

## MCF401.06

### Fast recovery diode module

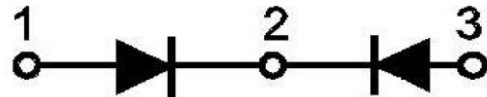


#### Features:

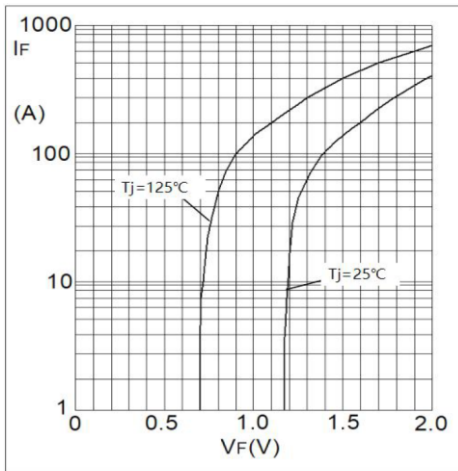
- Ultrafast reverse recovery time
- Soft reverse recovery characteristic
- Low reverse recovery loss
- High system power density

#### Typical applications:

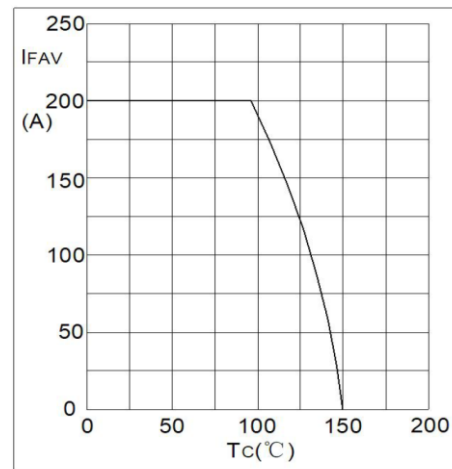
- Inversion welder
- power factor correction (PFC) circuit
- Plating power supply
- Ultrasonic cleaner and welder
- Converter & chopper



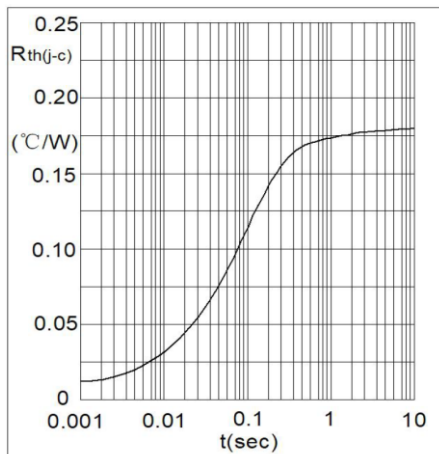
Symbol	Characteristics	Test Conditions	Value			Unit
			Min	Typ	Max	
$V_R$	Maximum DC reverse voltage	$T_j = 25^\circ\text{C}$			600	V
$V_{RRM}$	Maximum repetitive reverse voltage	$T_j = 25^\circ\text{C}$			600	V
$I_{F(AV)}$	Forward average current	Rectangular, $d = 0,5$ , $T_c = 96^\circ\text{C}$ , per leg			200	A
		Rectangular, $d = 0,5$ , $T_c = 96^\circ\text{C}$ , per module			400	A
$I_{F(RMS)}$	Forward square root current	$T_c = 96^\circ\text{C}$ , per leg			280	A
$I_{RRM}$	Repetitive peak current	$V_R = V_{RRM}$ , per leg, $T_j = 25^\circ\text{C}$			0.2	mA
		$V_R = V_{RRM}$ , per leg, $T_j = 150^\circ\text{C}$			10	mA
$I_{FSM}$	Forward surge current	$t = 50\text{Hz}$ (10ms), $V_R = 0\text{V}$ , per leg, $T_j = 25^\circ\text{C}$			2000	A
$I^2 t$	$I^2 t$ for fusing coordination	$t = 10\text{ms}$ , $T_j = 25^\circ\text{C}$			20000	$\text{A}^2\text{s}$
$V_{FO}$	Threshold voltage	$T_j = 125^\circ\text{C}$			0.70	V
$r_T$	Forward slope resistance	$T_j = 125^\circ\text{C}$			2.0	m $\Omega$
$V_{FM}$	Peak forward voltage	$T_j = 25^\circ\text{C}$ ; $I_F = 200\text{A}$			1.60	V
$P_{tot}$	Total power dissipation	$T_j = 25^\circ\text{C}$			694	W
$t_{rr}$	Typical reverse recovery time	$I_F = 0.5\text{A}$ , $I_R = -1\text{A}$ , $I_{RR} = -0.25\text{A}$ , per leg		140		ns
$t_{rr}$	Reverse recovery time	$I_F = 200\text{A}$ , $V_R = 300\text{V}$ , $di_F/dt = -200\text{A}/\mu\text{s}$ , $T_j = 25^\circ\text{C}$		140		ns
$I_{RM}$	Reverse recovery current	$di_F/dt = -200\text{A}/\mu\text{s}$ , $T_j = 25^\circ\text{C}$		15		A
$t_{rr}$	Reverse recovery time	$I_F = 200\text{A}$ , $V_R = 300\text{V}$ , $di_F/dt = -200\text{A}/\mu\text{s}$ , $T_j = 125^\circ\text{C}$		260		ns
$I_{RM}$	Reverse recovery current	$di_F/dt = -200\text{A}/\mu\text{s}$ , $T_j = 125^\circ\text{C}$		25		A
$R_{th(j-c)}$	Thermal resistance junction to case	Per leg			0.18	$^\circ\text{C}/\text{W}$
$R_{th(c-s)}$	Thermal resistance case to sink	Per leg			0.10	$^\circ\text{C}/\text{W}$
$V_{ISO}$	Isolation voltage	50Hz, RMS, $t = 1\text{min}$			3000	V
$F_M$	Mounting torque - copper plate (M6)		4		6	N·m
	Mounting torque - terminal (M6)		4		6	N·m
$T_{stg}$	Storage Temperature		-40		+125	$^\circ\text{C}$
$T_j$	Operating Temperature		-40		+150	$^\circ\text{C}$
$W_t$	Weight			185		g
Outline	M69GB					



