MMK110A160B-K

110A Thyristor Module

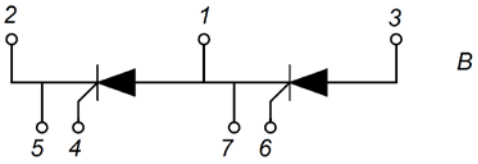
MAY 2014 PRELIMINARY Version 01 **RoHS Compliant**

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



B

ABSOLUTE MAXIMUM RATINGS

T_C=25°C unless otherwise specified

Symbol	Parameter/Test Conditions	Values	Unit
		MMK110A160B-K	
V_{DRM}	Repetitive Peak Off-State Voltage	1600	V
V_{RRM}	Repetitive Peak Reverse Voltage	1600	
V_{RSM}	Non-Repetitive Peak Reverse Voltage	1800	

Symbol	Parameter	Test Conditions	Values	Unit
$I_{T(AV)}$	Average On-State Current	Single phase, half wave, 180°conduction, Tc=85°C	110	A
$I_{T(RMS)}$	R.M.S. On-State Current		170	
I_{TSM}	Non-Repetitive Surge On-State Current	1/2 cycle, 50HZ, peak value Tc =45°C	2500	
		1/2 cycle, 60HZ, peak value Tc =45°C	2700	
I^2t	I^2t (For Fusing)	1/2 cycle, 50HZ, peak value Tc =45°C	31.2	KA^2s
		1/2 cycle, 60HZ, peak value Tc =45°C	30.2	KA^2s
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	Module-to-Sink	Recommended（M5）	2.5～5	N.m
Torque	Module Electrodes	Recommended（M5）	2.5～5	N.m
$R_{th\ (J-C)}$	Junction-to-Case Thermal Resistance		0.19	K /W
Weight			110	g

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ELECTRICAL AND THERMAL 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°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}=345A ,td=10 ms, half sine			1.7	V
V_{T0}	For power-loss calculations only				0.9	V
r_T	T_J=125°C				2.5	mΩ
V_{GT}	Max. required DC gate voltage to trigger	V_A=6V, R_A=1Ω,T_J = -40°C			4	V
		V_A=6V, R_A=1Ω			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				10	mA
I_H	Maximum holding current			125	250	
I_L	Maximum latching current			250	500	
P_{GM}	Maximum peak gate power				10	W
$P_{G(AV)}$	Maximum average gate power				2.5	W
I_{GM}	Maximum peak gate current				2.5	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	V_D = 2/3V_{DRM},I_G = 0.3A, dig/dt=0.3A/μs, T_J = 125°C				150	A/μs

