

# Thyristor Module

<b>V<sub>RRM</sub> / V<sub>DRM</sub></b>	800 to 1600V
<b>I<sub>TAV</sub></b>	110 Amp
<b>I<sub>TRMS</sub></b>	170 Amp

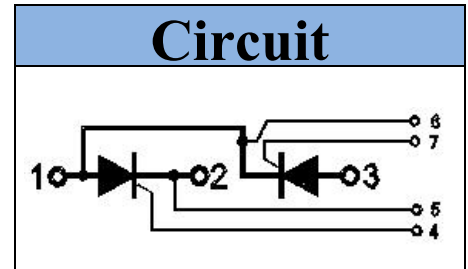


## Features

- Aluminum oxide DBC
- Glass passivated chip
- Thyristor for line frequency
- Long-term stability

## Applications

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



## Module Type

Type	V <sub>RRM</sub> / V <sub>DRM</sub>	V <sub>RSM</sub>
MTC110G-08	800V	900V
MTC110G-12	1200V	1300V
MTC110G-16	1600V	1700V

## Maximum Ratings

Symbol	Item	Conditions	Values	Unit
I <sub>TAV</sub>	Average On-state Current	180° Conduction Sin Half Wave, T <sub>c</sub> = 85°C	110	A
I <sub>TRMS</sub>	RMS On-state Current		170	A
I <sub>TSM</sub>	Surge On-state Current	T <sub>j</sub> = 25°C, t = 50Hz(10ms), V <sub>R</sub> = 0V	2850	A
I <sup>2</sup> t	Circuit Fusing Consideration	t = 10ms T <sub>j</sub> = 25°C	40600	A <sup>2</sup> s
V <sub>ISO</sub>	Isolation Breakdown Voltage	AC 50Hz/60Hz; R.M.S; 1min	3000	V
T <sub>j</sub>	Operating Junction Temperature		-40 to + 125	°C
T <sub>stg</sub>	Storage Temperature		-40 to + 125	°C
M <sub>t</sub>	Mounting Torque	To Terminals(M5)	3±15%	N·m
M <sub>s</sub>		To Heatsink(M6)	5±15%	
Weight	Module (Approximately)		105	g
di/dt	Critical Rate of Rise of On-state Current, Max	T <sub>j</sub> = 125°C, V <sub>D</sub> = 1/2V <sub>DRM</sub> , I <sub>G</sub> = 150mA, di <sub>G</sub> /dt = 0.1A/μs	150	A/μs

