



MACMIC

August 2014

PRELIMINARY

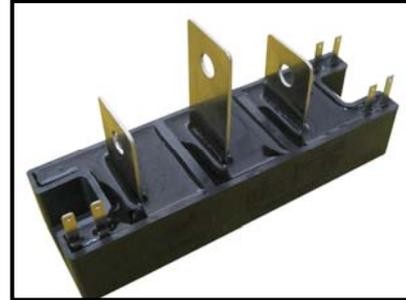
MMK150X300DA

300V 150A Thyristor Module

RoHS Compliant

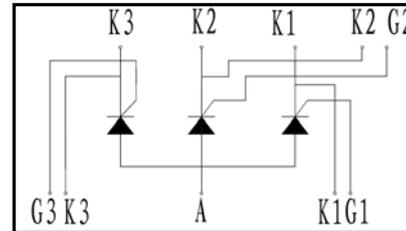
FEATURES

- 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

$T_C=25^\circ\text{C}$ unless otherwise specified

Symbol	Parameter	Test Conditions	Values	Unit
V_{RRM}	Repetitive Peak Off-State Voltage		300	V
V_{DRM}	Repetitive Peak Reverse Voltage		300	V
$I_{T(AV)}$	Average On-State Current	Single phase, half wave, 180° conduction, $T_C=100^\circ\text{C}$	150	A
$I_{T(RMS)}$	R.M.S On-State Current		225	A
I_{TSM}	Surge On-State Current	1/2cycle, 50Hz, peak value, non-repetitive	3300	A
I^2t		$T_j=25^\circ\text{C}$, $t=10\text{ms}$ (50Hz), sine, $V_R=0$	54000	A^2S
P_{GM}	Peak Gate Power Dissipation		12	W
$P_{G(AV)}$	Average Gate Power Dissipation		1.5	W
I_{FGM}	Peak Gate Current		3.5	A
V_{FGM}	Peak Gate Voltage (Forward)		12	V
V_{RGM}	Peak Gate Voltage (Reverse)		6	V
di/dt	Critical Rate of On-State Current	$I_G=200\text{mA}$, $T_j=25^\circ\text{C}$, $V_D=1/2V_{DRM}$, $dI_G=1\text{A}/\mu\text{S}$	100	$\text{A}/\mu\text{S}$
T_j	Operating Junction Temperature		-40~150	$^\circ\text{C}$
T_{STG}	Storage Temperature		-40~125	$^\circ\text{C}$
Md	Mounting torque(M6)		3 to 5	N·m
	Terminal torque(M8)		7 to 10	N·m
Weight			205	g

ELECTRICAL CHARACTERISTICS

T_C=25°C unless otherwise specified

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I _{DRM}	Max.Repetitive Peak Off-State Current	V _D = V _R =300V, T _C =125°C			25	mA
I _{RRM}	Max.Repetitive Peak Reverse Current	Single phase,half wave			25	mA
V _{TM}	Max. Peak On-State Voltage	I _{TM} =450A, T _C =25°C		1.15	1.5	V
		td=10ms,half sine T _C =125°C		1.10	1.4	V
V _{GT}	Max. Gate Trigger Voltage	I _T =1A, V _D =6V	T _C =25°C	1.1	1.5	V
			T _C =125°C	0.9	1.3	V
I _{GT}	Max. Gate Trigger Current	I _T =1A, V _D =6V	T _C =25°C	75	120	mA
			T _C =125°C	50	80	mA
I _H	Holding Current	T _C =25°C		70		mA
V _{GD}	Min. Gate Non-Trigger Voltage	T _C =125°C, V _D =1/2V _{DRM}	0.35			V
dv/dt	Min. Critical Rate of Rise Off-State Voltage	T _C =125°C,V _D =2/3V _{DRM} Exponential wave	500			V/μS
R _{thjc}	Thermal resistance,Junction to case	Per Thyristor			0.2	°C/W

