F/dt=-200A/\mu s, T_J=25^\circ C$  | --     | 155  | --   | ns    |
| $I_{RRM}$ |  | --     | 15   | --   | A     |
| trr       | $V_R=250V, I_F=300A, di_F/dt=-200A/\mu s, T_J=125^\circ C$ | --     | 335  | --   | ns    |
| $I_{RRM}$ |  | --     | 34   | --   | A     |

Performance Curves

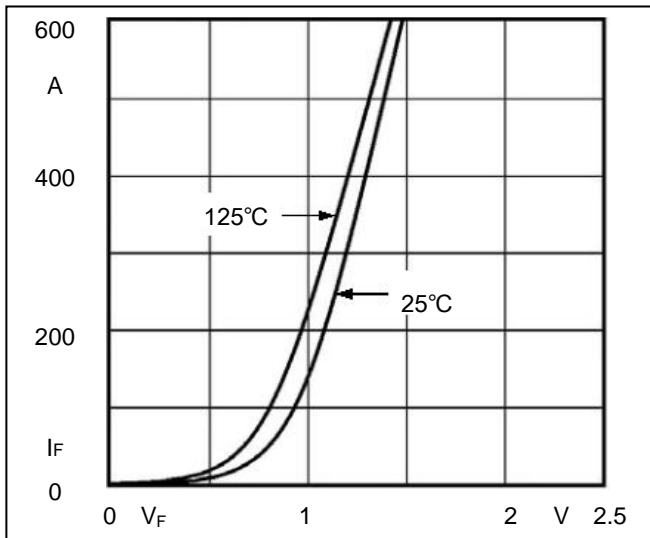


Fig1. Forward Voltage Drop vs Forward Current

