JMT90KH18T1A

Thyristor Module

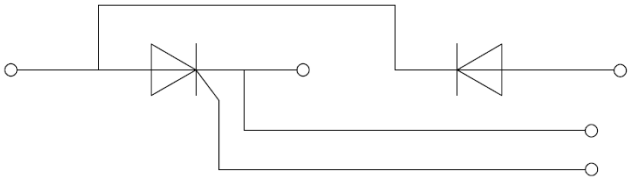
Features

- Half-bridge configuration with integrated SCR and diode in a single package
- High-thermal-conductivity DBC insulation for excellent heat dissipation
- Vacuum soldering technology for enhanced reliability

Parameter	Value	Unit
V_{RRM}	1800	V
$I_{T(AV)}$(@ T_C = 85℃)	90	A
I_{TSM}(@ t_P = 10ms)	1800	A
V_T(Max)	1.80	V

Applications

- Heating control
- Light control system
- DC motor



Absolute Maximum Ratings (@ T_C = 25°C unless otherwise specified)

Parameter	Conditions	Symbol	Values	Unit
Repetitive peak off-state voltage	Tvj = 25°C	V_{DRM}	1800	V
Repetitive peak reverse voltage	Tvj = 25°C	V_{RRM}	1800	V
Non-repetitive peak off-state voltage	Tvj = 25°C	V_{DSM}	1900	V
Non-repetitive peak reverse voltage	Tvj = 25°C	V_{RSM}	1900	V
Average forward current	T_C = 85°C	$I_{T(AV)}$	90	A
Forward surge current	1/2 cycle, Sine wave, 50Hz Tvj = 25℃	I_{TSM}	1800	A
I^2t value for fusing		I^2t	16200	A^2s
Critical rate of rise of on-state current	I_G=2×I_{GT}	di/dt	150	A/μs
RMS isolation voltage	A.C 50Hz(1s/1min)	V_{ISO}	3600/3000	V
Junction temperature range		T_J	-40 ~ +125	℃
Storage temperature range		T_{stg}	-40 ~ +125	℃

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Electrical Characteristics (@ T_C = 25°C unless otherwise specified)

Parameter	Conditions	Symbol	Values			Unit
			Min.	Typ.	Max.	
Peak forward voltage	I_T=270A, t_P=380μs	V_T			1.80	V
Repetitive peak off-state current	V_D = V_{DRM}, T_{vj} = 25℃	I_{DRM}			100	μA
	V_D = V_{DRM}, T_{vj} = 125℃				40	mA
Reverse leakage current	V_R = V_{RRM}, T_{vj} = 25℃	I_{RRM}			100	μA
	V_R = V_{RRM}, T_{vj} = 125℃				40	mA
Threshold voltage	For power loss calculation only T_{vj} = 125℃,	V_{TO}			0.90	V
Dynamic resistance	T_{vj} = 125℃,	r_T			3.1	mΩ
Triggering gate current	V_D=12V R_L=30Ω	I_{GT}	20		120	mA
Holding current	I_T=1A	I_H			250	mA
Latching current	I_G=1.2 I_{GT}	I_L			300	mA
Critical rate of rise of voltage	V_D=2/3V_{DRM} Tvj=125℃ Gate Open	dv/dt	1000			V/μs
Triggering gate voltage	V_D=12V R_L=30Ω	V_{GT}			1.8	V
Non triggering gate voltage	V_D=0.5V_{DRM} Tvj=125℃	V_{GD}	0.25			V

Thermal Characteristics (@ T_C = 25°C unless otherwise specified)

Parameter	Conditions	Symbol	Values			Unit
			Min.	Typ.	Max.	
Thermal resistance, junction to case	per Thyristor	$R_{th(j-c)}$		0.285		K/W
Thermal resistance, case to heatsink	per Thyristor	$R_{th(c-s)}$		0.14		K/W
Mounting torque	Module and heatsink fixed torque M5	M	4.25		5.75	N·m
	Electrode connection torque M5		2.55		3.45	N·m

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Ordering Information

Device	Marking	Package	Weight	Inner Box	Per Carton
JMT90KH18T1A	JMT90KH18T1A	T1A	100±5g/PCS	10 PCS	120 PCS

Typical Electrical & Thermal Characteristics

FIG.1: Power dissipation vs. on-state current (per thyristor or diode)

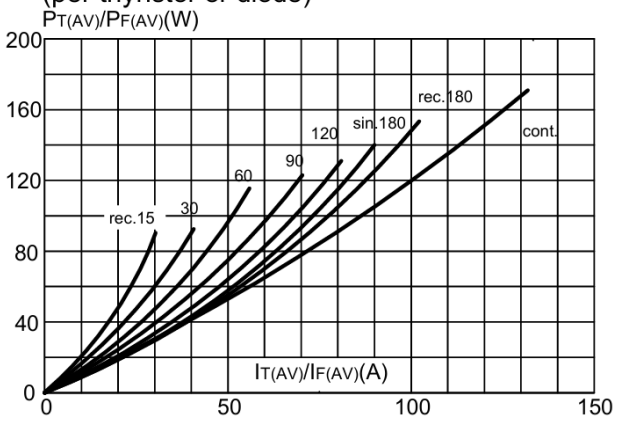


FIG.2: Maximum transient thermal impedance junction to case(per thyristor or diode)