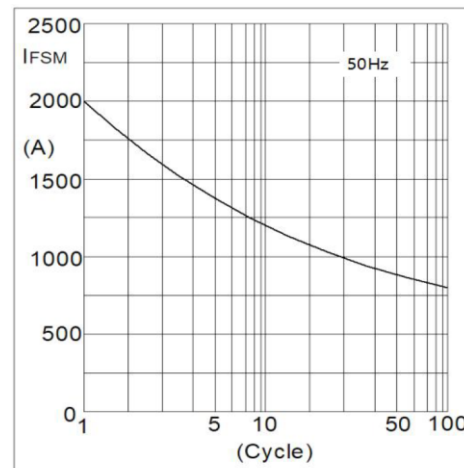
**Fig1. Forward Characteristics**



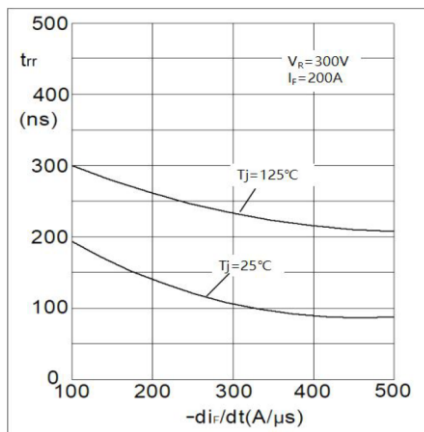
**Fig2. Forward Current Derating Curve**



