

## FRED Modules

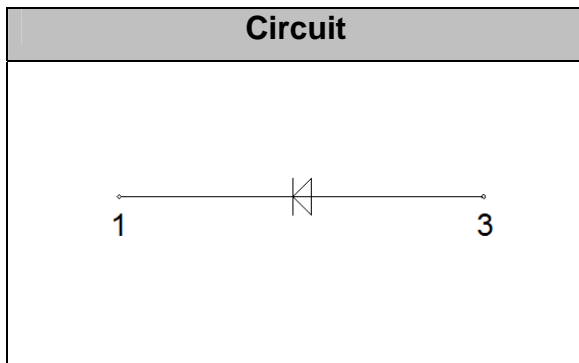


**V<sub>RRM</sub>** 1200V

**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>		1200	V
V <sub>R<sub>RM</sub></sub>		1200	V
I <sub>F(AV)</sub>	T <sub>C</sub> =90°C,	400	A
I <sub>F(RMS)</sub>	T <sub>C</sub> =90°C,	560	A
I <sub>FSM</sub>	1/2 Cycle , 50Hz, Sine	3200	A
	1/2 Cycle , 60Hz, Sine	3500	A
I <sup>2</sup> t	T <sub>J</sub> =45°C, t=10ms, 50Hz, Sine	51200	A <sup>2</sup> s
	T <sub>J</sub> =45°C, t=8.3ms, 60Hz, Sine		
P <sub>D</sub>		1130	W
Visol	a.c.50HZ;r.m.s.;1min	3000	V
T <sub>J</sub>		-40 to +150	°C
T <sub>STG</sub>		-40 to +125	°C
Torque	Module-to-Sink Recommended (M6)	4.5	N·m
Torque	Module Electrodes Recommended (M6)	4.5	N·m
Weight		160	g

### Thermal Characteristics

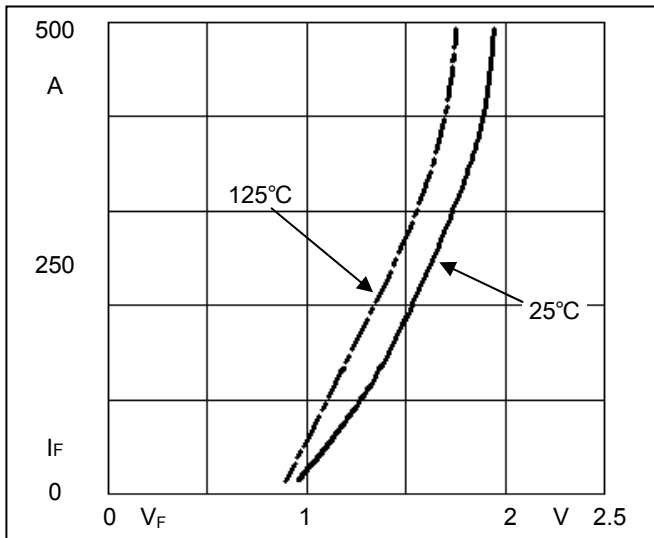
Symbol	Conditions	Values	Units
R <sub>th(j-c)</sub>	Per Module	0.22	°C/W



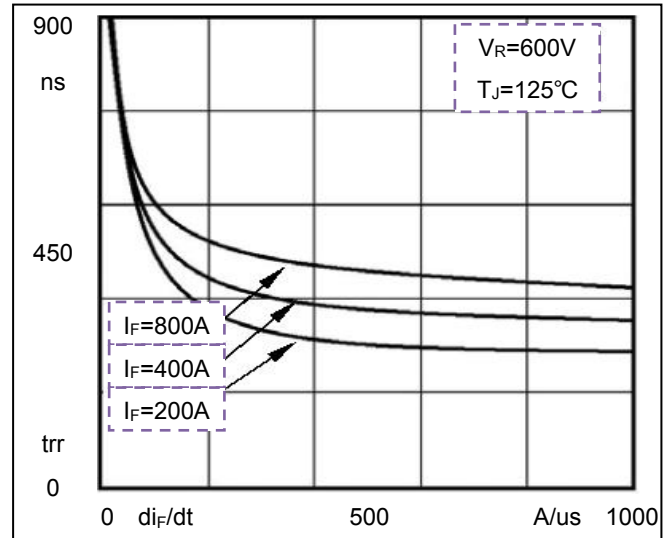
**Electrical Characteristics**

Symbol	Conditions	Values			Units
		Min.	Typ.	Max.	
$I_{RM}$	$V_R=1200V$	--	--	1	mA
	$V_R=1200V, T_J=125^\circ C$	--	--	5	mA
$V_F$	$I_F=400A$	--	1.9	2.1	V
	$I_F=400A, T_J=125^\circ C$	--	1.75	1.9	V
$t_{rr}$	$I_F=1A, V_R=30V, di_F/dt=-200A/\mu s$	--	76	--	ns
$t_{rr}$	$V_R=600V, I_F=400A, di_F/dt=-200A/\mu s, T_J=25^\circ C$	--	180	--	ns
$I_{RRM}$		--	15	--	A
$t_{rr}$	$V_R=600V, I_F=400A, di_F/dt=-200A/\mu s, T_J=125^\circ C$	--	500	--	ns
$I_{RRM}$		--	35	--	A

