

## Thyristor Module

$V_{RRM} / V_{DRM}$	800 to 1800V
$I_{TAV}$	400 Amp
$I_{TRMS}$	625 Amp

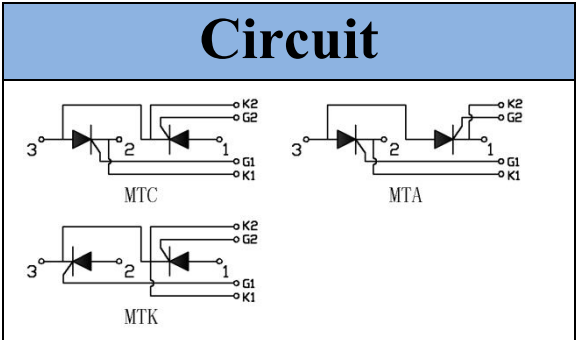


### Features

- Aluminum nitride(AIN) ceramic
- Precious metal pressure contacts for high reliability
- Long-term stability

### Applications

- Input converters for AC inverter drives
- AC motor softstarters
- DC motor control and drives
- Applied in temperature control instruments



### Module Type

Type			$V_{RRM}$	$V_{RSM}$
MTC400-08	MTA400-08	MTK400-08	800V	900V
MTC400-12	MTA400-12	MTK400-12	1200V	1300V
MTC400-16	MTA400-16	MTK400-16	1600V	1700V
MTC400-18	MTA400-18	MTK400-18	1800V	1900V

### Maximum Ratings

Symbol	Item	Conditions	Values	Unit
$I_{TAV}$	Average On-state Current	180° Conduction Sin Half Wave, $T_c = 80^{\circ}C$	400	A
$I_{TRMS}$	RMS On-state Current		625	A
$I_{TSM}$	Surge On-state Current	$T_j = 25^{\circ}C$ , $t = 50Hz(10ms)$ , $V_R = 0V$	12500	A
$I^2t$	Circuit Fusing Consideration	$t = 10ms$ $T_j = 25^{\circ}C$	781000	A <sup>2</sup> s
$V_{ISO}$	Isolation Breakdown Voltage	AC 50Hz/60Hz; R.M.S; 1min	2500	V
$T_j$	Operating Junction Temperature		-40 to + 125	°C
$T_{stg}$	Storage Temperature		-40 to + 125	°C
$M_t$	Mounting Torque	To Terminals(M10)	12±15%	N·m
$M_s$		To Heatsink(M6)	5±15%	
Weight	Module (Approximately)		1600	g
di/dt	Critical Rate of Rise of On-state Current, Max	$T_j = 125^{\circ}C$ , $V_D = 1/2V_{DRM}$ , $I_G = 200mA$ , $di_G/dt = 0.1A/\mu s$	150	A/μs