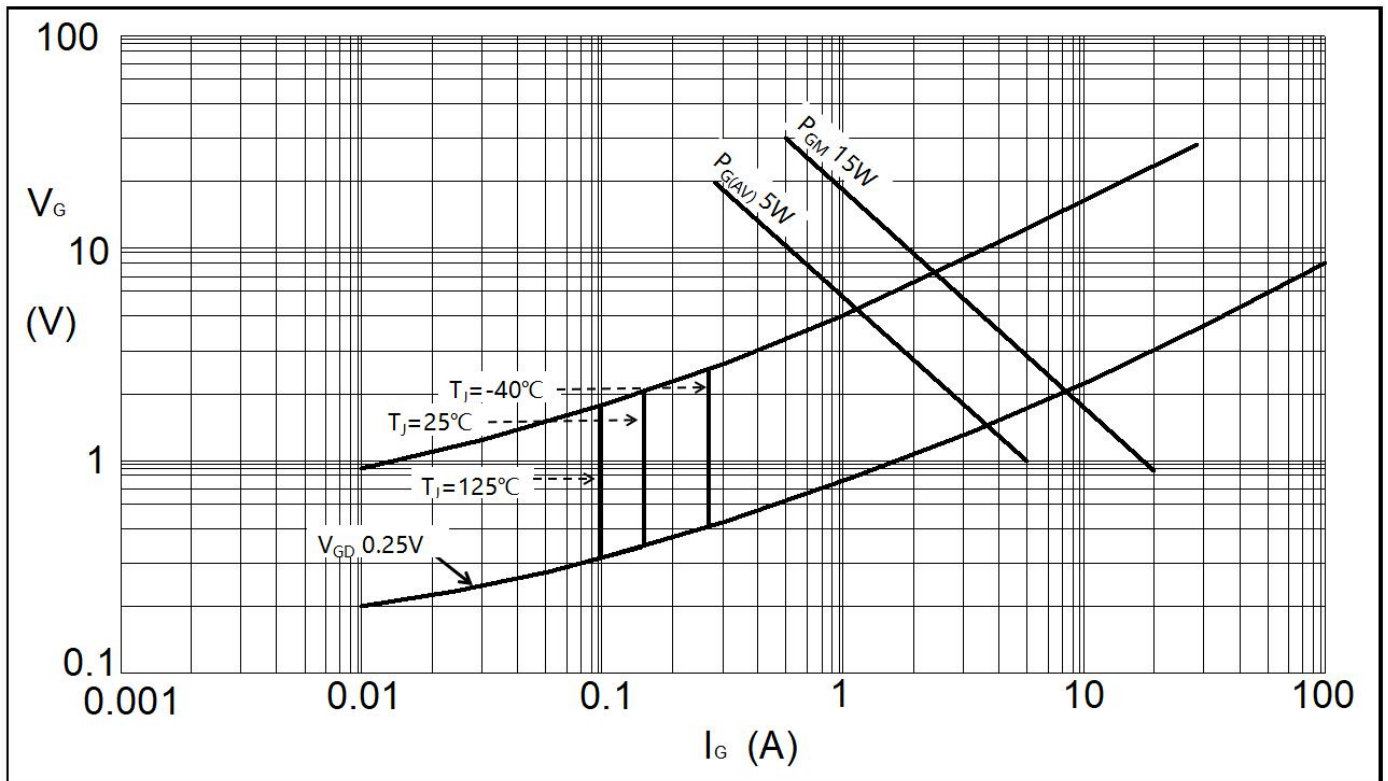
## Thermal Characteristics

Symbol	Item	Conditions	Values	Unit
R <sub>th(j-c)</sub>	Thermal Impedance, Max	Junction to Case(Per Thyristor)	0.22	°C/W
R <sub>th(c-s)</sub>	Thermal Impedance, Max	Case to Heat Sink	0.1	°C/W

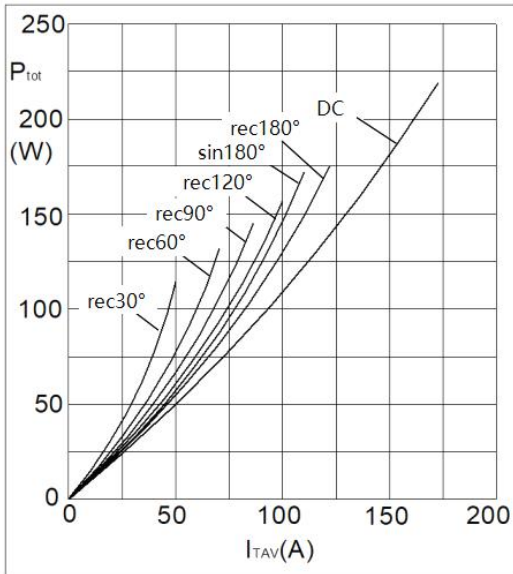
■ Electrical Characteristics

Symbol	Item	Conditions	Values			Unit
			Min.	Typ.	Max.	
$V_{TM}$	Peak On-State Voltage, Max	$T_j = 25^\circ\text{C}, I_T = 330\text{A}$	-	-	1.65	V
$I_{DRM}$ $/I_{RRM}$	Repetitive Peak Reverse Current, Max /Repetitive Peak Off-state Current, Max	$T_j = 125^\circ\text{C}, V_R = V_{RRM},$ $V_D = V_{DRM}$	-	-	20	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	$T_j = 125^\circ\text{C}$	0.85			V
$r_T$	Slope Resistance, for power loss calculation only	$T_j = 125^\circ\text{C}$	2.4			m $\Omega$

