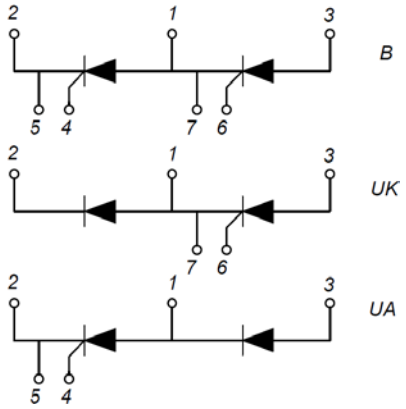
PRODUCT FEATURES

- Electrically Isolated by DBC Ceramic
- High Surge Current Capability
- Low Inductance Package

APPLICATIONS

- DC Motor Control and Drives
- Battery Charges ,Heater controls,Light dimmers
- Static switches



MAXIMUM VOLTAGE RATINGS

T_C=25°C unless otherwise specified

Module Type			V_{RRM}/V_{DRM}	V_{RSM}	Unit
MMK200S080B	MMK200S080UK	MMK200S080UA	800	900	V
MMK200S120B	MMK200S120UK	MMK200S120UA	1200	1300	
MMK200S140B	MMK200S140UK	MMK200S140UA	1400	1500	
MMK200S160B	MMK200S160UK	MMK200S160UA	1600	1700	
MMK200S180B	MMK200S180UK	MMK200S180UA	1800	1900	
MMK200S200B	MMK200S200UK	MMK200S200UA	2000	2100	
MMK200S220B	MMK200S220UK	MMK200S220UA	2200	2300	

ABSOLUTE MAXIMUM RATINGS (Thyristor)

Symbol	Parameter/Test Conditions		Values	Unit
$I_{T(AV)}$	Average On State Current	Single phase, half wave, 180°conduction, T_C= 80°C	200	A
$I_{T(RMS)}$	R.M.S. On State Current		310	
I_{TSM}	Non Repetitive Surge On State Current	1/2 cycle, 50/60Hz, peak value, T_C =45°C	5000/5400	
I^2t	I^2t (For Fusing)	1/2 cycle, 50/60Hz, peak value ,T_C =45°C	125/121	KA^2S
T_J	Junction Temperature(Thyristor)		-40 to +125	°C

ABSOLUTE MAXIMUM RATINGS (Diode)

Symbol	Parameter/Test Conditions		Values	Unit
$I_{F(AV)}$	Average Forward Current	Single phase, half wave, 180°conduction, T_C= 95°C	200	A
$I_{F(RMS)}$	R.M.S. Forward Current		310	
I_{FSM}	Non Repetitive Surge Forward Current	1/2 cycle, 50/60Hz, peak value, T_C =45°C	6800/7300	
I^2t	For Fusing	1/2 cycle, 50/60Hz, peak value ,T_C =45°C	231.2/221.1	KA^2S

ELECTRICAL CHARACTERISTICS (Thyristor)