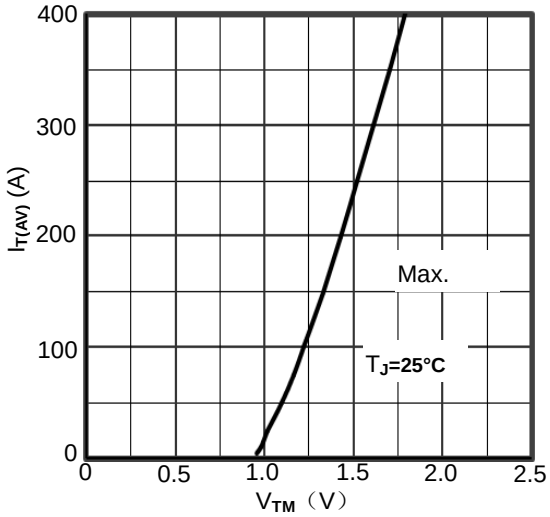


Figure1. SCR Average On-State Current vs. Forward Voltage

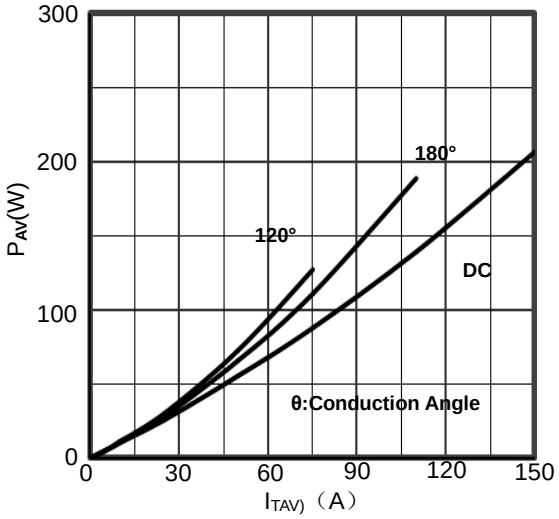


Figure2. SCR Power dissipation vs. $I_{T(AV)}$

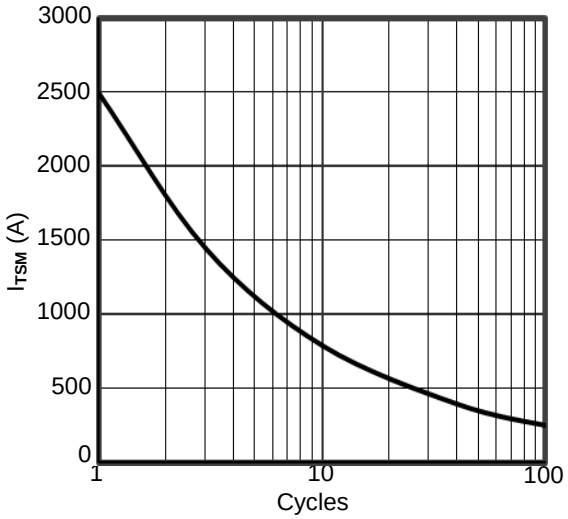


Figure3. Max Non-Repetitive Surge On-State Current

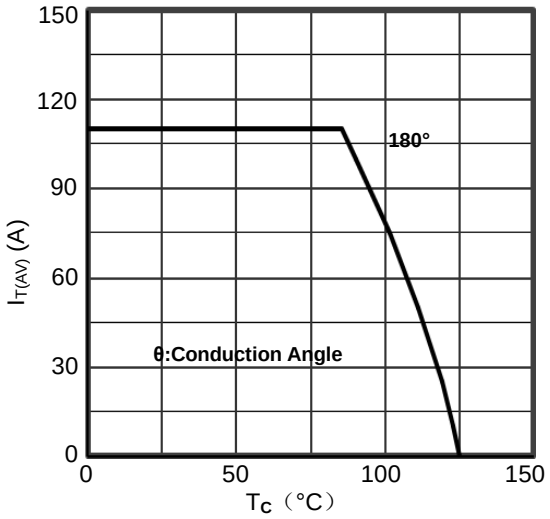
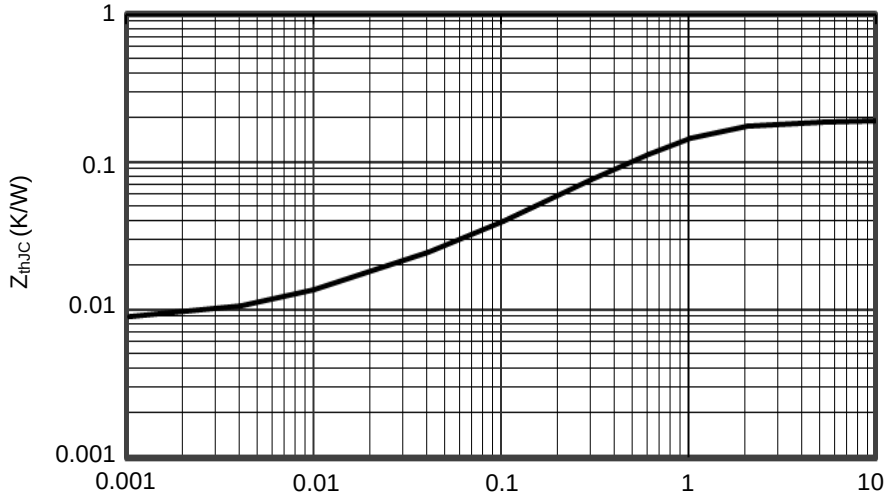


Figure4. On-State current vs.Case temperature



Rectangular Pulse Duration (seconds)

