

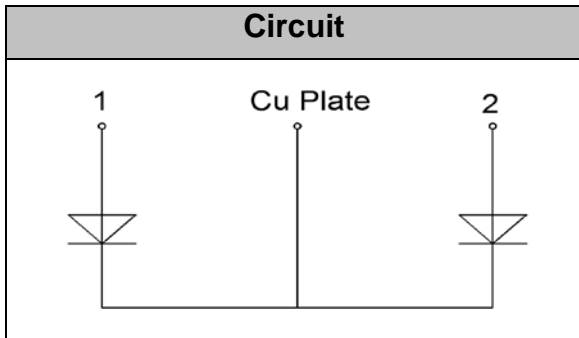
## FRED Modules



**V<sub>RRM</sub>** 400V  
**I<sub>FAV</sub>** 400 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>              |   | 400         | V                |
| V <sub>R<sub>RM</sub></sub> |   | 400         | V                |
| I <sub>F(AV)</sub>          | T <sub>C</sub> =125°C, Per Diode          | 200         | A                |
|                             | T <sub>C</sub> =125°C, Per Module         | 400         | A                |
|                             | T <sub>C</sub> =125°C, 20KHz, Per Module  | 300         | A                |
| I <sub>F(RMS)</sub>         | T <sub>C</sub> =125°C, Per Diode          | 285         | A                |
| I <sub>FSM</sub>            | 1/2 Cycle, 50Hz, Sine                     | 4000        | A                |
|                             | 1/2 Cycle, 60Hz, Sine                     | 4500        | A                |
| I <sup>2</sup> t            | T <sub>J</sub> =45°C, t=10ms, 50Hz, Sine  | 80000       | A <sup>2</sup> s |
|                             | T <sub>J</sub> =45°C, t=8.3ms, 60Hz, Sine | 101250      | A <sup>2</sup> s |
| P <sub>D</sub>              |   | 2000        | W                |
| T <sub>J</sub>              |   | -40 to +150 | °C               |
| T <sub>STG</sub>            |   | -40 to +125 | °C               |
| Torque                      | Recommended (M6)                          | 3~4.7       | N·m              |
| Torque                      | Recommended (M6)                          | 3~4.7       | N·m              |
| Weight                      |   | 92          | g                |

## Thermal Characteristics

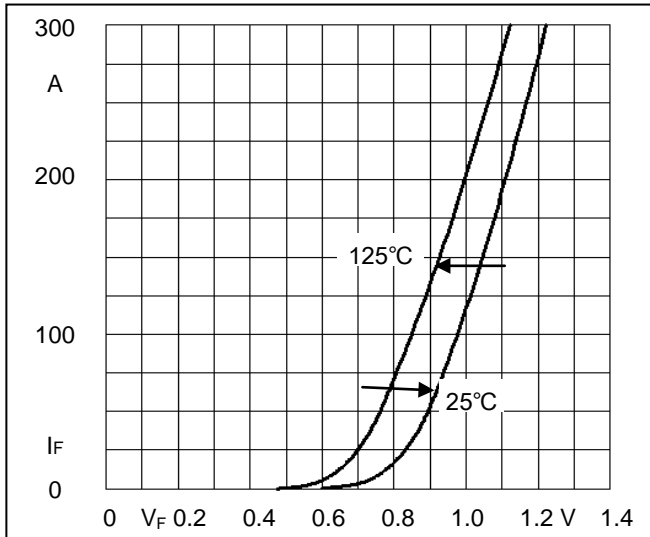
| Symbol               | Conditions | Values | Units |
|----------------------|------------|--------|-------|
| R <sub>th(j-c)</sub> |            | 0.06   | °C/W  |