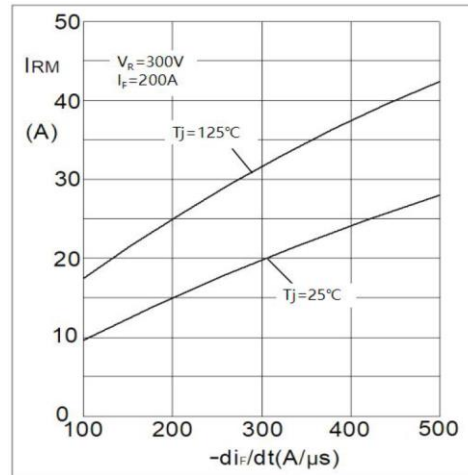
**Fig3. Transient Thermal Impedance**



**Fig4. Max Non-Repetitive Forward Surge Current**



**Fig5. Reverse Recovery Time VS  $di_F/dt$**



**Fig6. Reverse Recovery Current VS  $di_F/dt$**

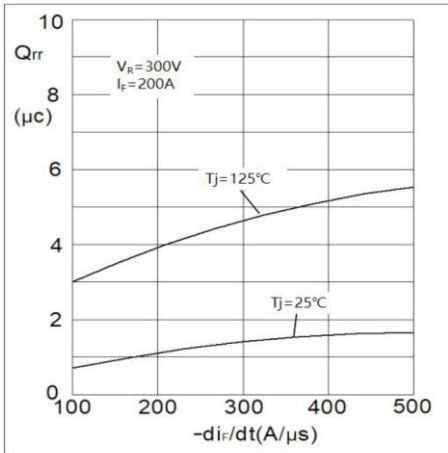
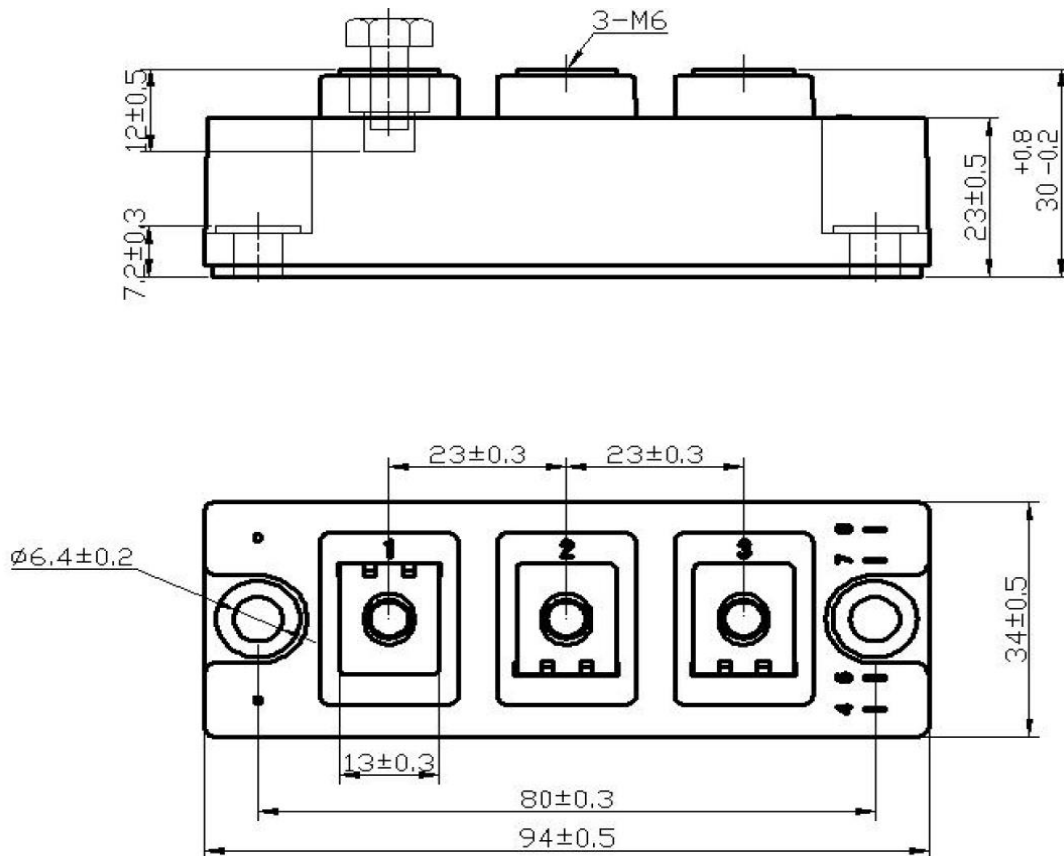


Fig7. Reverse Recovery Charge VS  $di_F/dt$



(dimensions in mm)

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