

# MF400K04F3

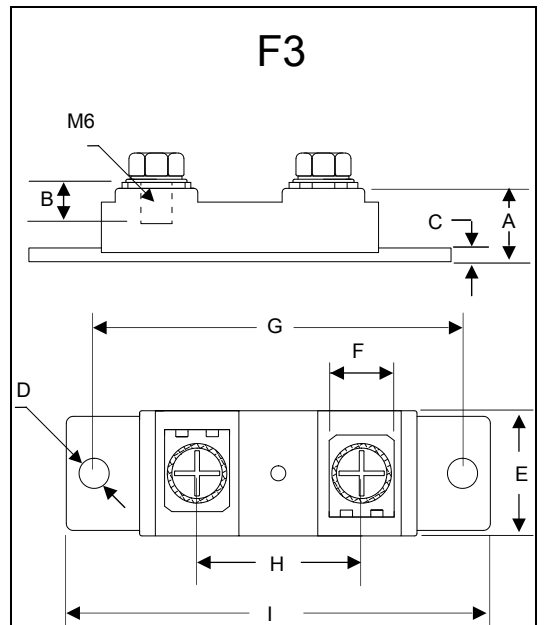
## 400 Amp FRED Modules 400 Volts

### Features

- Lead Free Finish/RoHS Compliant (NOTE 1) ("P" Suffix designates RoHS Compliant. See ordering information)
- Soft Reverse Recovery Characteristics
- Ultrafast Reverse Recovery Time
- Low Reverse Recovery Loss
- Low Forward Voltage
- High Surge Current Capability
- Low Inductance Package

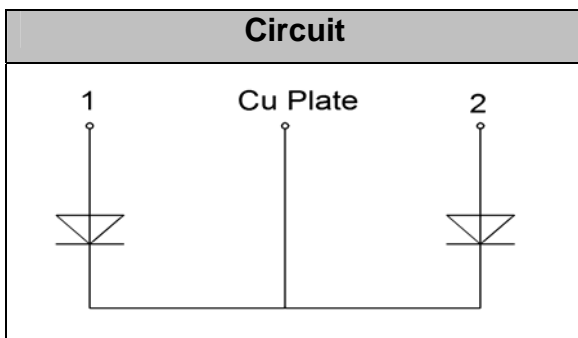
### Applications

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



DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.618	0.642	15.50	16.50	
B	0.343	0.366	8.50	9.50	
C	0.118	0.130	2.80	3.50	
D	0.256		6.50		∅
E	1.051	1.075	26.50	27.50	
F	0.539	0.563	13.50	14.50	
G	3.138	3.161	79.50	80.50	
H	1.366	1.390	34.50	35.50	
I	3.610	3.634	91.50	92.50	

### Circuit



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## 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	200	A
	$T_C=125^{\circ}\text{C}$ , Per Moudle	400	A
	$T_C=125^{\circ}\text{C}$ , 20KHz, Per Moudle	300	A
$I_{F(RMS)}$	$T_C=125^{\circ}\text{C}$ , Per Diode	285	A
$I_{FSM}$	1/2 Cycle , 50Hz, Sine	4000	A
	1/2 Cycle , 60Hz, Sine	4500	A
$I^2t$	$T_J=45^{\circ}\text{C}$ , $t=10\text{ms}$ , 50Hz, Sine	80000	$\text{A}^2\text{s}$
	$T_J=45^{\circ}\text{C}$ , $t=8.3\text{ms}$ , 60Hz, Sine	101250	$\text{A}^2\text{s}$
$P_D$		2080	W
$T_J$		-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		92	g

