



FRED Modules

V_{RRM} 400V

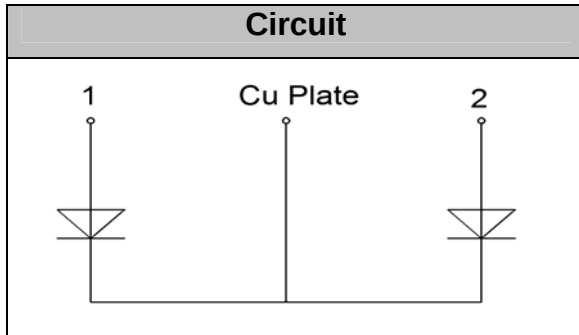
I_{FAV} 200 A

Features

- Soft Reverse Recovery Characteristics
- Ultrafast Reverse Recovery Time
- Low Reverse Recovery Loss
- Low Forward Voltage
- High Surge Current Capability
- Low Inductance Package

Applications

- Inversion Welder
- Uninterruptible Power Supply (UPS)
- Plating Power Supply
- Ultrasonic Cleaner and Welder
- Power Factor Correction (PFC) Circuit
- Converter & Chopper



Maximum Ratings

Symbol	Conditions	Values	Units
V_R		400	V
V_{RRM}		400	V
$I_{F(AV)}$	$T_C=125^{\circ}\text{C}$, Per Diode	100	A
	$T_C=125^{\circ}\text{C}$, Per Module	200	A
$I_{F(RMS)}$	$T_C=125^{\circ}\text{C}$, Per Diode	150	A
I_{FSM}	1/2 Cycle, 50Hz, Sine	1500	A
	1/2 Cycle, 60Hz, Sine	1800	A
I^2t	$T_J=45^{\circ}\text{C}$, $t=10\text{ms}$, 50Hz, Sine	11250	A^2s
	$T_J=45^{\circ}\text{C}$, $t=8.3\text{ms}$, 60Hz, Sine	16200	A^2s
T_J		-40 to +150	$^{\circ}\text{C}$
T_{STG}		-40 to +125	$^{\circ}\text{C}$
Torque	Recommended (M6)	3~4.7	N·m
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Weight		68	g

Thermal Characteristics

Symbol	Conditions	Values	Units
$R_{th(j-c)}$	Per Leg	0.22	$^{\circ}\text{C/W}$
$R_{th(j-c)}$	Per Module	0.11	$^{\circ}\text{C/W}$

Electrical Characteristics

Symbol	Conditions	Values			Units
		Min.	Typ.	Max.	
I_{RM}	$V_R=400V$	--	--	0.5	mA
	$V_R=400V, T_J=125^{\circ}C$	--	--	1	mA
V_F	$I_F=100A$	--	1.15	1.35	V
	$I_F=100A, T_J=125^{\circ}C$	--	1.04	1.24	V
t_{rr}	$I_F=1A, V_R=30V, di_F/dt=-200A/\mu s$	--	38	--	ns
t_{rr}	$V_R=200V, I_F=100A, di_F/dt=-200A/\mu s, T_J=25^{\circ}C$	--	95	--	ns
I_{RRM}		--	8.5	--	A
t_{rr}	$V_R=200V, I_F=100A, di_F/dt=-200A/\mu s, T_J=125^{\circ}C$	--	150	--	ns
I_{RRM}		--	14	--	A