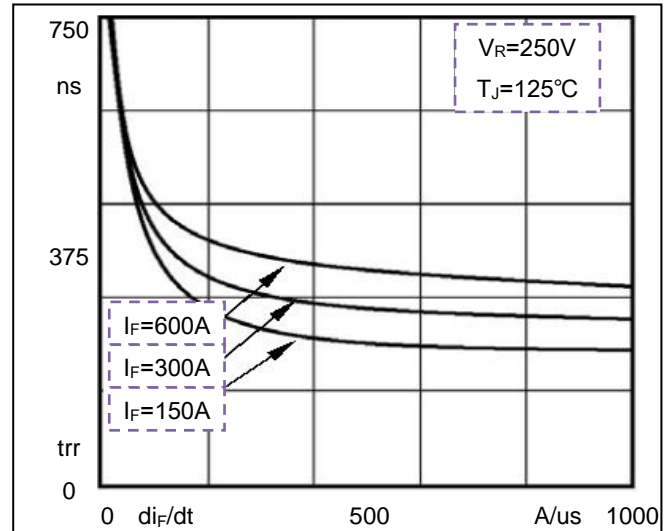


Fig2. Reverse Recovery Time vs  $di_F/dt$

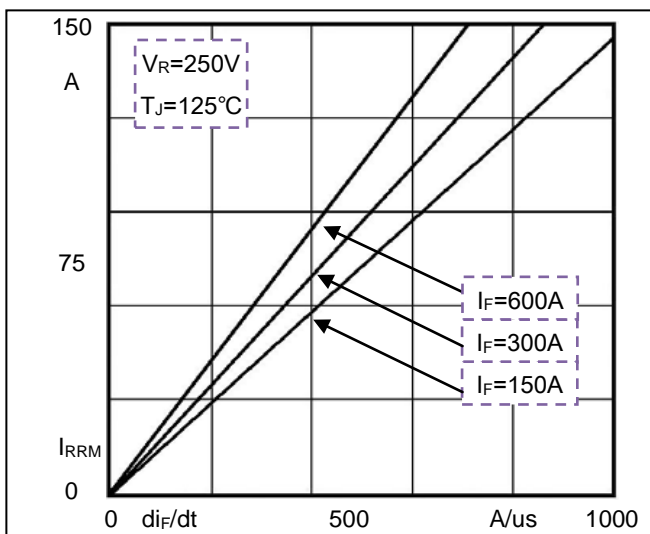


Fig3. Reverse Recovery Current vs  $di_F/dt$

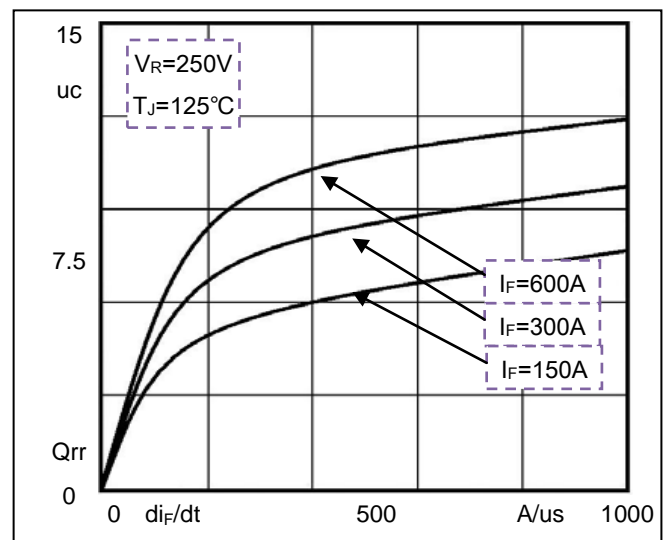
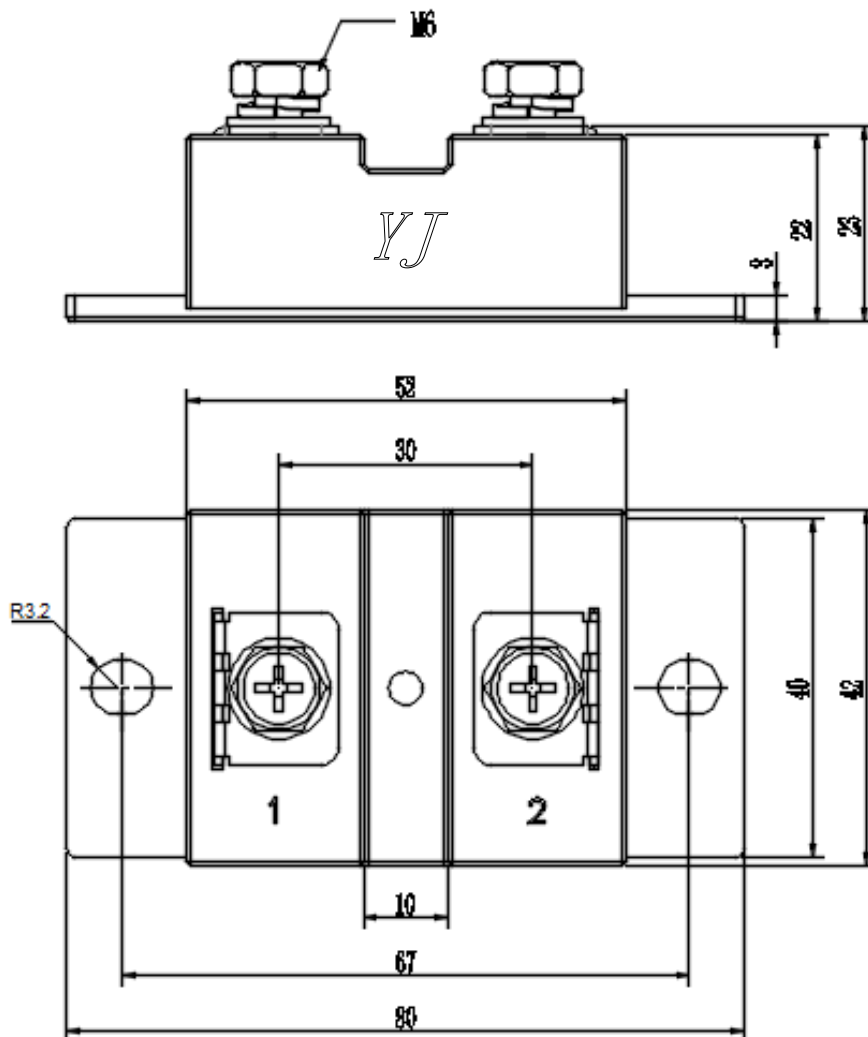


Fig4. Reverse Recovery Charge vs  $di_F/dt$

## Package Outline Information

CASE: F6



Dimensions in mm