T_C=25°C unless otherwise specified

Symbol	Parameter/Test Conditions		Min.	Typ.	Max.	Unit
I_{DRM}	Maximum Peak Off-State Current	$V_D = V_{DRM}$, T_J = 125°C			25	mA
I_{RRM}	Maximum Peak Reverse Current	$V_R = V_{RRM}$, T_J = 125°C			25	
V_{TM}	Maximum on state voltage drop	I_{TM}=500A,td=10 ms, half sine			1.75	V
V_{TO}	For power loss calculations only	T_J = 125°C			0.80	V
r_T					2.0	mΩ
V_{GT}	Max. required DC gate voltage to trigger	V_A=6V, R_A=1Ω,T_J = -40°C			4.0	V
		V_A=6V, R_A=1Ω		1.0	2.5	
		V_A=6V, R_A=1Ω,T_J = 125°C			1.7	
I_{GT}	Max. required DC gate current to trigger	V_A=6V, R_A=1Ω,T_J = -40°C			270	mA
		V_A=6V, R_A=1Ω		75	150	
		V_A=6V, R_A=1Ω,T_J = 125°C			80	
V_{GD}	Max. required DC gate voltage not to trigger,$V_D = V_{DRM}$, T_J = 125°C				0.25	V
I_{GD}	Max. required DC gate current not to trigger,$V_D = V_{DRM}$, T_J = 125°C				6	mA
I_H	Maximum holding current			100	200	mA
I_L	Maximum latching current			200	400	mA
P_{GM}	Maximum peak gate power				12	W
$P_{G(AV)}$	Maximum average gate power				3.0	
I_{GM}	Maximum peak gate current				3.0	A
$-V_{GM}$	Maximum peak negative gate voltage				10	V
dv/dt	Critical Rate of Rise of Off-State Voltage,T_J=125°C,exponential to 67% rated V_{DRM}				1000	V/μs
di/dt	Max.Rate of Rise of Turned on Current, T_J =125°C,I_{TM}=500A, rated V_{DRM}				150	A/μs

ELECTRICAL CHARACTERISTICS (Diode)

Symbol	Parameter/Test Conditions		Min.	Typ.	Max.	Unit
I_{RM}	Maximum Reverse Leakage Current	$V_R = V_{RRM}$			0.5	mA
		$V_R = V_{RRM}$, T_J = 125°C			10	
V_F	Forward Voltage Drop	I_F=500A			1.5	V
V_{TO}	For power-loss calculations only , T_J = 125°C				0.9	V
r_T					1.0	mΩ

MODULE CHARACTERISTICS

T_C=25°C unless otherwise specified

T_J	Junction Temperature		-40 to +125	°C
T_{STG}	Storage Temperature Range		-40 to +125	°C
V_{ISO}	Isolation Breakdown Voltage	AC, 50Hz(R.M.S), t=1minute	3000	V
Torque	to heatsink	Recommended（M6）	3～5	Nm
Torque	to terminal	Recommended（M6）	3～5	Nm
R_{thJC}	Junction-to-Case Thermal Resistance(Per Thyristor/Per Diode)		0.12/0.14	K /W
Weight			160	g

