

## FRED Modules

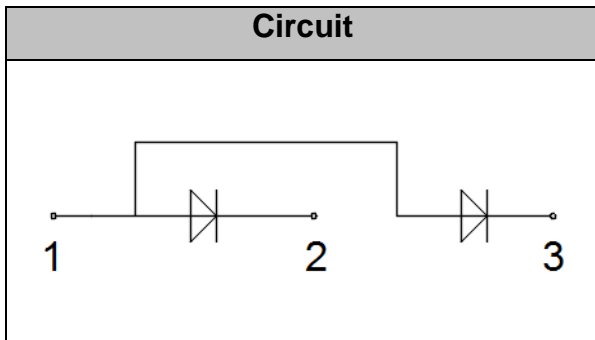


**V<sub>RRM</sub>** 1200V

**I<sub>FAV</sub>** 100 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       |
|--------------|--|--------------|-------------|
| $V_R$        |  | 1200         | V           |
| $V_{RRM}$    |  | 1200         | V           |
| $I_{F(AV)}$  | $T_C=75^{\circ}C$ , Per Diode              | 100          | A           |
|              | $T_C=85^{\circ}C$ , 20KHz, Per Module      | 75           | A           |
| $I_{F(RMS)}$ | $T_C=75^{\circ}C$ , Per Diode              | 150          | A           |
| $I_{FSM}$    | 1/2 Cycle , 50Hz, Sine                     | 1100         | A           |
|              | 1/2 Cycle , 60Hz, Sine                     | 1200         | A           |
| $I^2t$       | $T_J=45^{\circ}C$ , $t=10ms$ , 50Hz, Sine  | 6050         | $A^2s$      |
|              | $T_J=45^{\circ}C$ , $t=8.3ms$ , 60Hz, Sine | 7200         | $A^2s$      |
| $P_D$        |  | 280          | W           |
| Visol        | AC, $T_{on}=1min$                          | 3000         | V           |
| $T_J$        |  | -40 to +150  | $^{\circ}C$ |
| $T_{STG}$    |  | -40 to +125  | $^{\circ}C$ |
| Torque       | Recommended (M6)                           | $3 \pm 15\%$ | N·m         |
| Torque       | Recommended (M6)                           | $5 \pm 15\%$ | N·m         |
| Weight       |  | 100          | g           |

### Thermal Characteristics

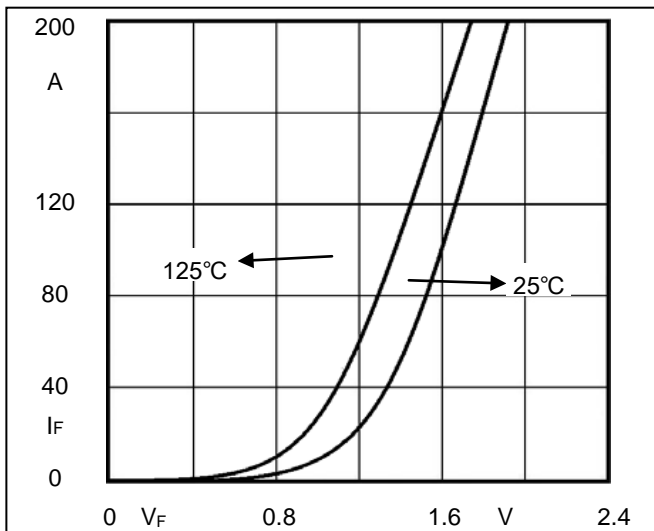
| Symbol        | Conditions | Values | Units         |
|---------------|------------|--------|---------------|
| $R_{th(j-c)}$ | Per diode  | 0.4    | $^{\circ}C/W$ |



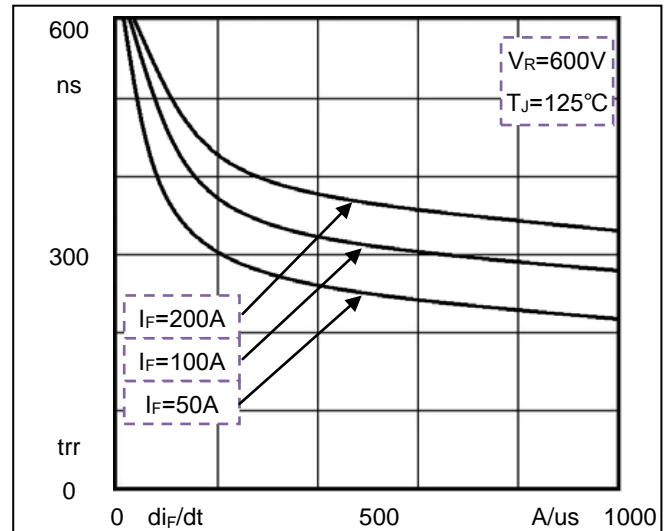
**Electrical Characteristics**

| Symbol    | Conditions   | Values |      |      | Units |
|-----------|--|--------|------|------|-------|
|           |  | Min.   | Typ. | Max. |       |
| $I_{RM}$  | $V_R=1200V$  | --     | --   | 1    | mA    |
|           | $V_R=1200V, T_J=125^\circ C$                               | --     | --   | 10   | mA    |
| $V_F$     | $I_F=100A$   | --     | 1.58 |      | V     |
|           | $I_F=100A, T_J=125^\circ C$                                | --     | 1.35 |      | V     |
| trr       | $I_F=1A, V_R=30V, di_F/dt=-200A/\mu s$                     | --     | 55   | --   | ns    |
| trr       | $V_R=600V, I_F=100A, di_F/dt=-200A/\mu s, T_J=25^\circ C$  | --     | 135  | --   | ns    |
| $I_{RRM}$ |  | --     | 10   | --   | A     |
| trr       | $V_R=600V, I_F=100A, di_F/dt=-200A/\mu s, T_J=125^\circ C$ | --     | 380  | --   | ns    |
| $I_{RRM}$ |  | --     | 21   | --   | A     |

