MMK110A160B

110A Thyristor Module

February 2017 Version 1 RoHS Compliant

PRODUCT FEATURES

☐ Electrically Isolated by DBC Ceramic

☐ High Surge Current Capability

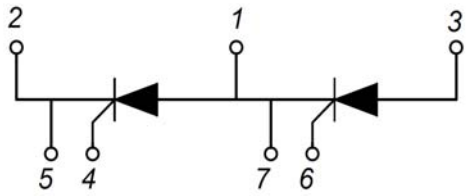
☐ Low Inductance Package

APPLICATIONS

☐ DC Motor Control and Drives

☐ Battery Charges ,Heater controls,Light dimmers

☐ Static switches



ABSOLUTE MAXIMUM RATINGS(T_C =25°C *unless otherwise specified)*

Symbol	Parameter/Test Conditions	Values			Unit
		MMK110A120B	MMK110A140B	MMK110A160B	
V_{RRM}	Repetitive Peak Reverse Voltage	1200	1400	1600	V
V_{DRM}	Repetitive Peak Off State Voltage	1200	1400	1600	
V_{RSM}	Non-Repetitive Peak Reverse Voltage	1300	1500	1700	

Symbol	Parameter/Test Conditions		Values	Unit
$I_{T(AV)}$	Average On State Current	Single phase, half wave, 180°conduction, Tc= 80℃	110	A
$I_{T(RMS)}$	R.M.S. On State Current	Single phase, half wave, 180°conduction, Tc =80℃	170	
I_{TSM}	Non Repetitive Surge On State Current	1/2 cycle, 50HZ, peak value, T_J =45℃	2000	
		1/2 cycle, 60HZ, peak value, T_J =45℃	2200	
I^2t	For Fusing	1/2 cycle, 50HZ, peak value ,T_J =45℃	20.0	KA^2S
		1/2 cycle, 60HZ, peak value, T_J =45℃	20.0	
T_J	Junction Temperature		-40 to +125	℃
T_{STG}	Storage Temperature Range		-40 to +125	℃
V_{ISO}	Isolation Breakdown Voltage	AC, 50Hz(R.M.S), t=1minute	3000	V
Torque	Module to Sink	Recommended（M6）	3～5	Nm
Torque	Module Electrodes	Recommended（M5）	2.5～5	Nm
R_{thJC}	Junction to Case Thermal Resistance		0.25	K /W
Weight			110	g

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ELECTRICAL CHARACTERISTICS *(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℃			25	mA
I_{RRM}	Maximum Peak Reverse Current	$V_R = V_{RRM}$, T_J = 125℃			25	
V_{TM}	Maximum on-state voltage drop	I_{TM}=280A,td=10 ms, half sine			1.65	V
V_{TO}	For power-loss calculations only	T_J = 125℃			0.9	V
r_T					2.8	mΩ
V_{GT}	Max. required DC gate voltage to trigger	V_A=6V, R_A=1Ω,T_J = -40℃			4.0	V
		V_A=6V, R_A=1Ω		1.0	2.5	
		V_A=6V, R_A=1Ω,T_J = 125℃			1.7	
I_{GT}	Max. required DC gate current to trigger	V_A=6V, R_A=1Ω,T_J = -40℃			270	mA
		V_A=6V, R_A=1Ω		75	150	
		V_A=6V, R_A=1Ω,T_J = 125℃			80	
V_{GD}	Max. required DC gate voltage not to trigger,$V_D = V_{DRM}$, T_J = 125℃				0.25	V
I_{GD}	Max. required DC gate current not to trigger,$V_D = V_{DRM}$, T_J = 125℃				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℃,exponential to 67% rated V_{DRM}				1000	V/μs
di/dt	Max.Rate of Rise of Turned-on Current, T_J =125℃,I_{TM}=280A, rated V_{DRM}				150	A/μs