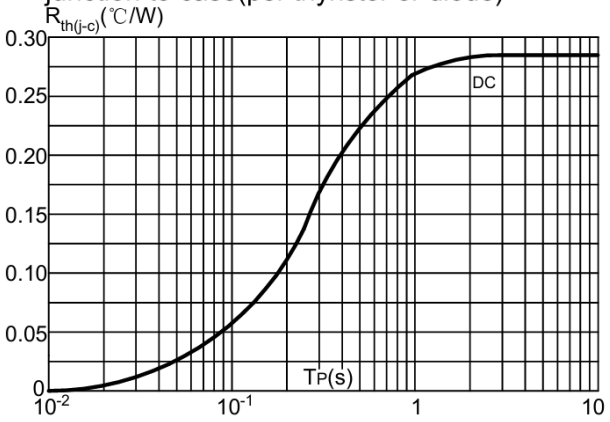


FIG.3: Forward characteristics (per thyristor or diode)

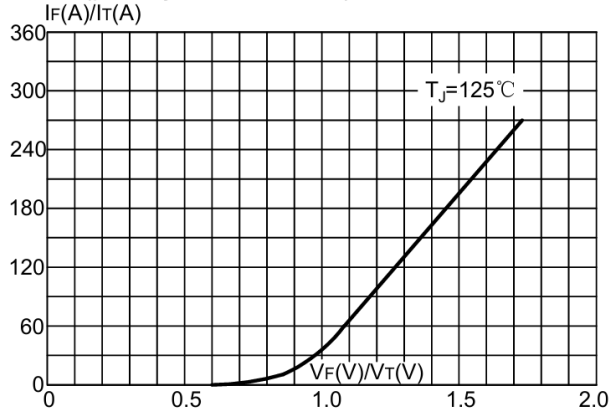


FIG.4: Relative variations of gate trigger current, holding current and latching current versus junction temperature

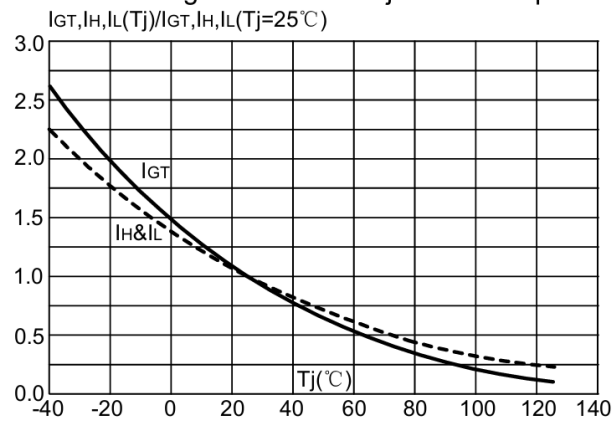


FIG.5 Gate trigger characteristics

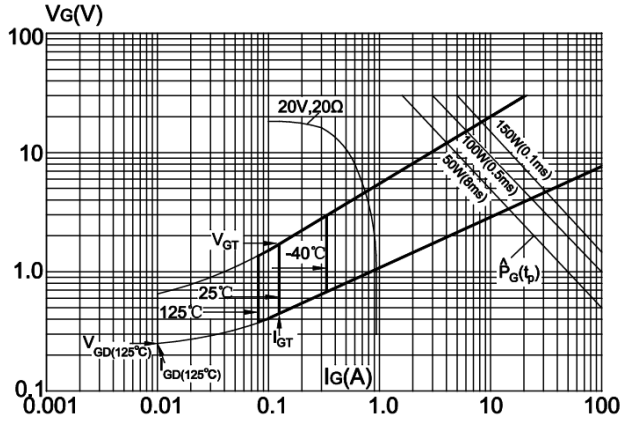
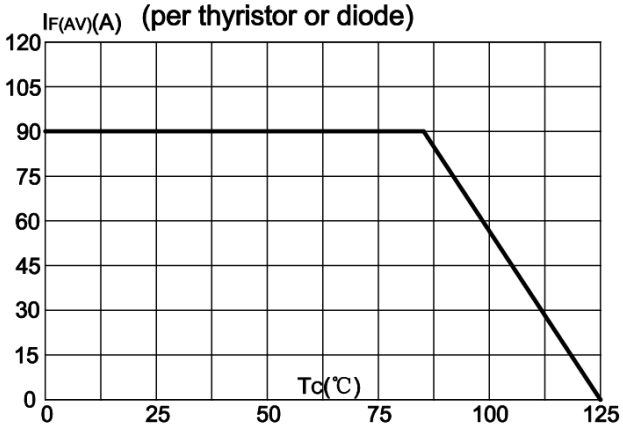


FIG.6: Forward current vs. case temperature (per thyristor or diode)