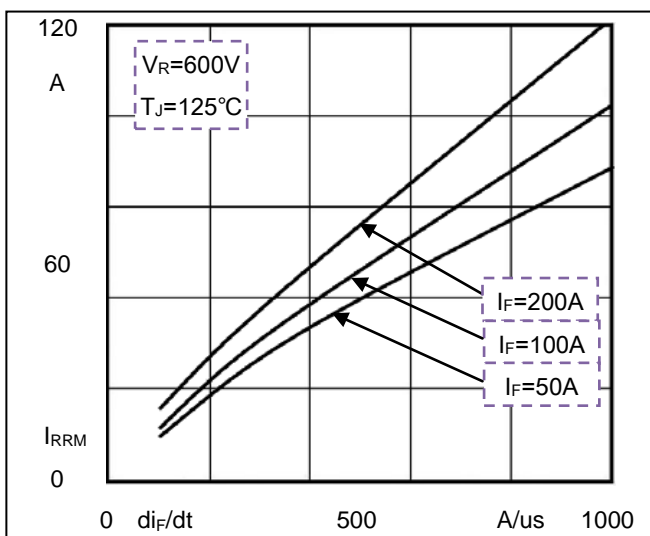
**Performance Curves**



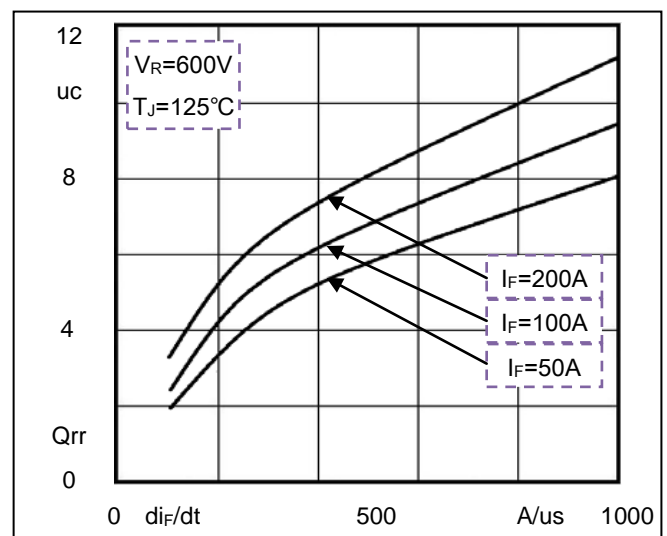
**Fig1. Forward Voltage Drop vs Forward Current**



**Fig2. Reverse Recovery Time vs  $di_F/dt$**



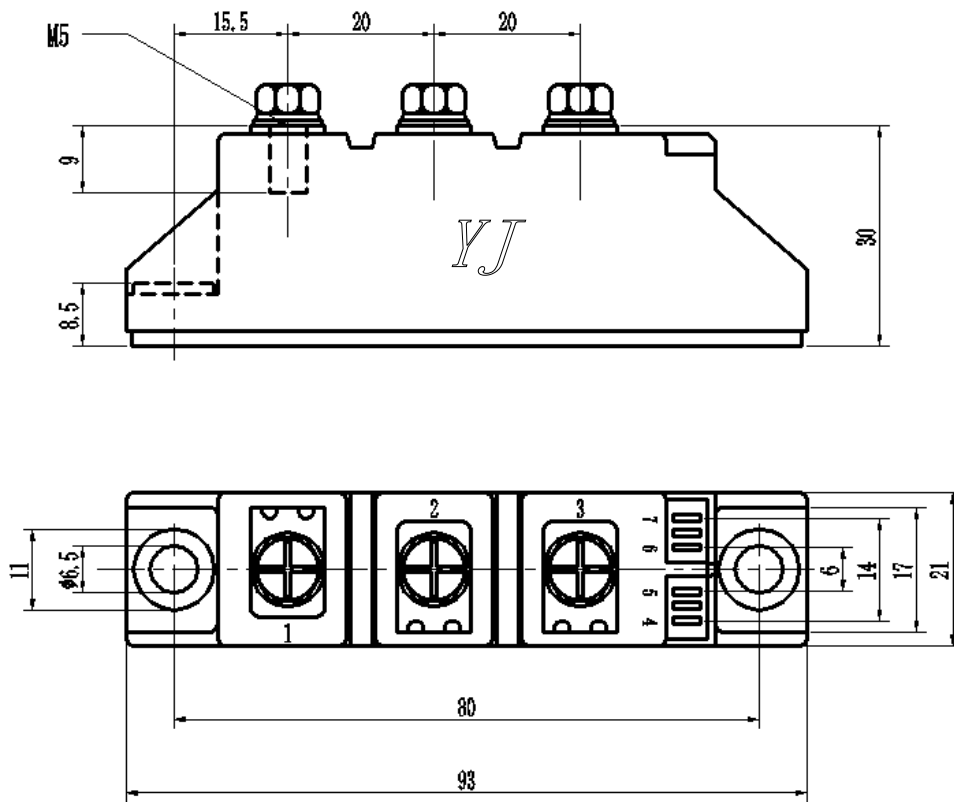
**Fig3. Reverse Recovery Current vs  $di_F/dt$**



**Fig4. Reverse Recovery Charge vs  $di_F/dt$**

## Package Outline Information

CASE: F1



Dimensions in mm

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