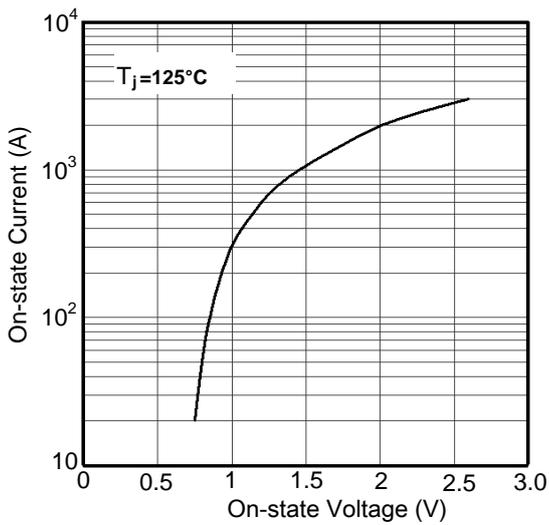


Figure1. On State Voltage Drop Characteristics

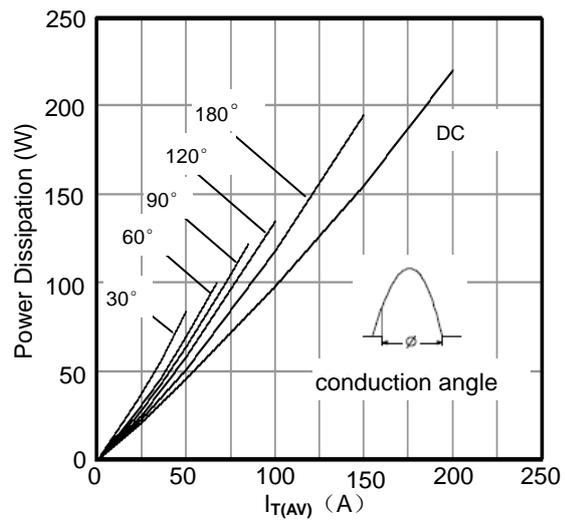


Figure2. Average On-State Current vs Power Dissipation

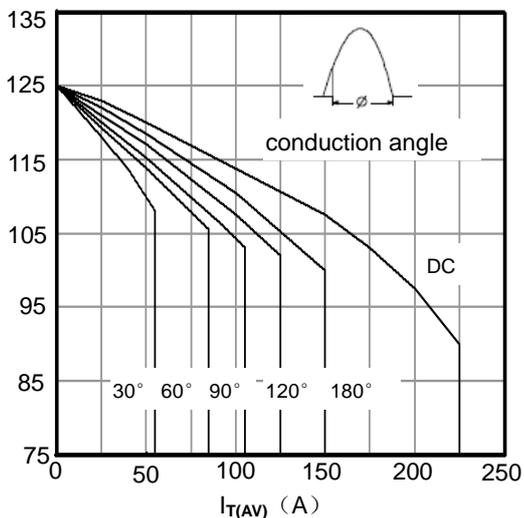


Figure3. Average On-State Current vs Maximum Allowable Case Temperature

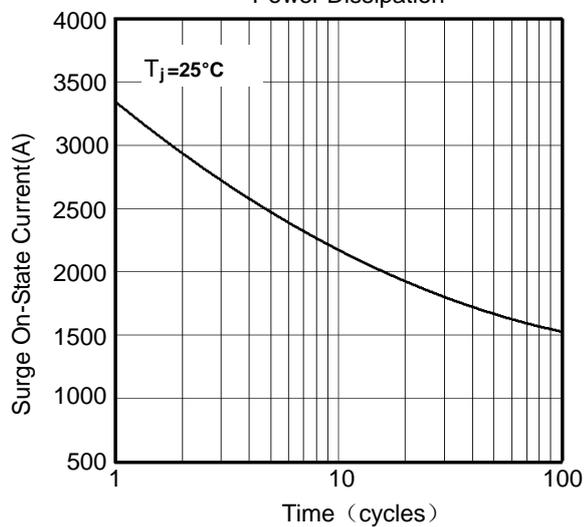


Figure4. Surge On-State Current Rating (Non-Repetitive)