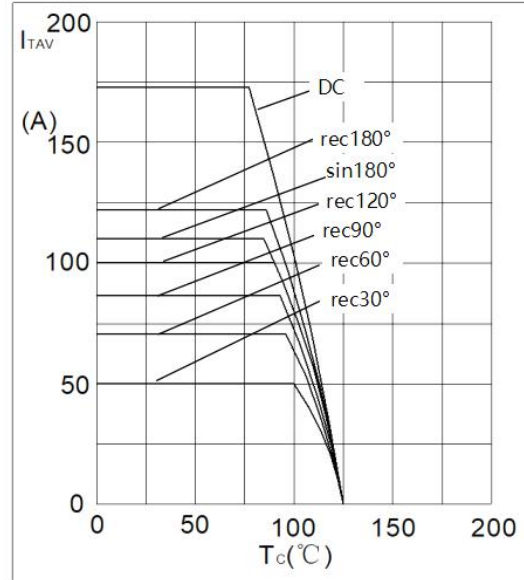
**Performance Curves**



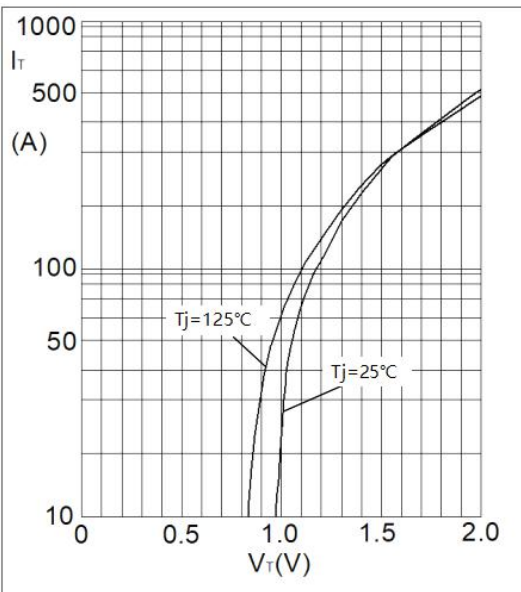
**Fig1. Gate Trigger Characteristics**



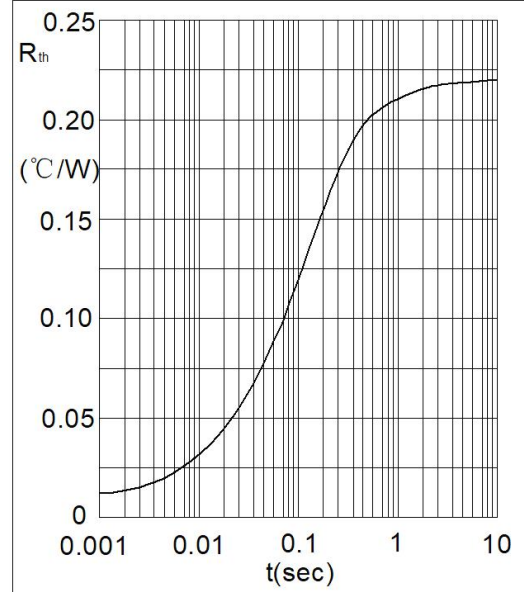
**Fig2. Power Dissipation**



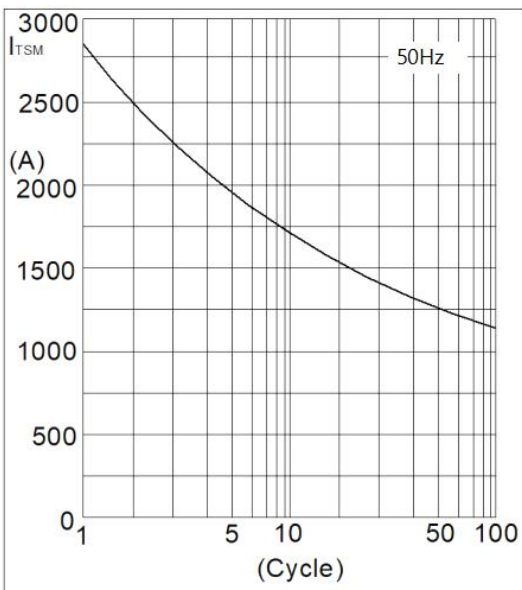
**Fig3. Forward Current Derating Curve**



