

# Thyristor&Diode Module

$V_{RRM} / V_{DRM}$	800 to 1600V
$I_{FAV} / I_{TAV}$	200 Amp
$I_{FRMS} / I_{TRMS}$	314 Amp

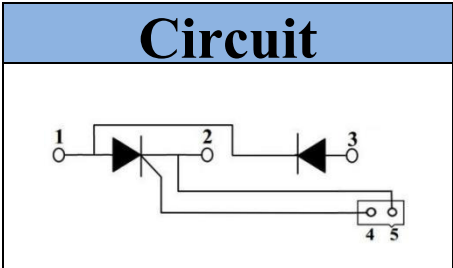


## Features

- Aluminum oxide DBC
- Glass passivated chip
- High surge capability

## Applications

- Power converters
- Lighting control
- DC motor control and drives
- Heat and temperature control



## Module Type

Type	$V_{RRM} / V_{DRM}$	$V_{RSM}$
MFC200G-08	800V	900V
MFC200G-12	1200V	1300V
MFC200G-16	1600V	1700V

## Maximum Ratings

Symbol	Item	Conditions	Values	Unit
$I_{FAV}/I_{TAV}$	Average On-state Current	180° Conduction Sin Half Wave, $T_c = 82^{\circ}C$	200	A
$I_{FRMS}/I_{TRMS}$	RMS On-state Current		314	A
$I_{FSM}/I_{TSM}$	Surge On-state Current	$T_j = 25^{\circ}C$ , $t = 50Hz(10ms)$ , $V_R = 0V$	6300	A
$I^2t$	Circuit Fusing Consideration	$t = 10ms$ $T_j = 25^{\circ}C$	198450	$A^2s$
$V_{ISO}$	Isolation Breakdown Voltage	AC 50Hz/60Hz; R.M.S; 1min	3000	V
$T_j$	Operating Junction Temperature		-40 to + 125	$^{\circ}C$
$T_{stg}$	Storage Temperature		-40 to + 125	$^{\circ}C$
$M_t$	Mounting Torque	To Terminals(M6)	5±15%	N·m
$M_s$		To Heatsink(M6)	5±15%	
Weight	Module (Approximately)		180	g
di/dt	Critical Rate of Rise of On-state Current, Max	$T_j = 125^{\circ}C$ , $V_D = 1/2V_{DRM}$ , $I_G = 150mA$ , $di_G/dt = 0.1A/\mu s$	150	$A/\mu s$