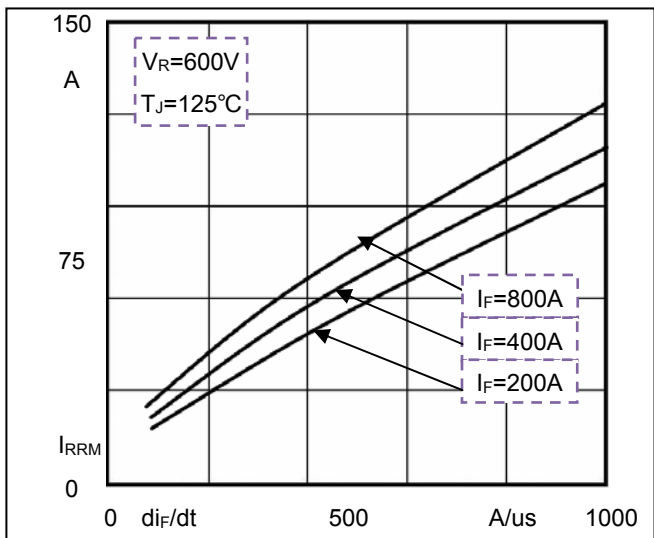
**Performance Curves**



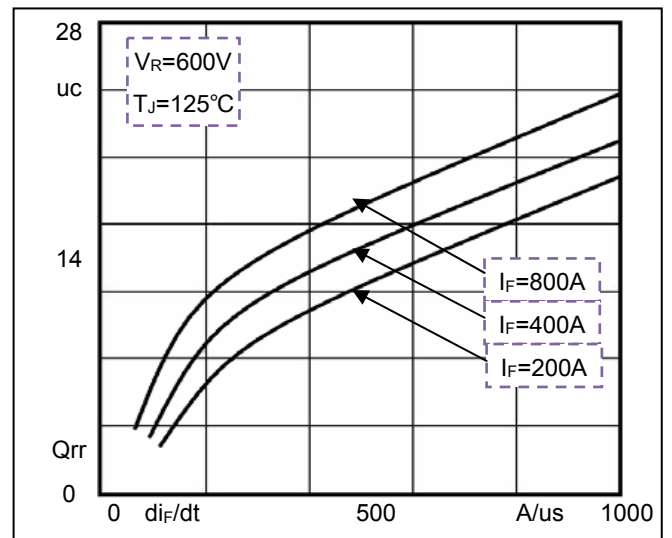
**Fig1. Forward Voltage Drop vs Forward Current**



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



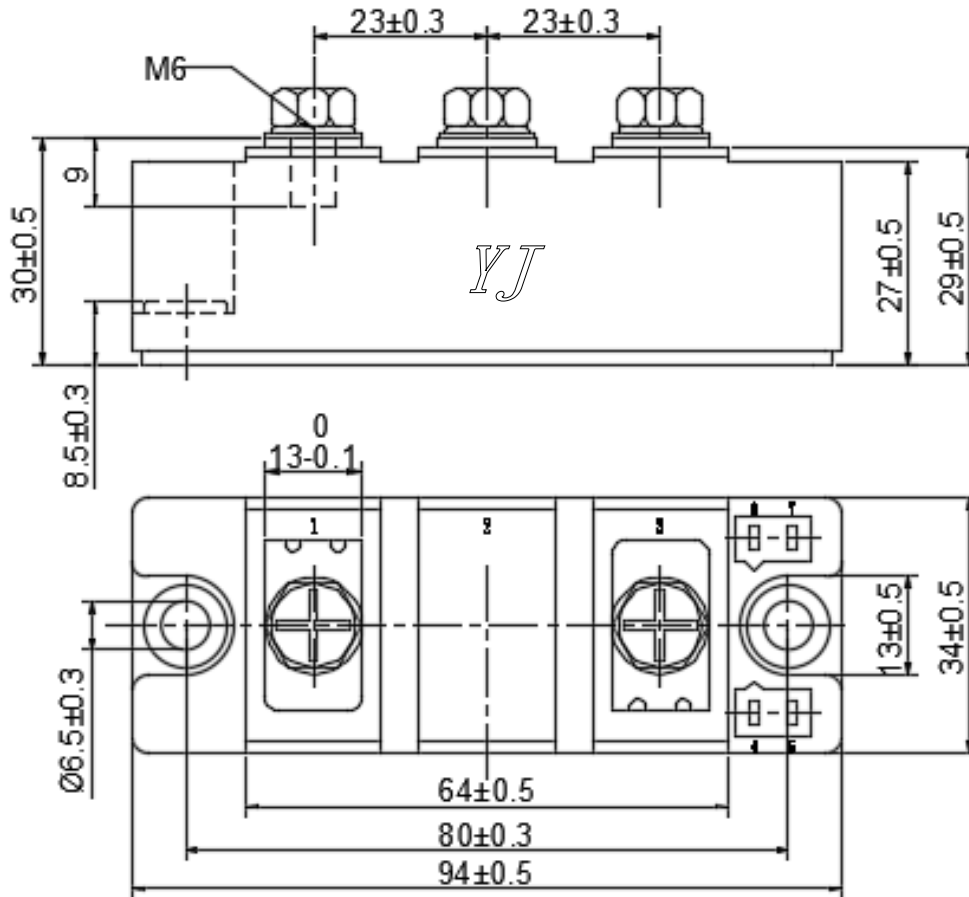
**Fig3. Reverse Recovery Current vs  $di_F/dt$**



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

Package Outline Information

CASE: F2



Dimensions in mm

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