Figure5. Transient Thermal Impedance

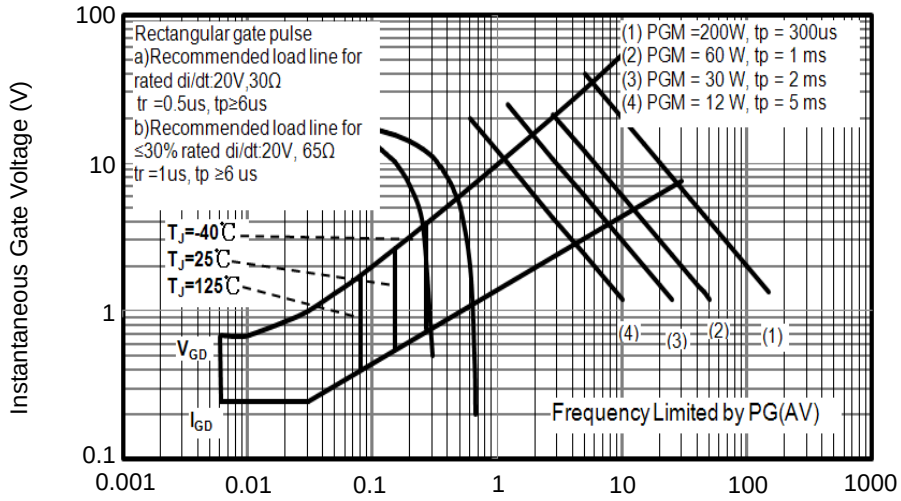
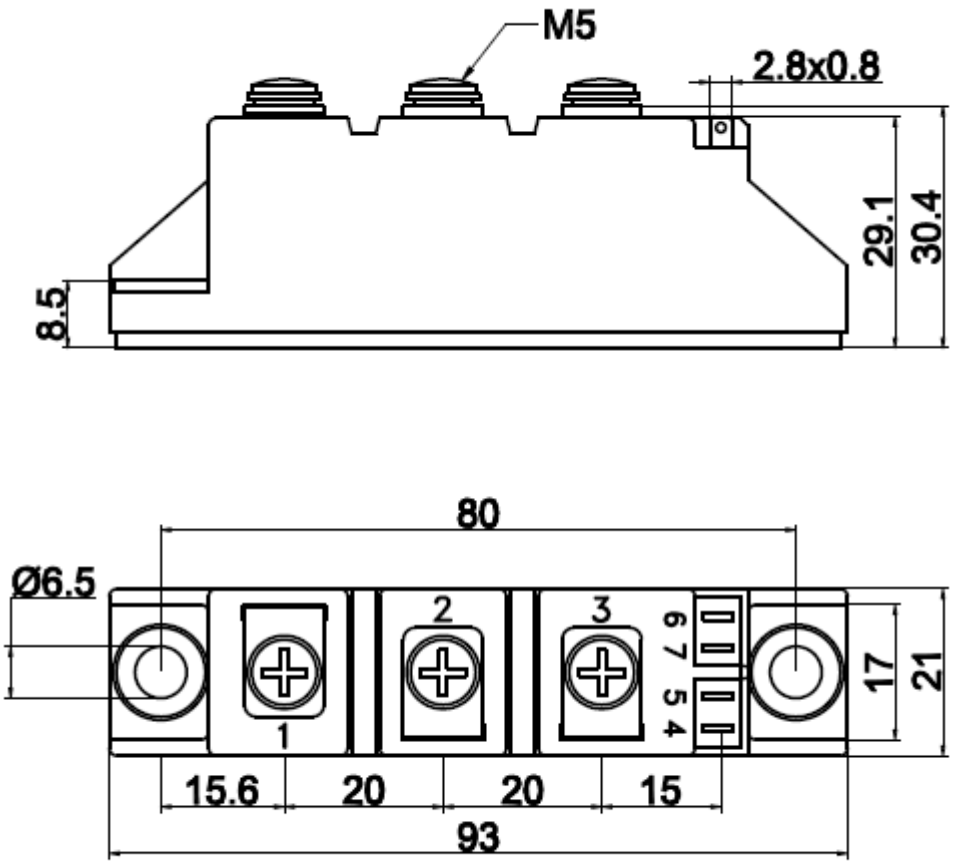


Figure6. Gate Characteristics



Dimensions in Millimeters
Figure7. Package Outline