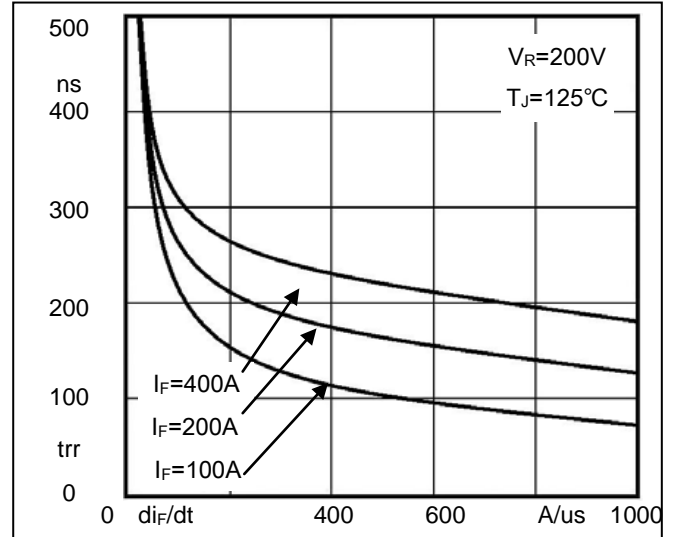
**Electrical Characteristics**

| Symbol    | Conditions   | Values |      |      | Units |
|-----------|--|--------|------|------|-------|
|           |  | Min.   | Typ. | Max. |       |
| $I_{RM}$  | $V_R=400V$   | --     | --   | 1    | mA    |
|           | $V_R=400V, T_J=125^\circ C$                                | --     | --   | 2    | mA    |
| $V_F$     | $I_F=200A$   | --     | 1.1  | 1.35 | V     |
|           | $I_F=200A, T_J=125^\circ C$                                | --     | 1.0  | 1.25 | V     |
| trr       | $I_F=1A, V_R=30V, di_F/dt=-200A/\mu s$                     | --     | 45   | --   | ns    |
| trr       | $V_R=200V, I_F=200A, di_F/dt=-200A/\mu s, T_J=25^\circ C$  | --     | 135  | --   | ns    |
| $I_{RRM}$ |  | --     | 12   | --   | A     |
| trr       | $V_R=200V, I_F=200A, di_F/dt=-200A/\mu s, T_J=125^\circ C$ | --     | 210  | --   | ns    |
| $I_{RRM}$ |  | --     | 20   | --   | A     |

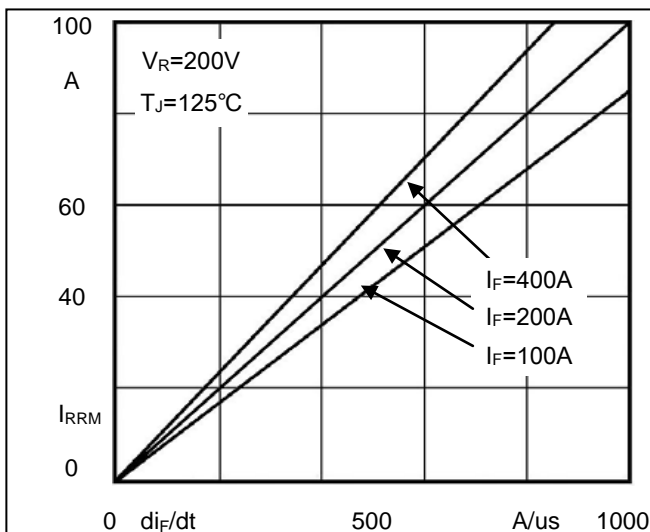
**Performance Curves**



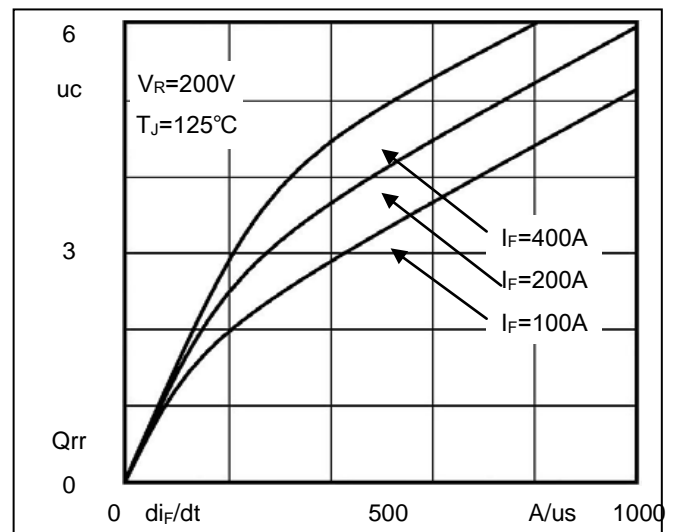
**Fig1. Forward Voltage Drop vs Forward Current**



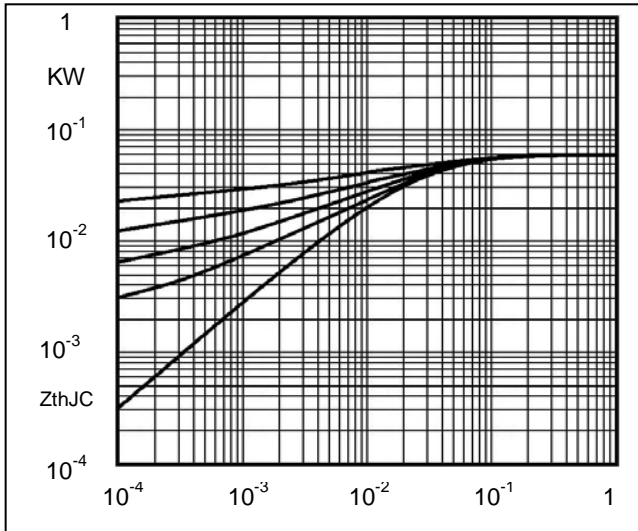
**Fig2. Reverse Recovery Time vs  $di_F/dt$**



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



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



**Fig5. Transient Thermal Impedance**

**Package Outline Information**