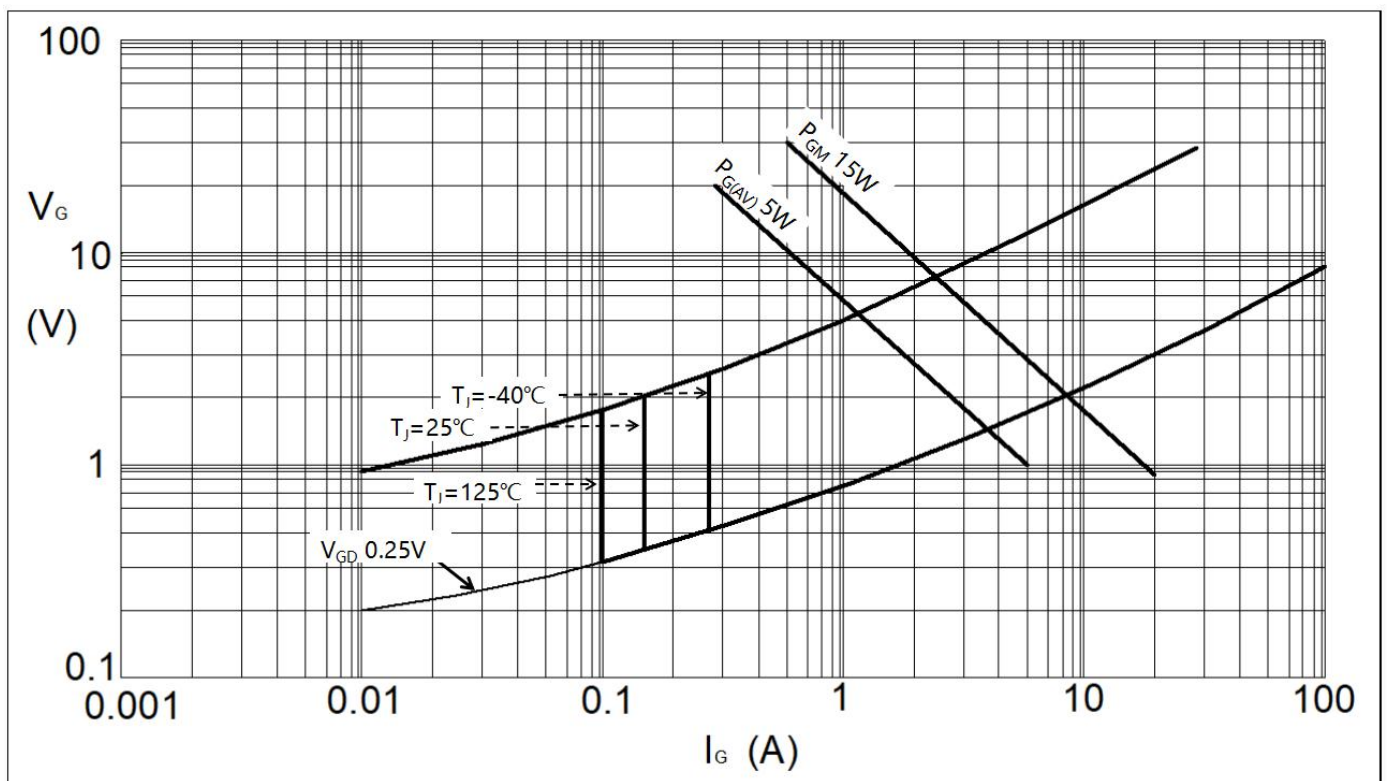
## Thermal Characteristics

Symbol	Item	Conditions	Values	Unit
$R_{th(j-c)}$	Thermal Impedance, Max	Junction to Case(Per Leg)	0.13	$^{\circ}C/W$
$R_{th(c-s)}$	Thermal Impedance, Max	Case to Heat Sink	0.05	$^{\circ}C/W$

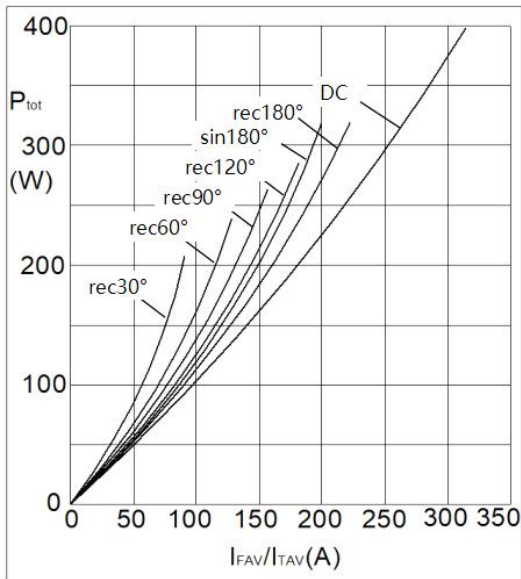
■ Electrical Characteristics

Symbol	Item	Conditions	Values			Unit
			Min.	Typ.	Max.	
$V_{FM}/V_{TM}$	Peak On-State Voltage, Max	$T_j = 25^\circ\text{C}$ , $I_F/I_T = 600\text{A}$	-	-	1.60	V
$I_{DRM}$ $/I_{RRM}$	Repetitive Peak Reverse Current, Max /Repetitive Peak Off-state Current, Max	$T_j = 125^\circ\text{C}$ , $V_R = V_{RRM}$ , $V_D = V_{DRM}$	-	-	35	mA
$V_{GT}$	Gate Trigger Voltage, Max	$T_j = 25^\circ\text{C}$ , $V_D = 6\text{V}$	-	-	3.0	V
$I_{GT}$	Gate Trigger Current, Max	$T_j = 25^\circ\text{C}$ , $V_D = 6\text{V}$	-	-	150	mA
$V_{GD}$	Gate Non-Trigger Voltage, Max	$T_j = 125^\circ\text{C}$ , $V_D = 2/3V_{DRM}$	-	-	0.25	V
$I_L$	Latching Current	$T_j = 25^\circ\text{C}$	-	200	-	mA
$I_H$	Holding Current	$T_j = 25^\circ\text{C}$	-	150	-	mA
$t_{gt}$	Turn On Time	$T_j = 25^\circ\text{C}$	-	3	-	$\mu\text{s}$
$dv/dt$	Critical Rate of Rise of Off-state Voltage, Min	$T_j = 125^\circ\text{C}$ , $V_D = 2/3V_{DRM}$ Linear Voltage Rise	1000			V/ $\mu\text{s}$
$V_{T0}$	Threshold Voltage, for power loss calculation only	$T_j = 125^\circ\text{C}$	0.86			V
$r_T$	Slope Resistance, for power loss calculation only	$T_j = 125^\circ\text{C}$	1.3			$\text{m}\Omega$

