



## FRED Modules

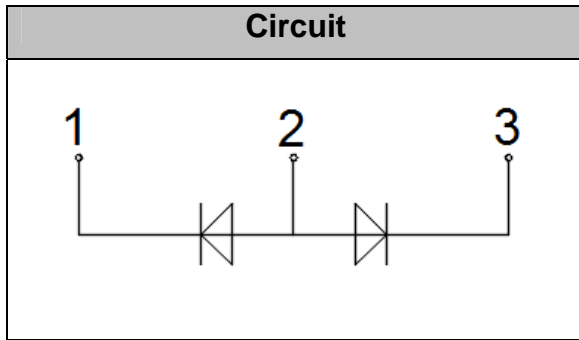
**V<sub>RRM</sub>** 1200V  
**I<sub>FAV</sub>** 100 A

### 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 <sub>R</sub>      |   | 1200        | V                |
| V <sub>RRM</sub>    |   | 1200        | V                |
| I <sub>F(AV)</sub>  | T <sub>C</sub> =110°C, Per Leg            | 100         | A                |
|                     | T <sub>C</sub> =110°C, Per Module         | 200         | A                |
| I <sub>F(RMS)</sub> | T <sub>C</sub> =110°C, Per Leg            | 150         | A                |
| I <sub>FSM</sub>    | 1/2 Cycle, 50Hz, Sine                     | 1100        | A                |
|                     | 1/2 Cycle, 60Hz, Sine                     | 1200        | A                |
| I <sup>2</sup> t    | T <sub>J</sub> =45°C, t=10ms, 50Hz, Sine  | 6050        | A <sup>2</sup> s |
|                     | T <sub>J</sub> =45°C, t=8.3ms, 60Hz, Sine | 7200        | A <sup>2</sup> s |
| P <sub>D</sub>      |   | 280         | W                |
| Visol               | AC, Ton=1min                              | 3000        | V                |
| T <sub>J</sub>      |   | -40 to +150 | °C               |
| T <sub>STG</sub>    |   | -40 to +125 | °C               |
| Torque              | Recommended (M5)                          | 2.5~4       | N·m              |
| Torque              | Recommended (M5)                          | 2.5~4       | N·m              |
| Weight              |   | 100         | g                |

## Thermal Characteristics

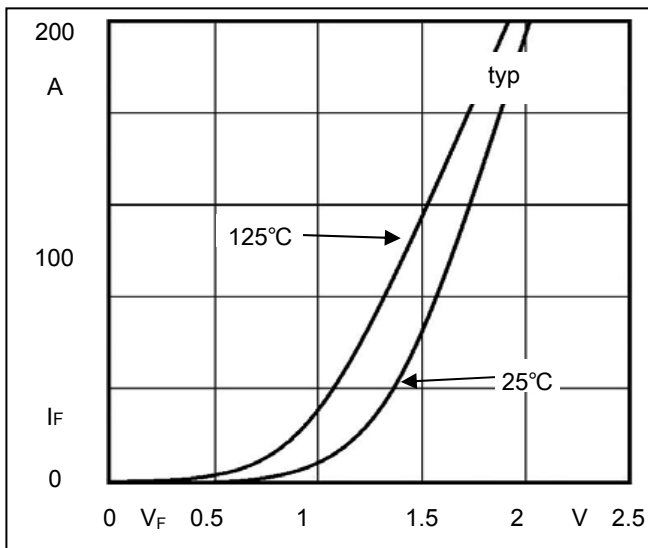
| Symbol               | Conditions | Values | Units |
|----------------------|------------|--------|-------|
| R <sub>th(j-c)</sub> | Per Module | 0.2    | °C/W  |



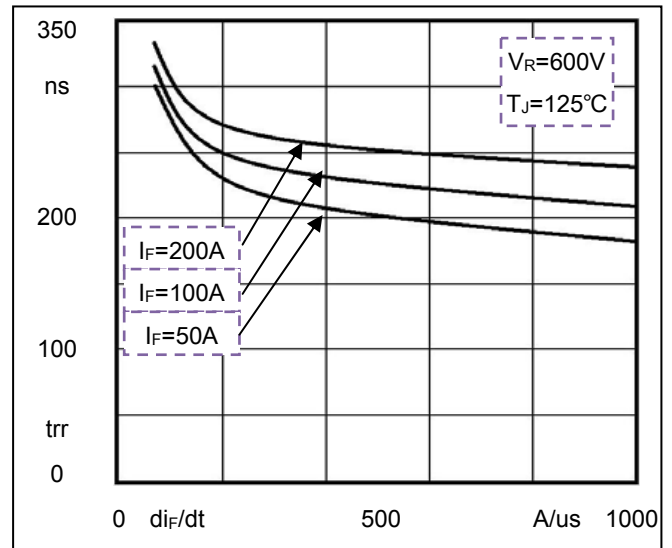
**Electrical Characteristics**

| Symbol    | Conditions   | Values |      |      | Units |
|-----------|--|--------|------|------|-------|
|           |  | Min.   | Typ. | Max. |       |
| $I_{RM}$  | $V_R=1200V$  | --     | --   | 0.2  | mA    |
|           | $V_R=1200V, T_J=125^\circ C$                               | --     | --   | 2    | mA    |
| $V_F$     | $I_F=100A$   | --     | 1.65 | 1.75 | V     |
|           | $I_F=100A, T_J=125^\circ C$                                | --     | 1.4  | 1.6  | V     |
| $t_{rr}$  | $I_F=1A, V_R=30V, di_F/dt=-200A/\mu s$                     | --     | 35   | --   | ns    |
| $t_{rr}$  | $V_R=600V, I_F=100A, di_F/dt=-200A/\mu s, T_J=25^\circ C$  | --     | 150  | --   | ns    |
| $I_{RRM}$ |  | --     | 28   | --   | A     |
| $t_{rr}$  | $V_R=600V, I_F=100A, di_F/dt=-200A/\mu s, T_J=125^\circ C$ | --     | 255  | --   | ns    |
| $I_{RRM}$ |  | --     | 48   | --   | A     |