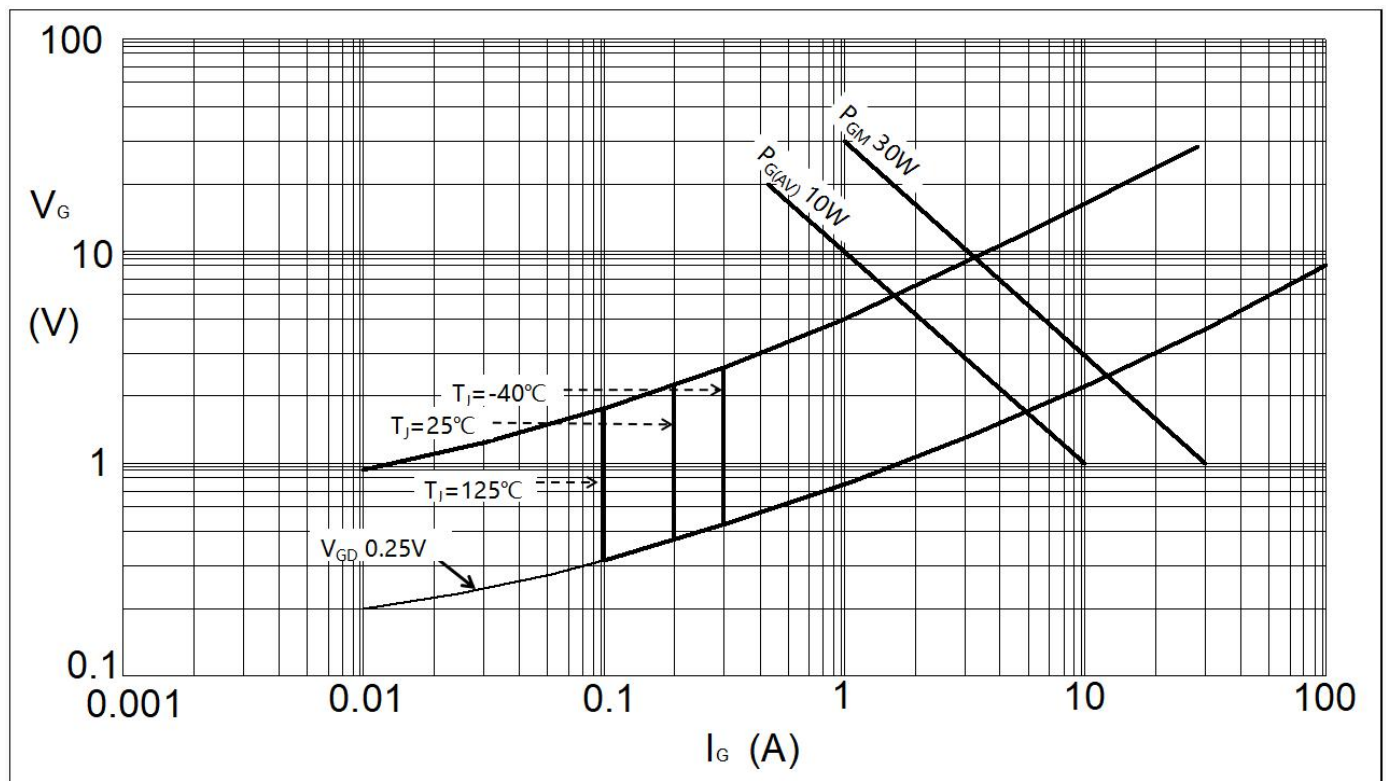
### Thermal Characteristics

Symbol	Item	Conditions	Values	Unit
$R_{th(j-c)}$	Thermal Impedance, Max	Junction to Case(Per Thyristor)	0.075	°C/W
$R_{th(c-s)}$	Thermal Impedance, Max	Case to Heat Sink	0.01	°C/W