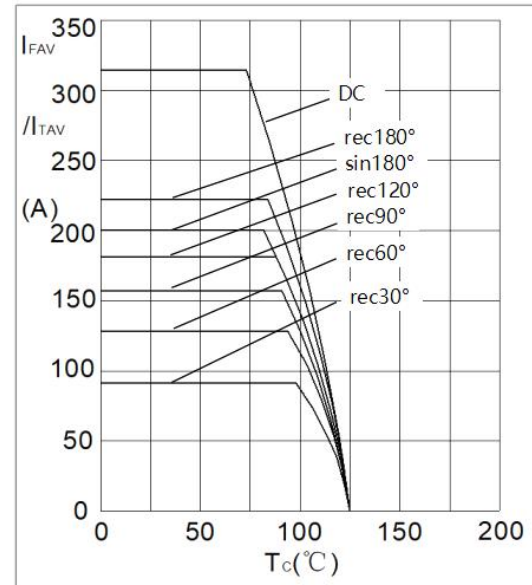
**Performance Curves**



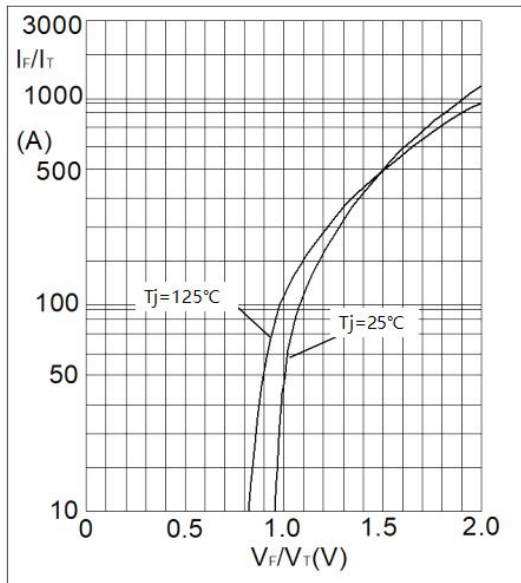
**Fig1. Gate Trigger Characteristics**



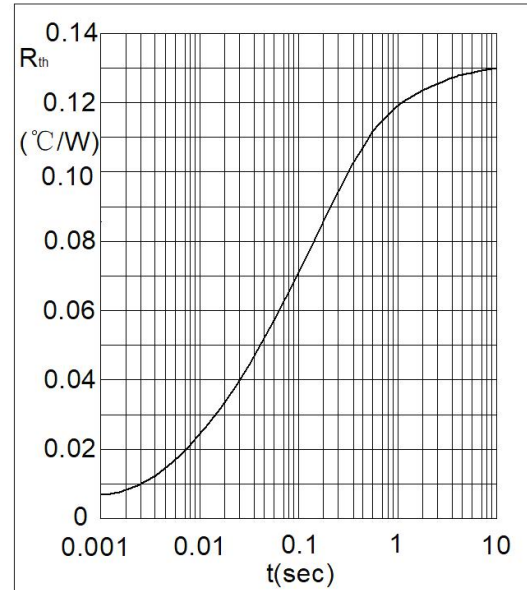
**Fig2. Power Dissipation**



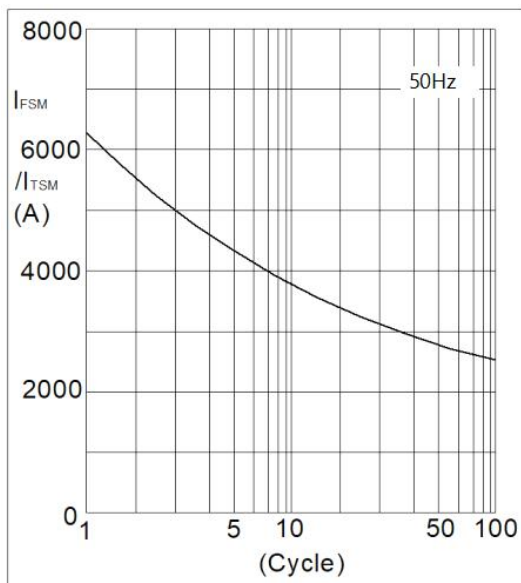
**Fig3. Forward Current Derating Curve**



**Fig4. Forward