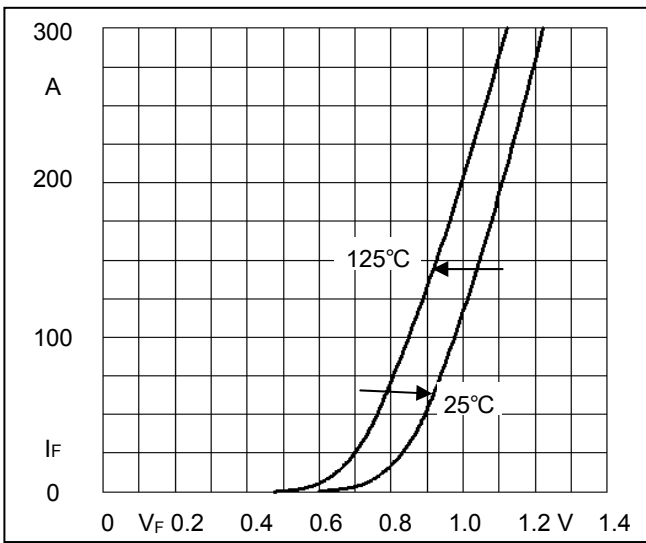
## Thermal Characteristics

Symbol	Conditions	Values	Units
$R_{th(j-c)}$		0.06	$^{\circ}\text{C/W}$

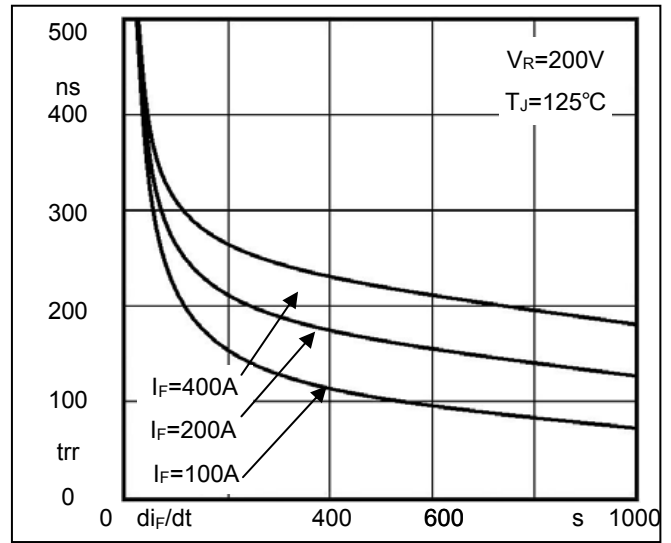
## Electrical Characteristics

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

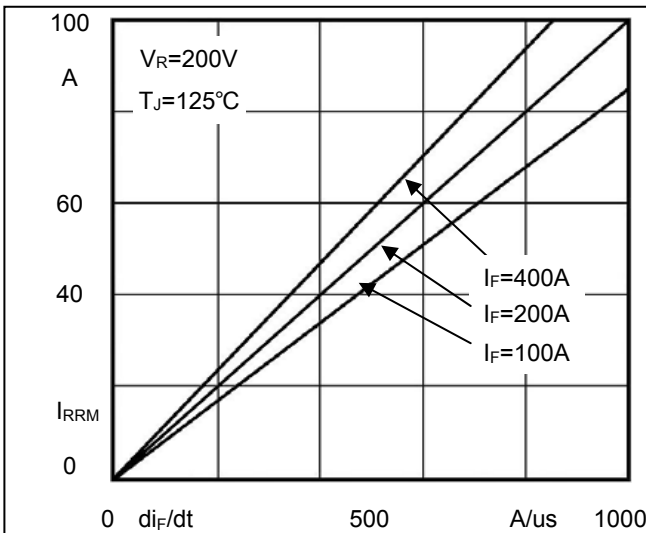
## Performance Curves



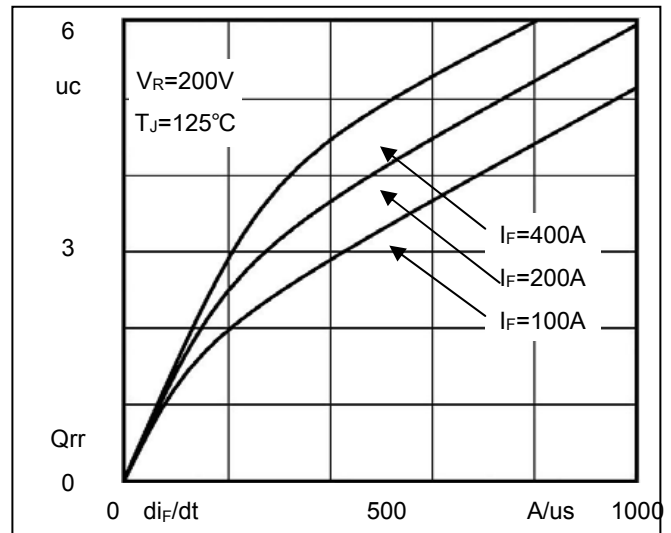
**Fig1. Forward Voltage Drop vs Forward Current**



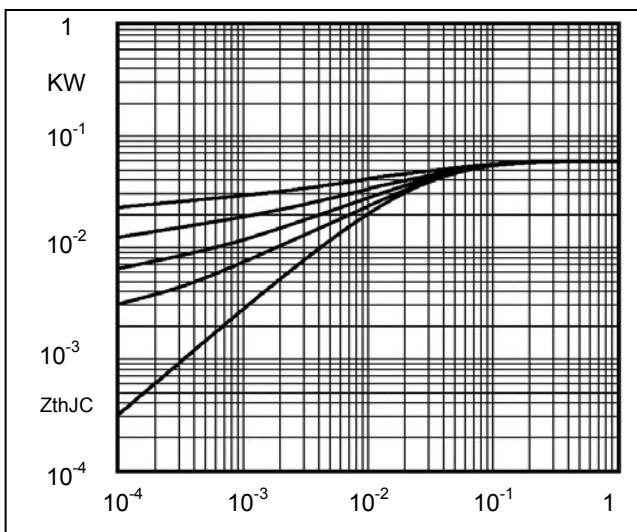
**Fig2. Reverse Recovery Time vs  $di_F/dt$**



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



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



**Fig5. Transient Thermal Impedance**



Micro Commercial Components

### Ordering Information :

Device	Packing
Part Number-BP	Bulk: 10PCS/BOX ;100PCS/CTN

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