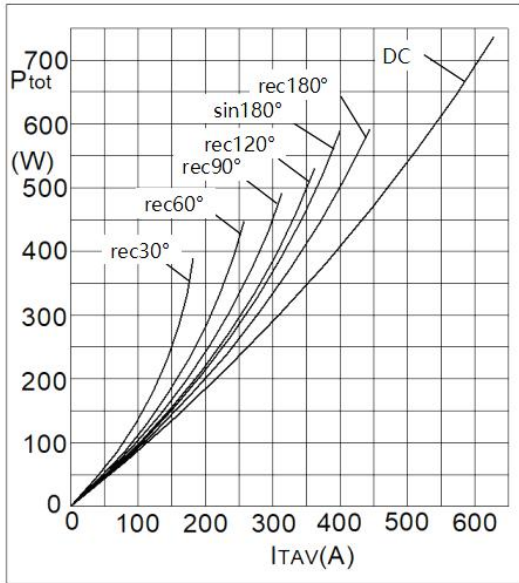
■ Electrical Characteristics

Symbol	Item	Conditions	Values			Unit
			Min.	Typ.	Max.	
$V_{TM}$	Peak On-State Voltage, Max	$T_j = 25^\circ\text{C}$ , $I_T = 1200\text{A}$	-	-	1.75	V
$I_{DRM}$ $/I_{RRM}$	Repetitive Peak Reverse Current, Max /Repetitive Peak Off-state Current, Max	$T_j = 125^\circ\text{C}$ , $V_R = V_{RRM}$ , $V_D = V_{DRM}$	-	-	55	mA
$V_{GT}$	Gate Trigger Voltage, Max	$T_j = 25^\circ\text{C}$ , $V_D = 6\text{V}$	-	-	2.5	V
$I_{GT}$	Gate Trigger Current, Max	$T_j = 25^\circ\text{C}$ , $V_D = 6\text{V}$	-	-	200	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	$T_j = 25^\circ\text{C}$	-	400	-	mA
$I_H$	Holding Current	$T_j = 25^\circ\text{C}$	-	200	-	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	$T_j = 125^\circ\text{C}$	0.80			V
$r_T$	Slope Resistance, for power loss calculation only	$T_j = 125^\circ\text{C}$	0.59			m $\Omega$