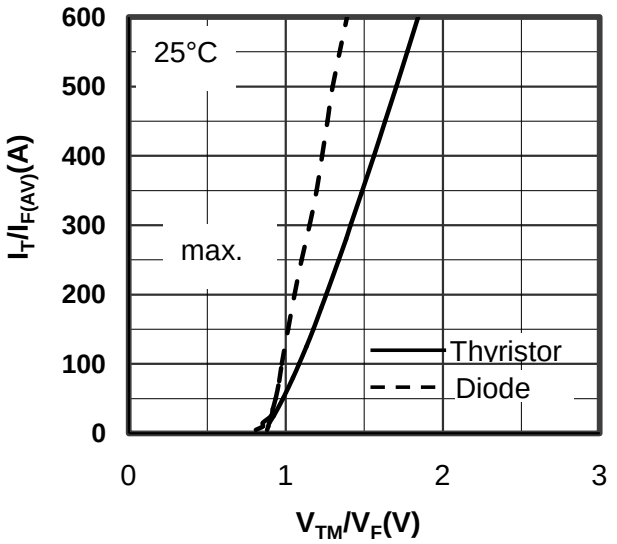


Figure 1. Forward Voltage Drop vs Forward Current

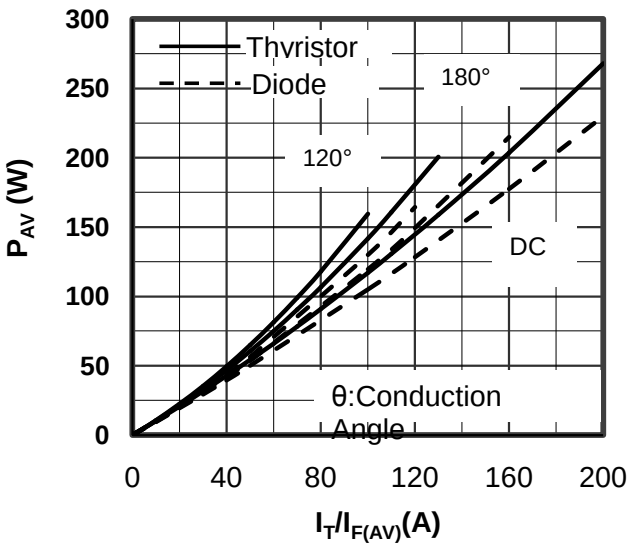


Figure 2. Power dissipation vs. $I_T/I_{F(AV)}$

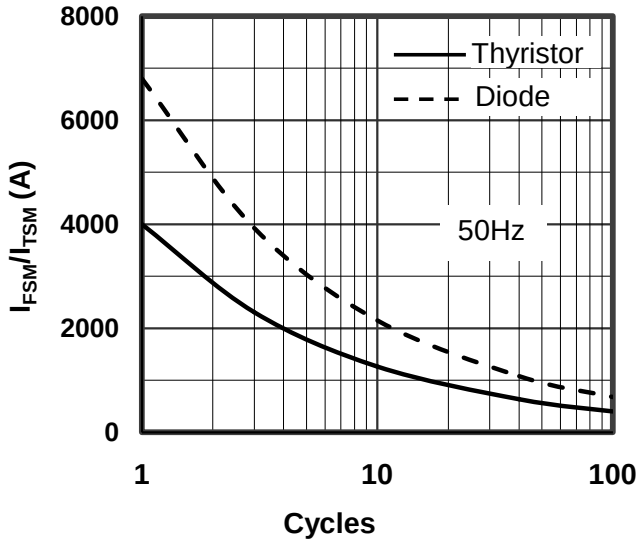