Performance Curves

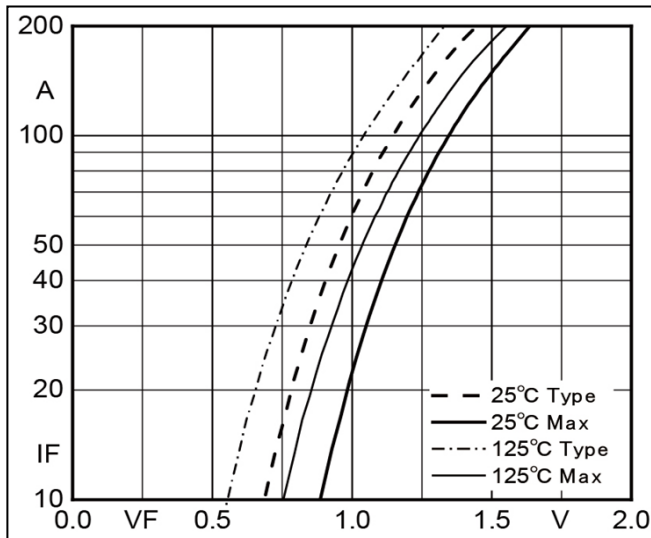


Fig1. Forward Voltage Drop vs Forward Current

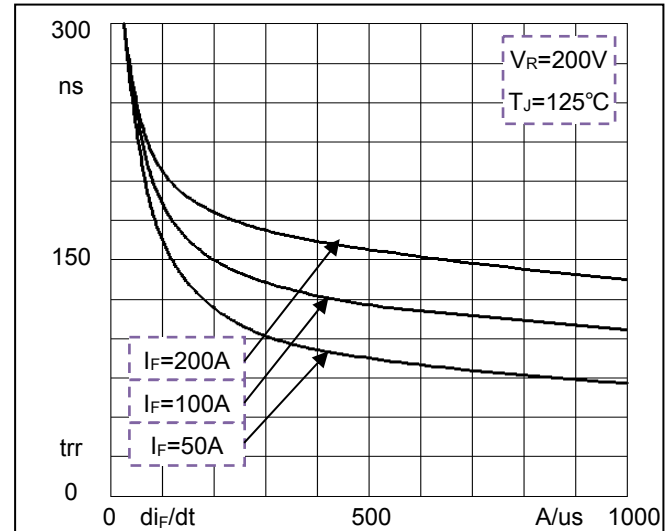


Fig2. Reverse Recovery Time vs di_F/dt

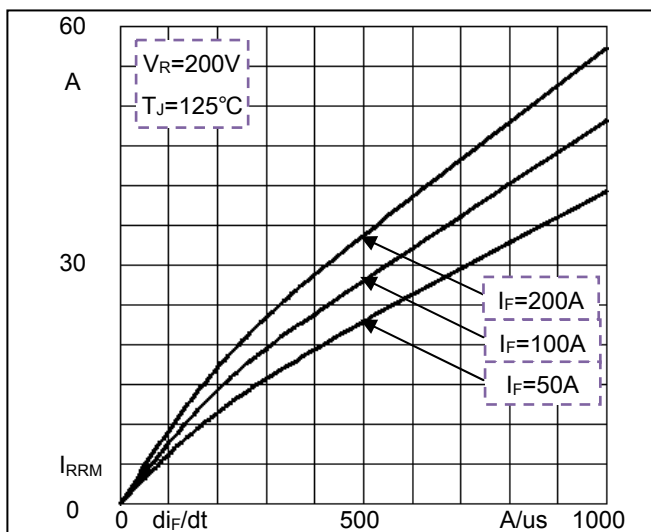


Fig3. Reverse Recovery Current vs di_F/dt

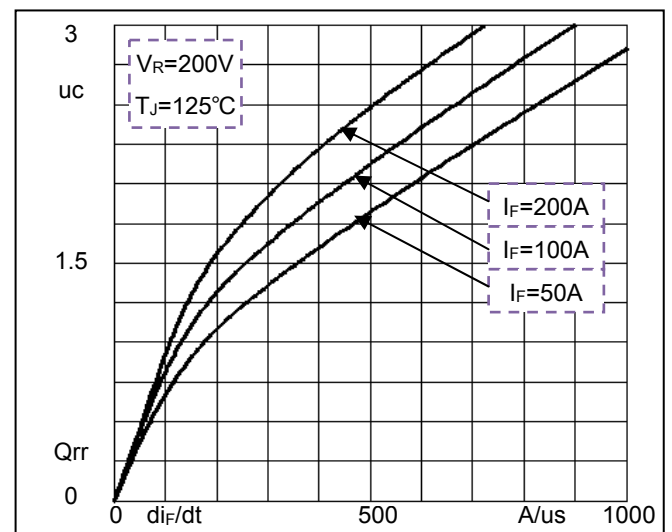
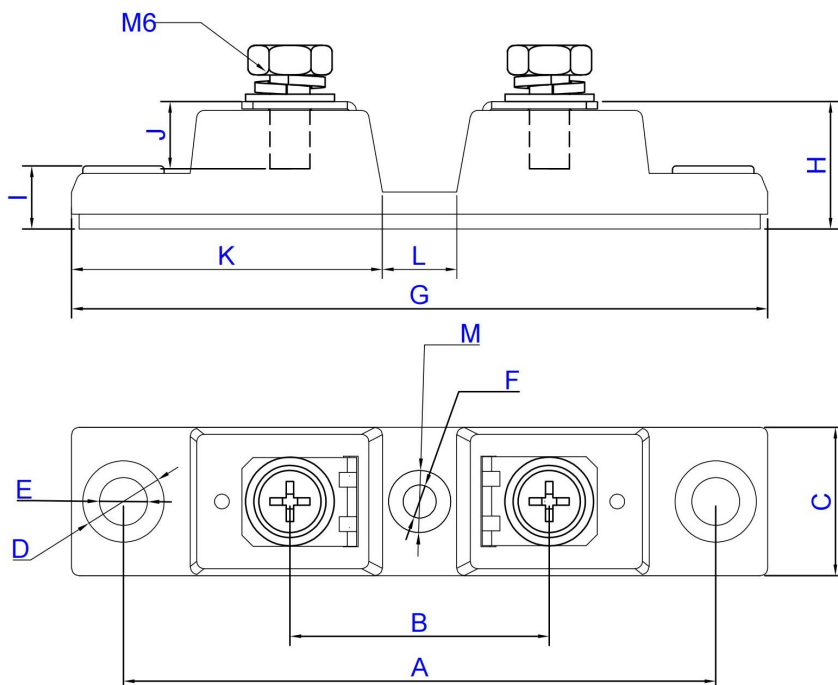


Fig4. Reverse Recovery Charge vs di_F/dt

Package Outline Information

CASE: F4N



DIM	Min (mm)	Max (mm)	Note
A	79.5	80.5	
B	34.5	35.5	
C	19.5	20.5	
D	10.5	11.5	Ø
E	6	7	Ø
F	4	5	Ø
G	93	94	
H	16.5	17.5	
I	8	9	
J	8.5	9.5	
K	41.5	42.5	
L	9.5	10.5	
M	8.1	8.7	Ø

Packing Standard

Item	Length: A (mm)	Width: B (mm)	Height: C (mm)	Quantity (PCS)
Inner Box	276	258	40	12
Outer Carton	545	295	240	144



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