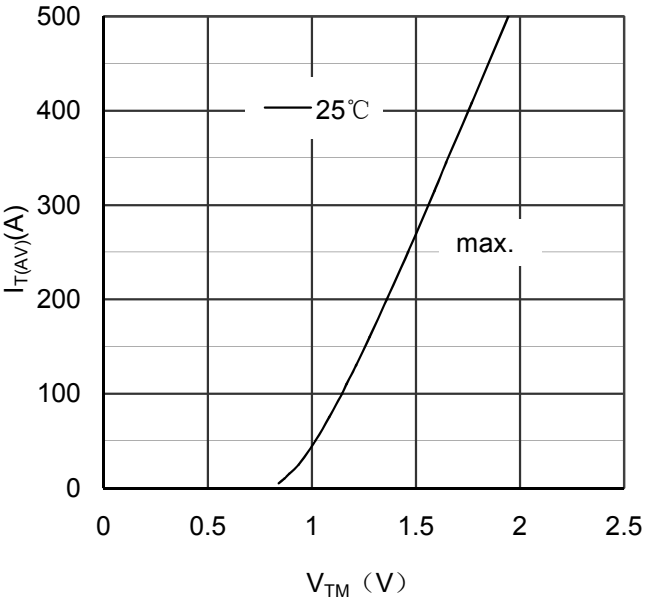


Figure 1. SCR Average On State Current vs Forward Voltage

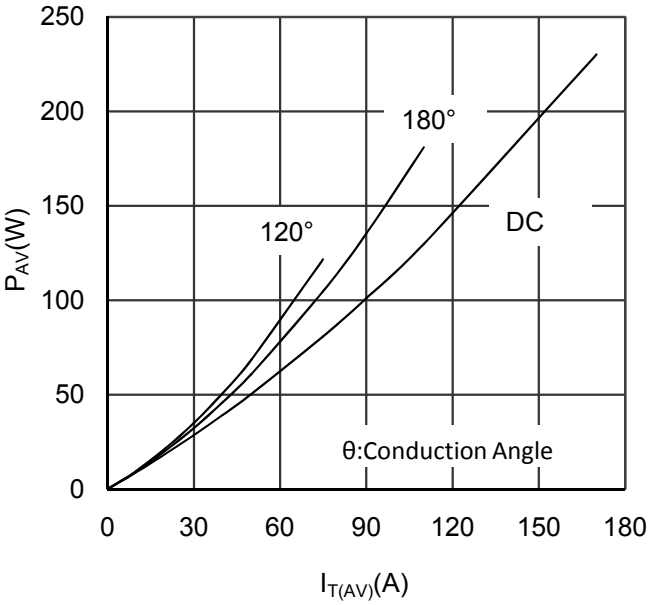


Figure 2. SCR Power dissipation vs $I_{T(AV)}$