Characteristics**



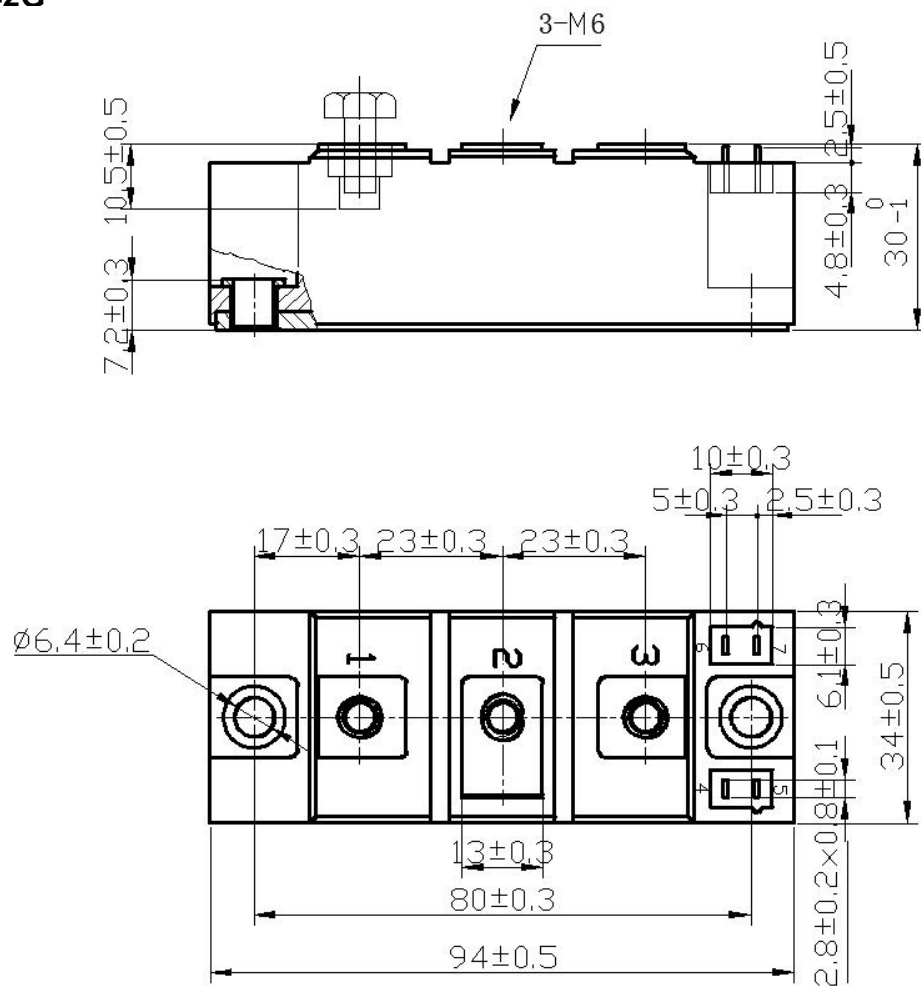
**Fig5. Transient Thermal impedance**



**Fig6. Max Non-Repetitive Forward Surge Current**

## Package Outline Information

**CASE: M42G**



**Dimensions in mm**

## **\*IMPORTANT INFORMATION AND WARNINGS**

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