Figure 3. Diode and SCR Max Non-Repetitive Surge

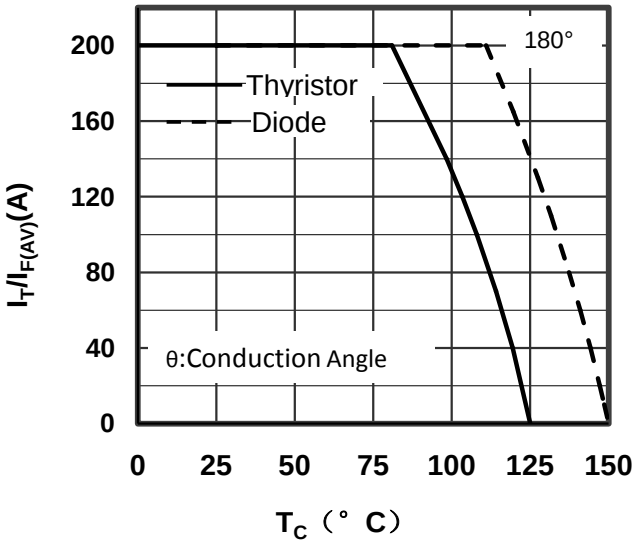


Figure 4. Diode $I_{F(AV)}$ and SCR $I_{T(AV)}$vs.T_C

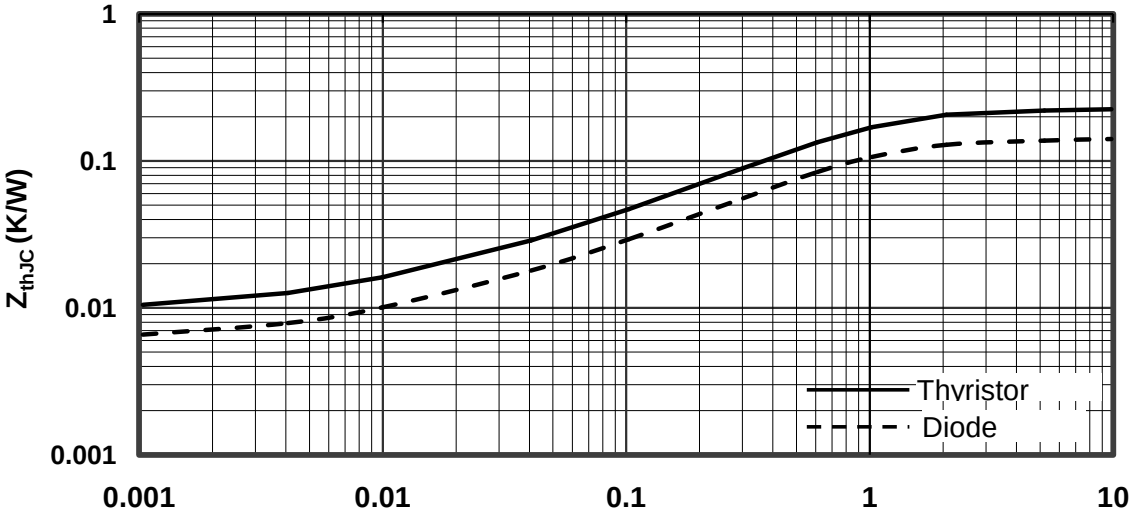