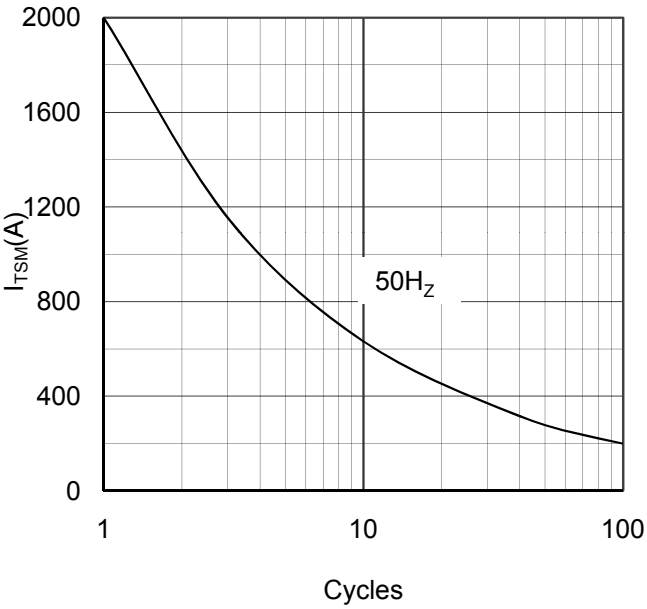


Figure 3. Max Non Repetitive Surge On State Current

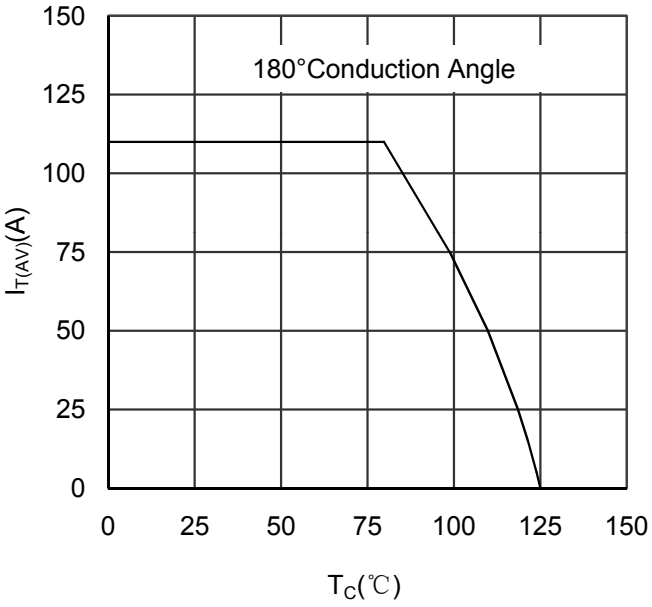


Figure 4. On State current vs Case temperaturer

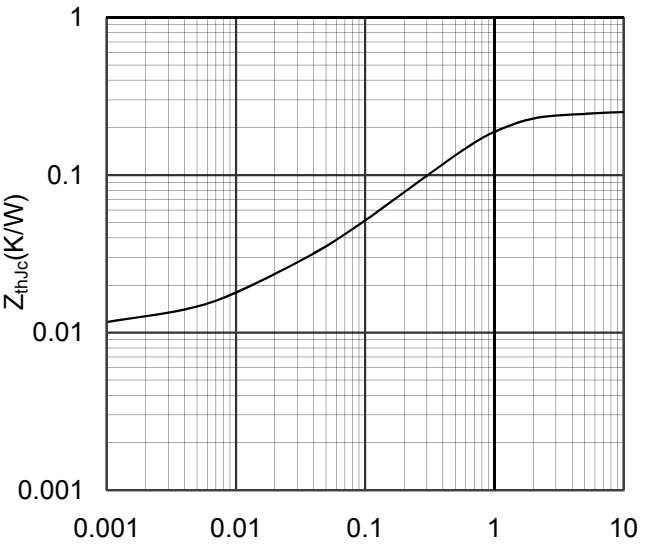


