

# MMK200X040DA

400V 200A Thyristor Module

## PRELIMINARY

### FEATURES

- High surge current
- Easy construction
- Non-isolated (Mounting base as common Anode terminal)
- High  $I_T(AV)$

### APPLICATIONS

- DC Motor Control and Drives
- Welders
- Power Converters
- Heat and Temperature Control

### ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Voltage Class	Unit
		4	
VRRM	Repetitive peak reverse voltage	400	V
VRSM	Non-repetitive peak reverse voltage	480	
VR (DC)	DC reverse voltage	480	
VDRM	Repetitive peak off-state voltage	600	
VDSM	Non-repetitive peak off-state voltage	720	
VD (DC)	DC off-state voltage	480	

### ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Conditions	Ratings	Unit
$I_T$ (RMS)	RMS on-state current		314	A
$I_T$ (AV)	Average on-state current	Three-phase, half-wave, $T_c=119^\circ\text{C}$	200	A
$I_{TSM}$	Surge (non-repetitive) on-state current	One half cycle at 60Hz, peak value	5600	A
$I^2t$	$I^2t$ for fusing	Value for one cycle of surge current	146000	$\text{A}^2\text{s}$
di/dt	Critical rate of rise of on-state current	$V_D=1/2 V_{DRM}$ , $I_G=1.0\text{A}$ , $T_J=125^\circ\text{C}$	80	$\text{A}/\mu\text{s}$
PGM	Peak gate power dissipation		5.0	W
PG (AV)	Average gate power dissipation		0.5	W
VFGM	Peak gate forward voltage		10	V
VRGM	Peak gate reverse voltage		5.0	V
IFGM	Peak gate forward current		2.0	A
$T_J$	Junction temperature		-40~+150	$^\circ\text{C}$
$T_{stg}$	Storage temperature		-40~+125	$^\circ\text{C}$
-	Mounting torque	Main terminal screw M8	8~10	N·m
			80~100	kg·cm
		Mounting screw M6	1.9~2.9	N·m
			20~35	kg·cm
-	Weight	Typical value	290	g

### ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
I <sub>RRM</sub>	Repetitive peak reverse current	$T_J=125^\circ\text{C}$ , $V_{RRM}$ applied	-	-	40	mA
I <sub>DRM</sub>	Repetitive peak off-state current	$T_J=25^\circ\text{C}$ , $V_{DRM}$ applied	-	-	40	mA
V <sub>TM</sub>	On-state voltage	$T_J=125^\circ\text{C}$ , $I_{TM}=600\text{A}$ , instantaneous meas.	-	-	1.2	V
dv/dt	Critical rate of rise of off-state voltage	$T_J=125^\circ\text{C}$ , $V_D=2/3 V_{DRM}$	200	-	-	$\text{V}/\mu\text{s}$
V <sub>GT</sub>	Gate trigger voltage	$T_J=25^\circ\text{C}$ , $V_D=6\text{V}$ , $I_T=1\text{A}$	-	-	3.0	V
V <sub>GD</sub>	Gate non-trigger voltage	$T_J=125^\circ\text{C}$ , $V_D=1/2 V_{DRM}$	0.25	-	-	V
I <sub>GT</sub>	Gate trigger current	$T_J=25^\circ\text{C}$ , $V_D=6\text{V}$ , $I_T=1\text{A}$	15	-	150	mA
R <sub>th</sub> (j-c)	Thermal resistance	Junction to case (per 1/3 module)	-	-	0.15	$^\circ\text{C}/\text{W}$

Package Outline

Dimensions (mm)