Figure 5. Transient Thermal Impedance of Diode and SCR

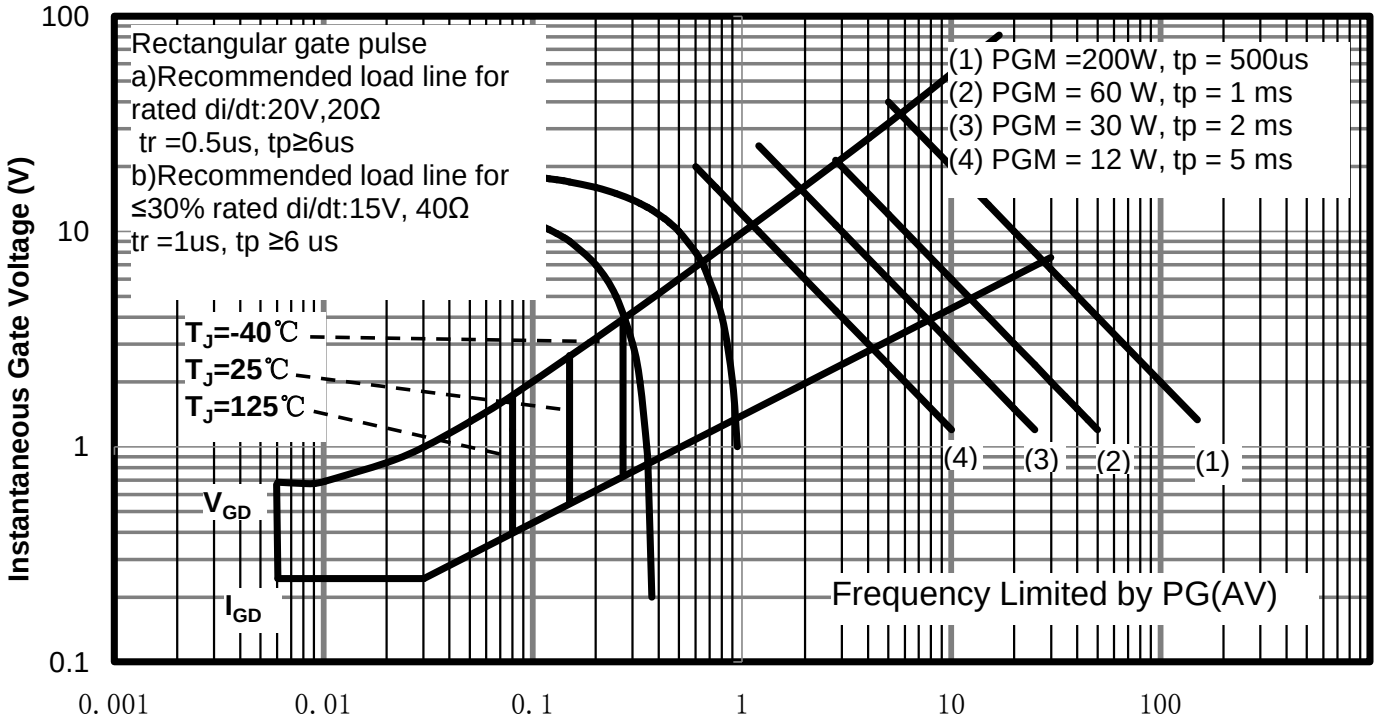
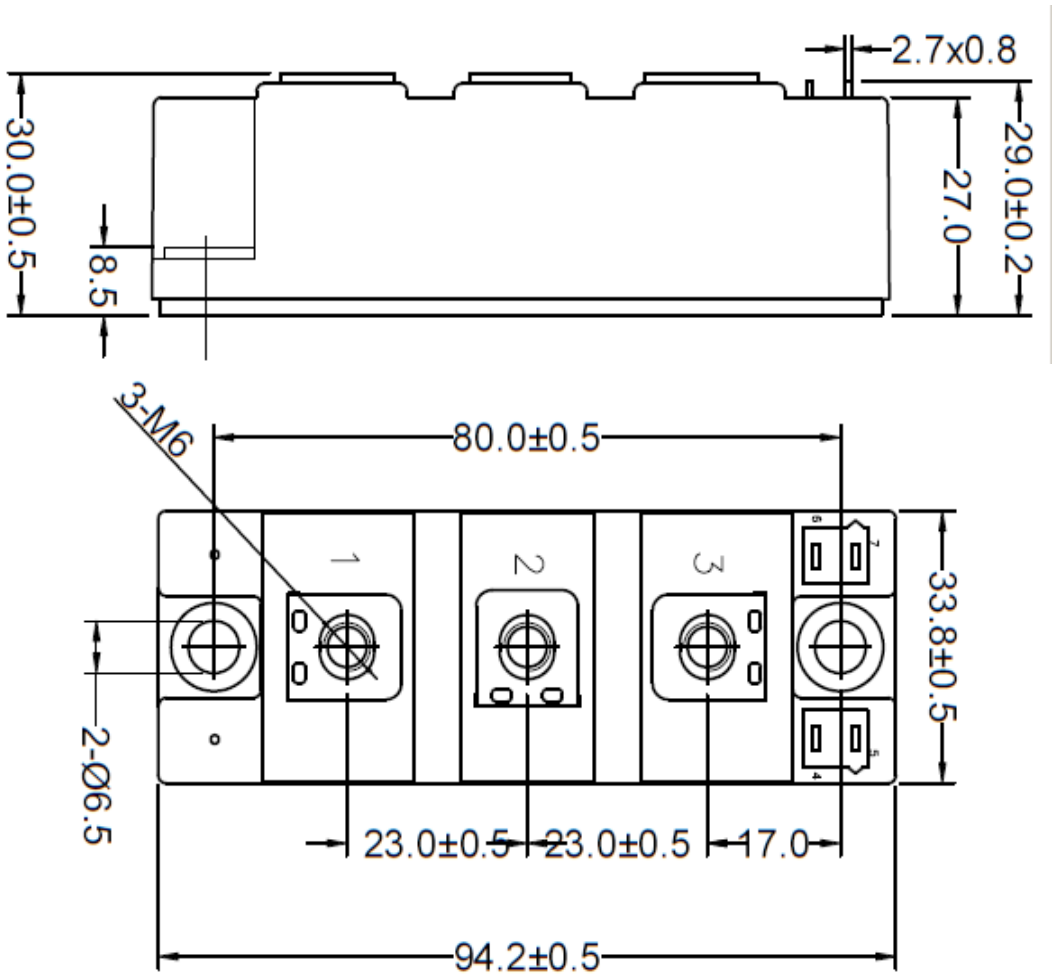


Figure 6. SCR Gate Characteristics



Dimensions in (mm)

Figure 7. Package Outline