MMK150X300DA

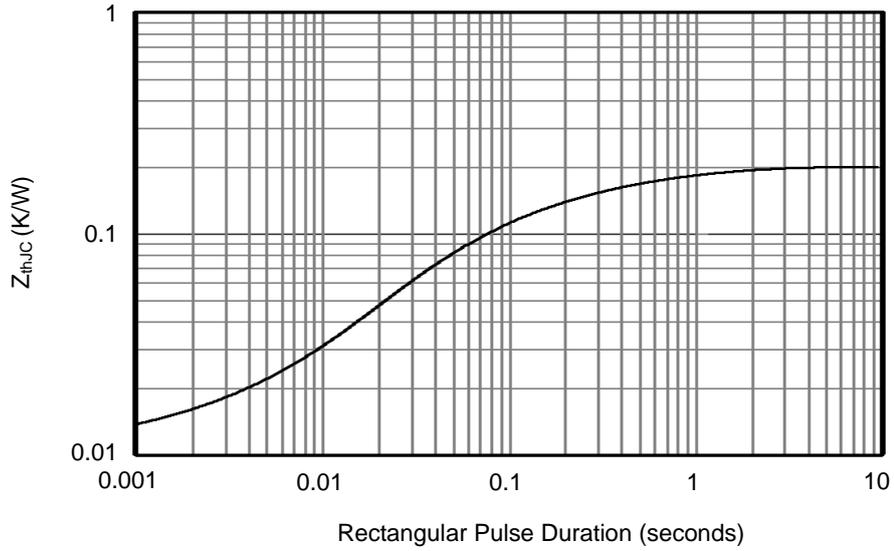
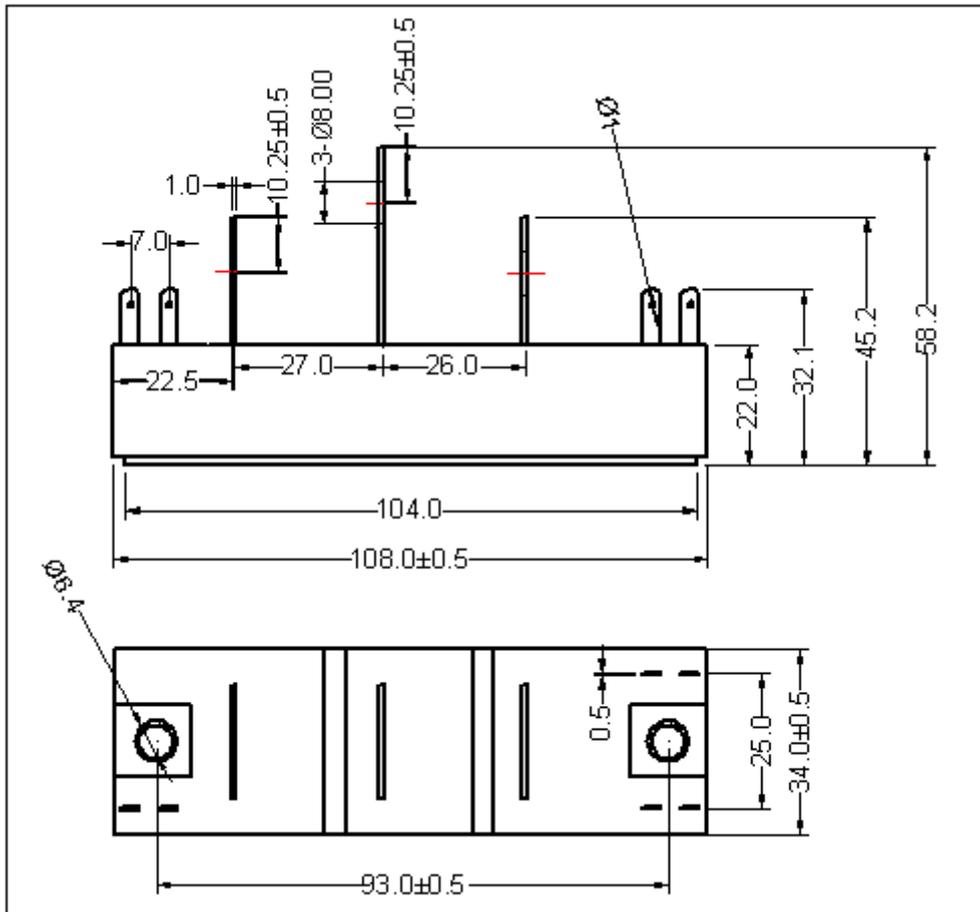


Figure5. Transient Thermal Impedance



Dimensions (mm)
Figure6. Package Outline