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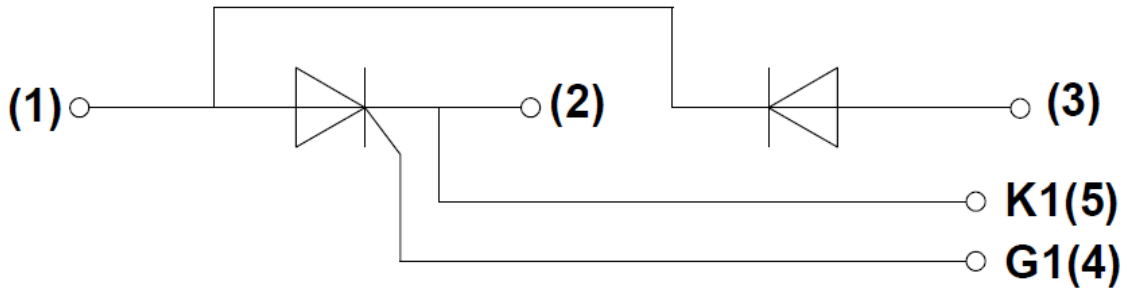
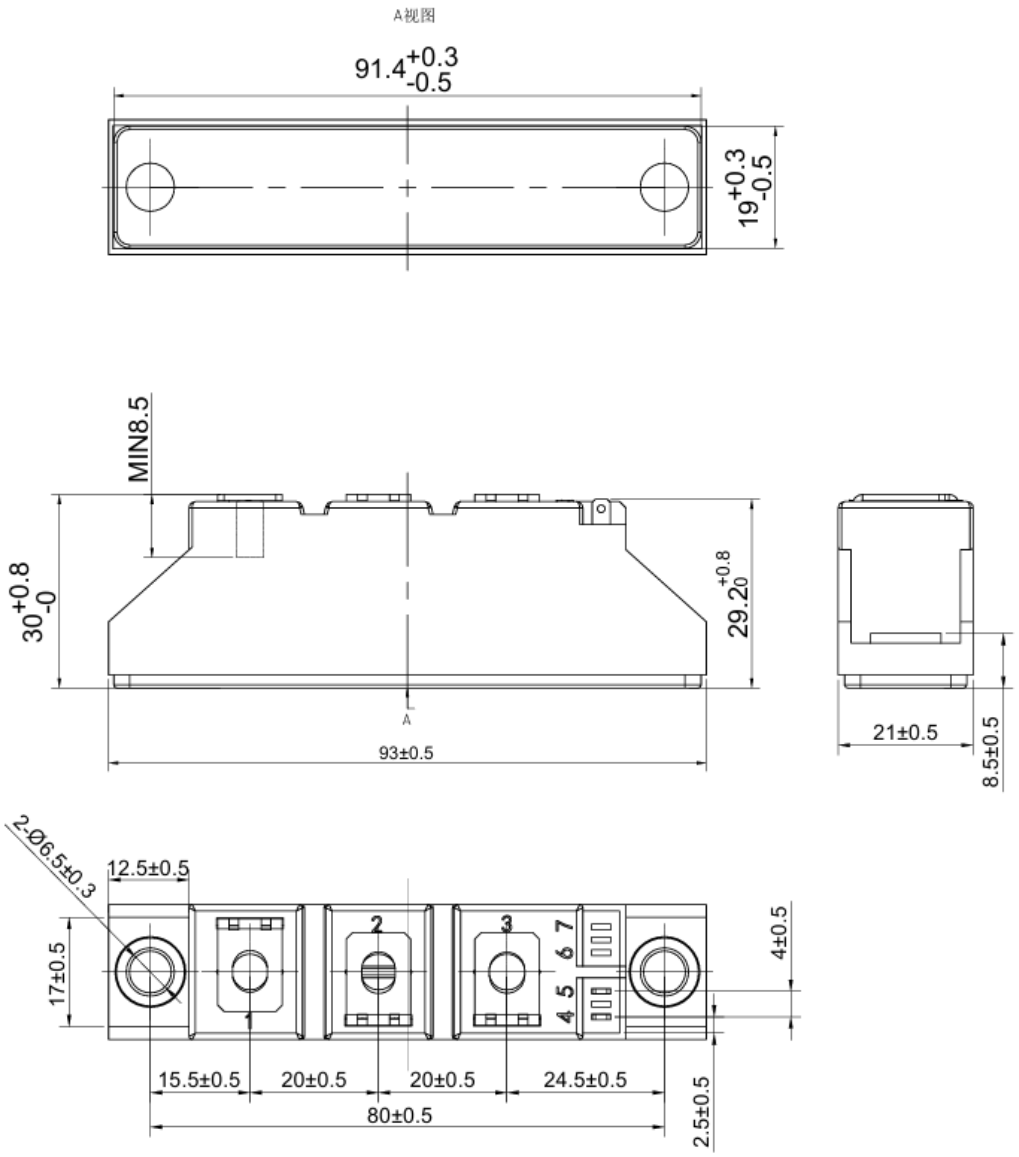
Circuit Diagram



Package Outlines (mm)



Unit of measurement: mm

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