



## FRED Modules

**V<sub>RRM</sub>** 600V

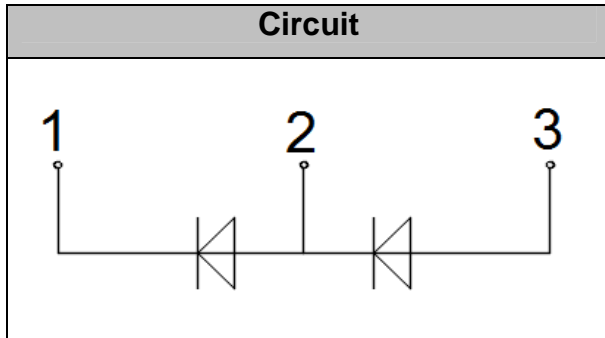
**I<sub>FAV</sub>** 150 A

### 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
- Insulation Encapsulation



### Maximum Ratings

Symbol	Conditions	Values	Units
$V_R$		600	V
$V_{RRM}$		600	V
$I_{F(AV)}$	$T_C=100^\circ\text{C}$ , Per Diode	150	A
	$T_C=100^\circ\text{C}$ , Per Module	300	A
$I_{F(RMS)}$	$T_C=100^\circ\text{C}$ , Per Diode	212	A
$I_{FSM}$	1/2 Cycle, 50Hz, Sine	1400	A
	1/2 Cycle, 60Hz, Sine	1536	A
$I^2t$	$T_J=45^\circ\text{C}$ , $t=10\text{ms}$ , 50Hz, Sine	9800	$\text{A}^2\text{s}$
	$T_J=45^\circ\text{C}$ , $t=8.3\text{ms}$ , 60Hz, Sine		$\text{A}^2\text{s}$
$P_D$		480	W
Visol	AC, $T_{on}=1\text{min}$	3000	V
$T_J$		-40 to +150	$^\circ\text{C}$
$T_{STG}$		-40 to +125	$^\circ\text{C}$
Torque	Recommended (M6)	$3\pm 15\%$	N·m
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Weight		160	g

### Thermal Characteristics

Symbol	Conditions	Values	Units
$R_{th(j-c)}$	Junction-to-Case, Per Diode	0.32	$^\circ\text{C/W}$
$R_{th(j-c)}$	Junction-to-Case, Per Module	0.16	$^\circ\text{C/W}$



## Electrical Characteristics

Symbol	Conditions	Values			Units
		Min.	Typ.	Max.	
$I_{RM}$	$V_R=600V$	--	--	1	mA
	$V_R=600V, T_J=125^\circ C$	--	--	5	mA
$V_F$	$I_F=150A$	--	1.28	1.5	V
	$I_F=150A, T_J=125^\circ C$	--	--	1.4	V
$t_{rr}$	$I_F=1A, V_R=30V, di_F/dt=-200A/\mu s$	--	50	--	ns
$t_{rr}$	$V_R=300V, I_F=150A, di_F/dt=-200A/\mu s, T_J=25^\circ C$	--	130	--	ns
$I_{RRM}$		--	14	--	A
$t_{rr}$	$V_R=300V, I_F=150A, di_F/dt=-200A/\mu s, T_J=125^\circ C$	--	220	--	ns
$I_{RRM}$		--	22	--	A