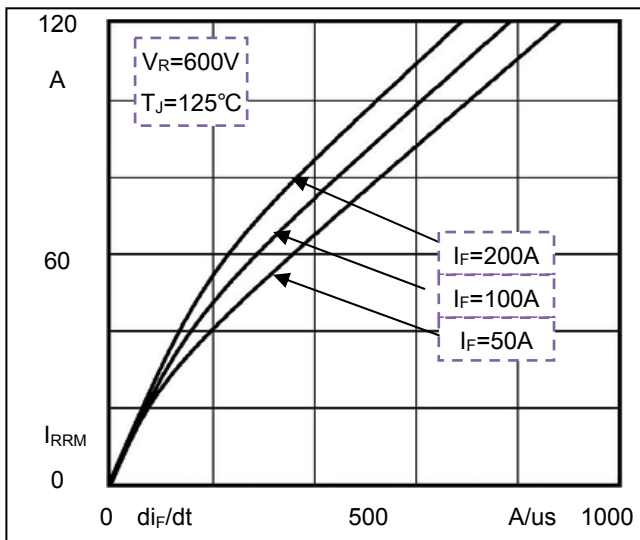
**Performance Curves**



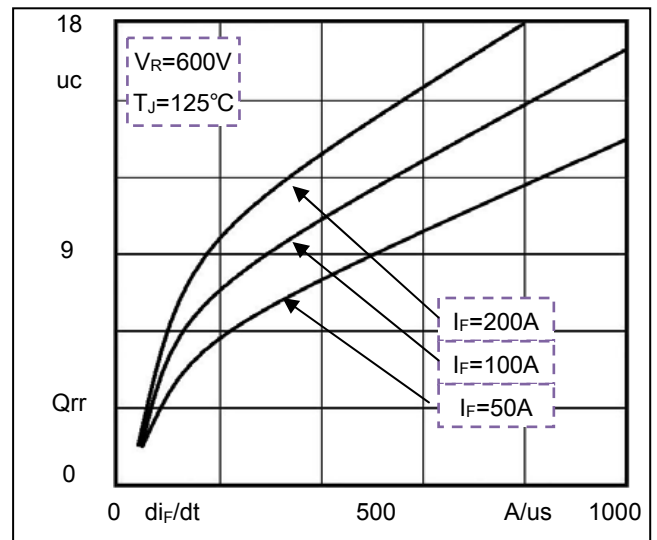
**Fig1. Forward Voltage Drop vs Forward Current**



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



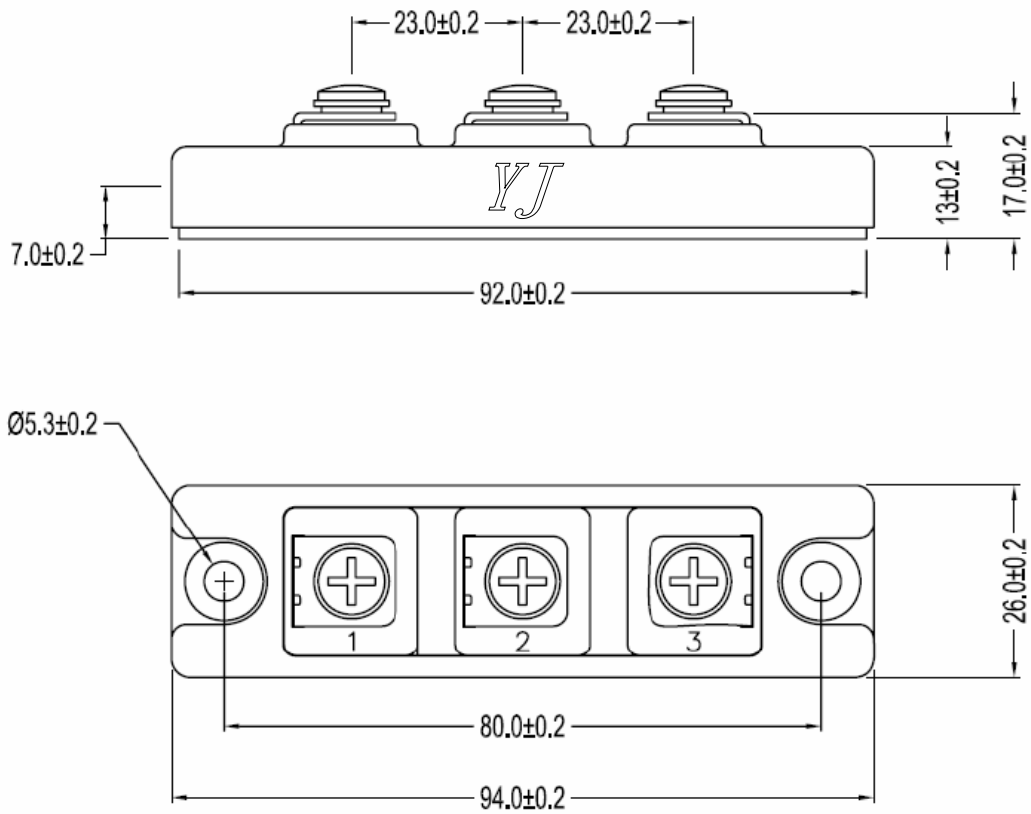
**Fig3. Reverse Recovery Current vs  $di_F/dt$**



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

## Package Outline Information

CASE: F5



Dimensions in mm