Figure 5. Transient Thermal Impedance

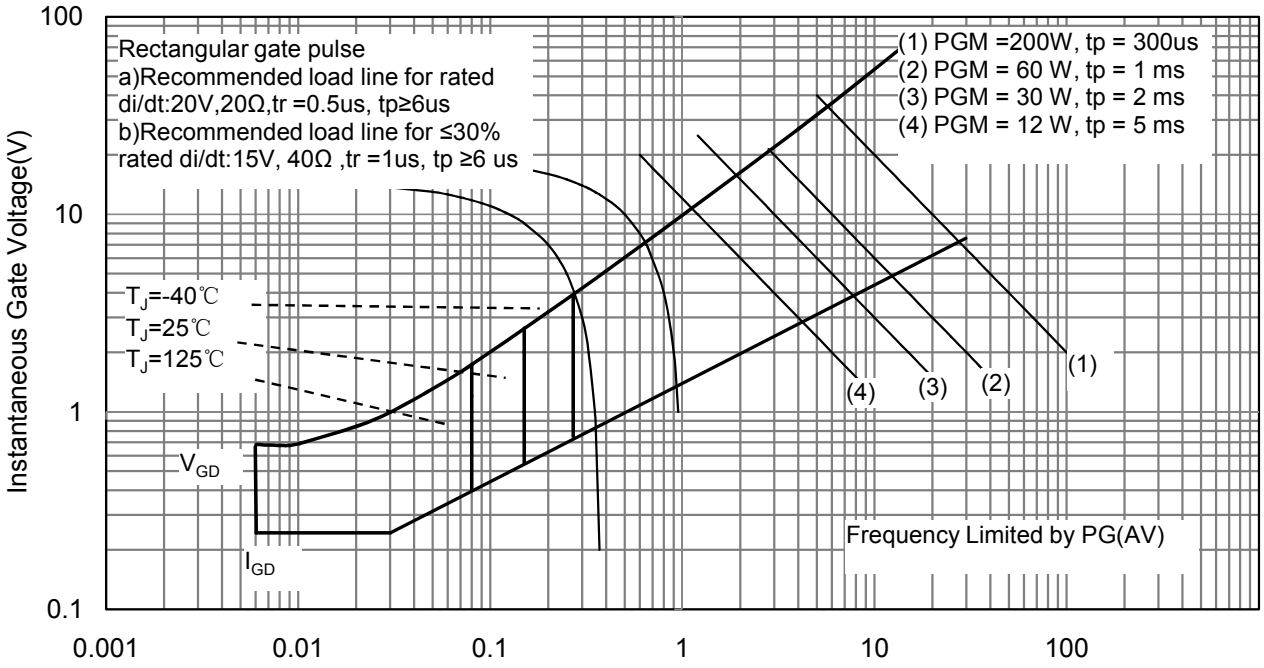
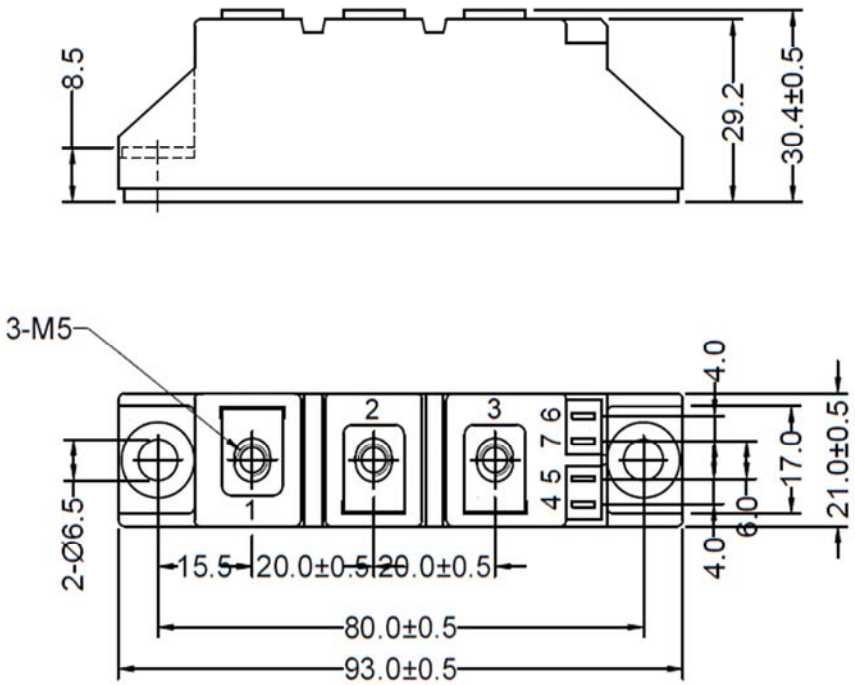


Figure 6. Gate Characteristics



Dimensions in (mm)

Figure 7. Package Outline