## Performance Curves

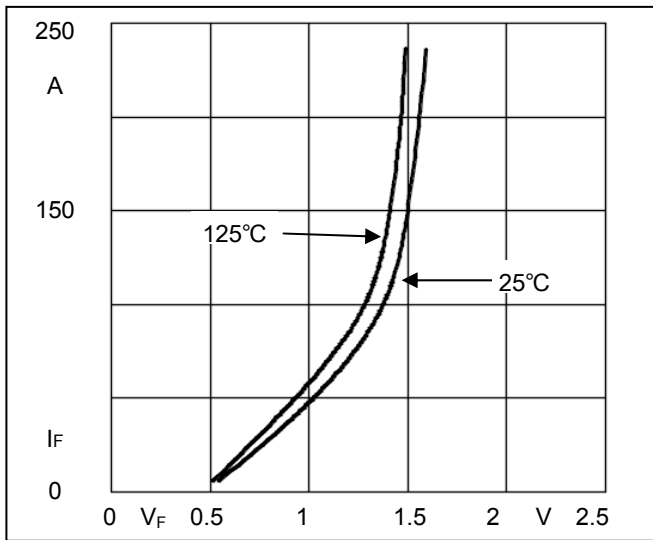


Fig1. Forward Voltage Drop vs Forward Current

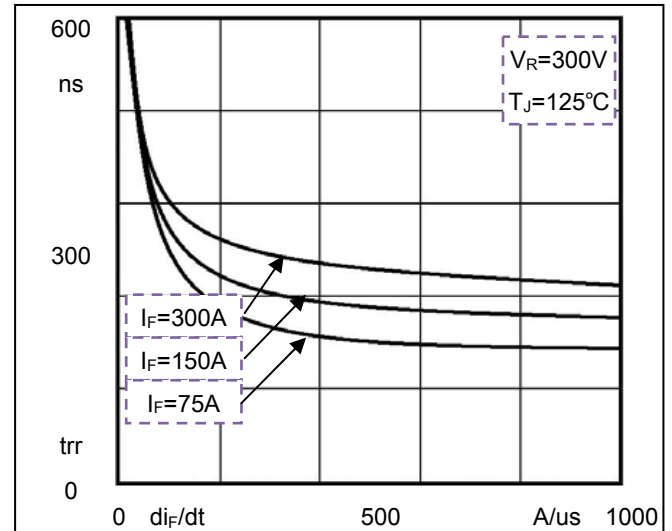


Fig2. Reverse Recovery Time vs  $di_F/dt$

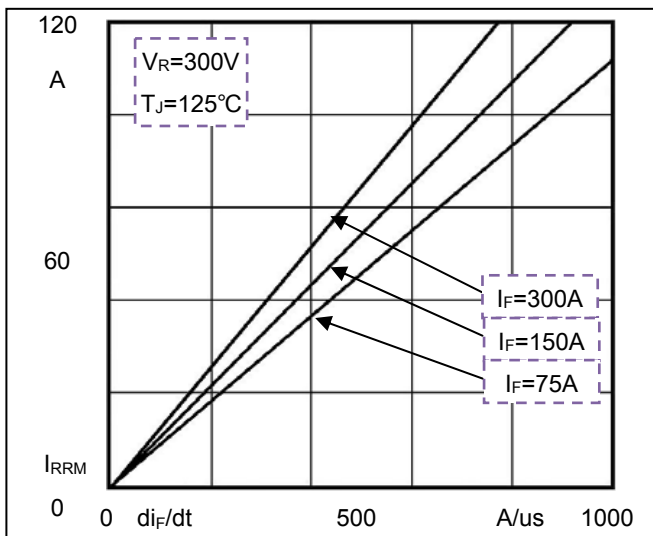


Fig3. Reverse Recovery Current vs  $di_F/dt$

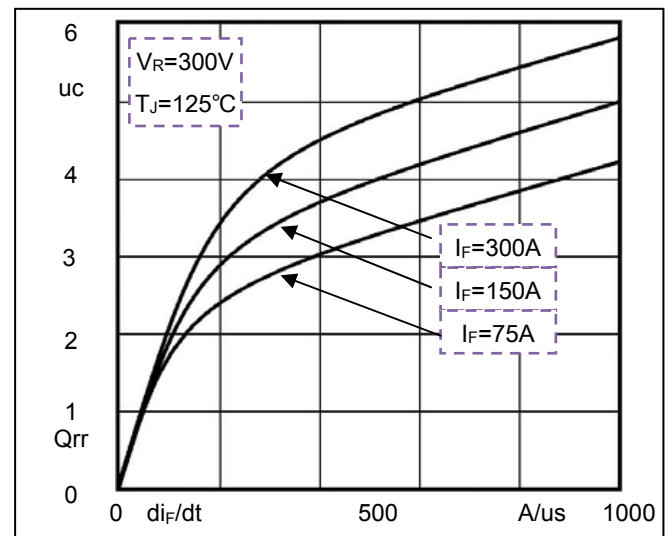
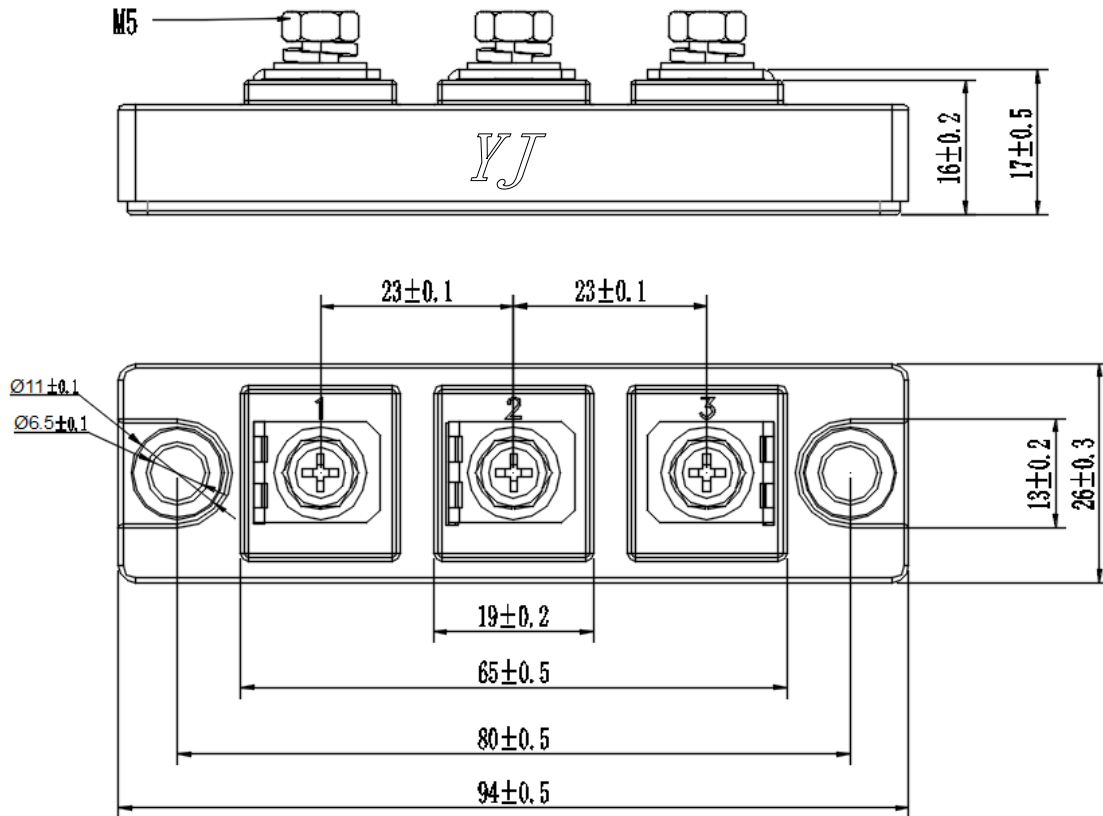


Fig4. Reverse Recovery Charge vs  $di_F/dt$

## Package Outline Information

CASE: F5



Dimensions in mm