**Fig4. Forward Characteristics**

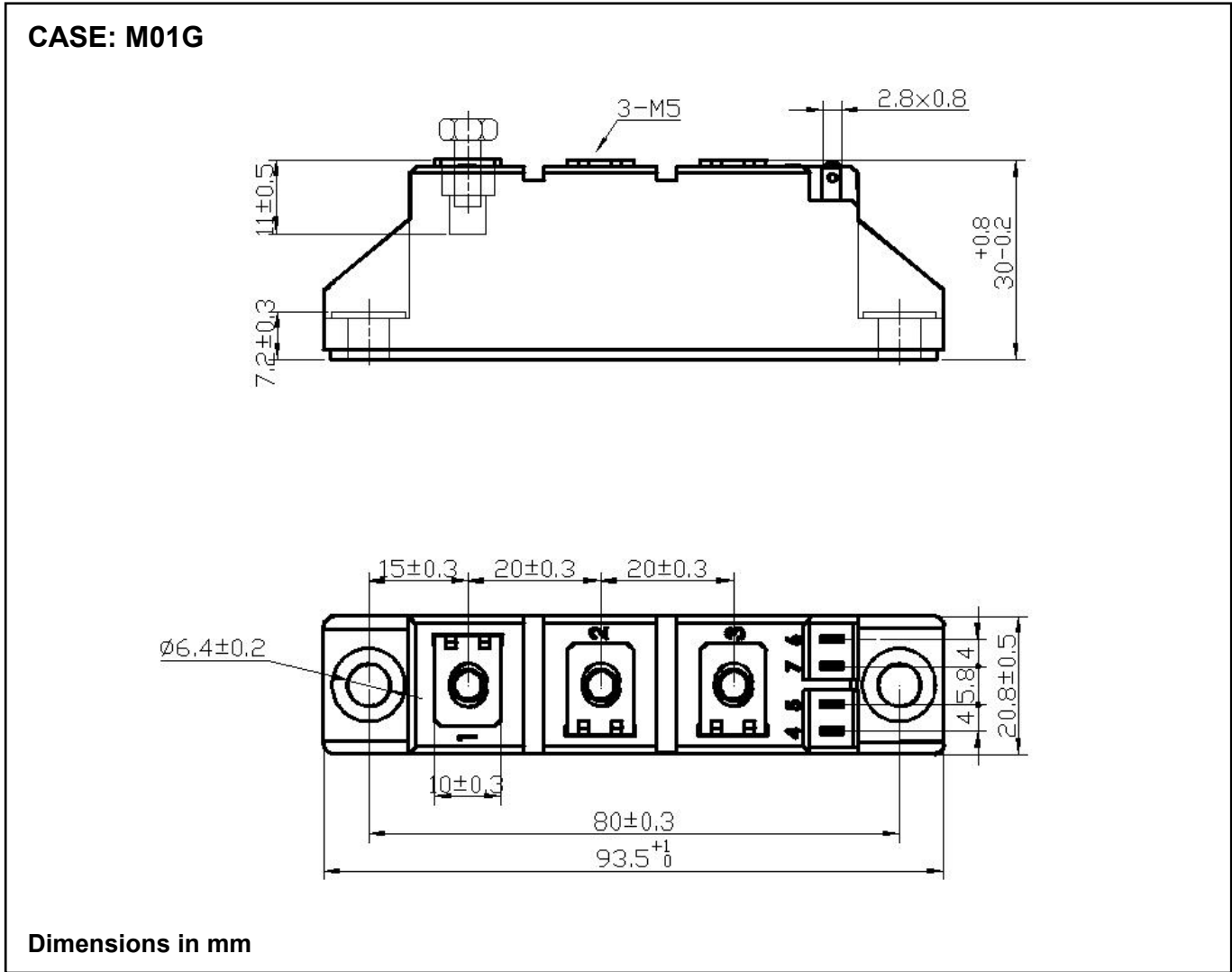


**Fig5. Transient Thermal impedance**



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

**Package Outline Information**



**\*IMPORTANT INFORMATION AND WARNINGS**

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