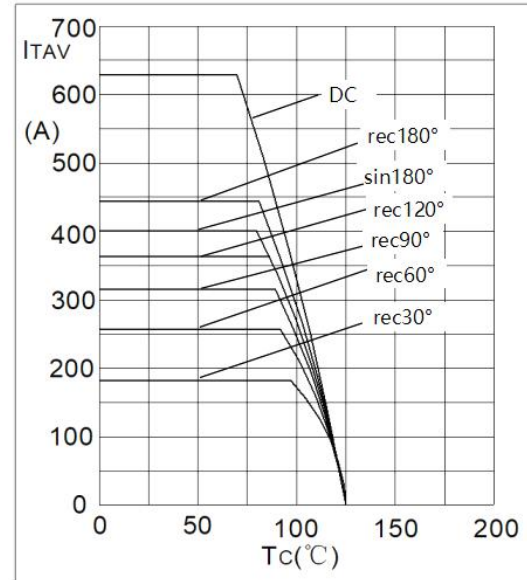
**Performance Curves**



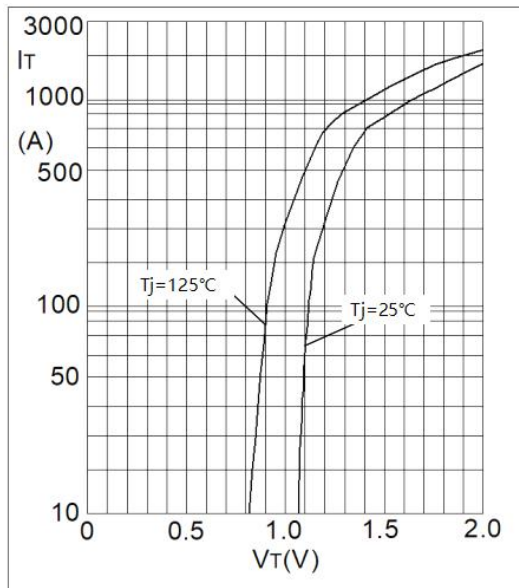
**Fig1. Gate Trigger Characteristics**



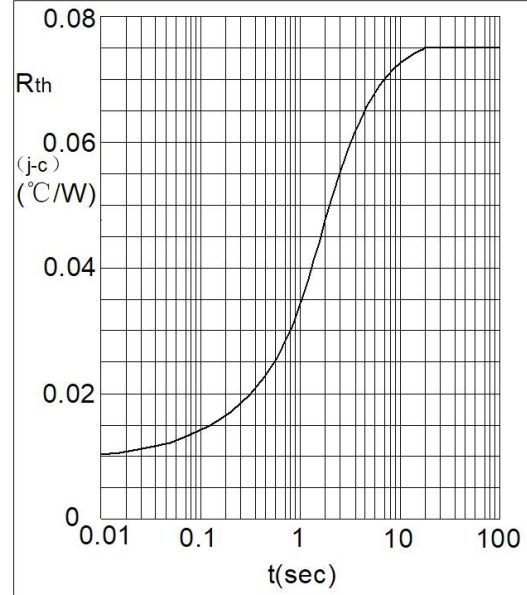
**Fig2. Power Dissipation**



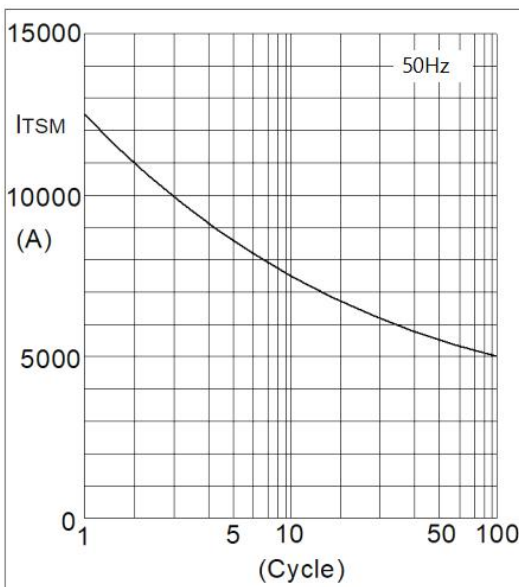
**Fig3. Forward Current Derating Curve**



**Fig4. Forward Characteristics**



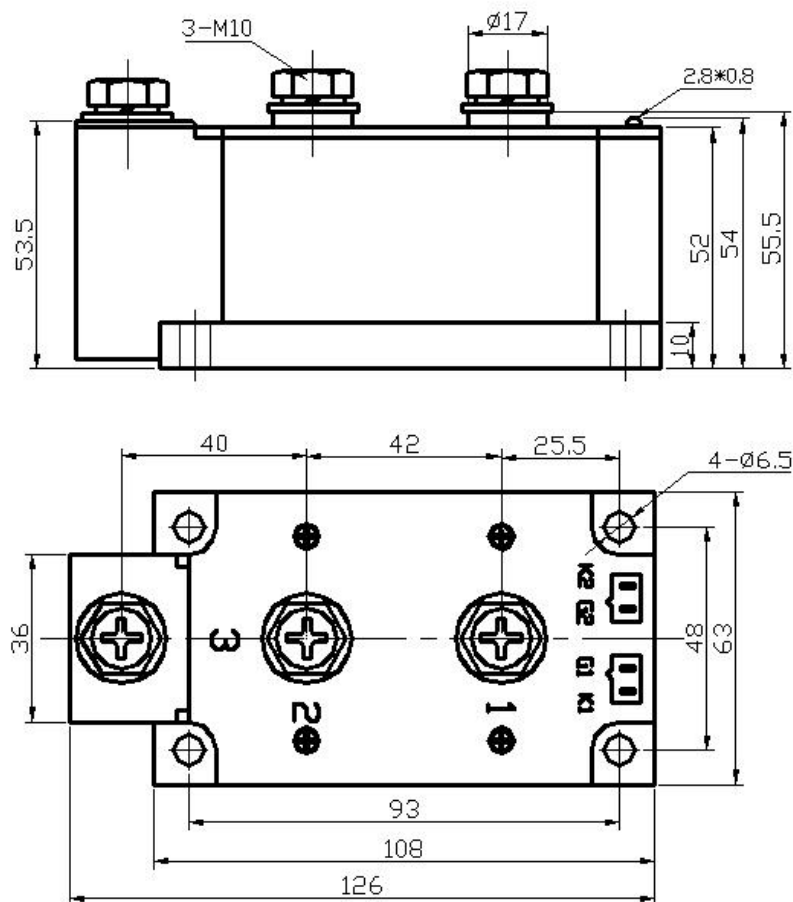
**Fig5. Transient Thermal Impedance**



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

**Package Outline Information**

**CASE: M07**



**Dimensions in mm**

**Unspecified dimension tolerance  $\pm 0.5\text{mm}$**

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

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