



JMT140KB20T1

Thyristor Module

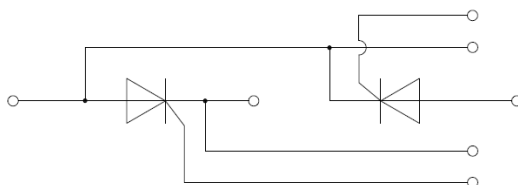
Features

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

Applications

- Heating control
- Light control system
- DC motor

Parameter	Value	Unit
V_{RRM}	2000	V
$I_{T(AV)}(@ T_C = 85^{\circ}C)$	140	A
$I_{TSM}(@ t_p = 10ms)$	2800	A
$V_T(Max)$	1.80	V



Absolute Maximum Ratings (@ $T_C = 25^{\circ}C$ unless otherwise specified)

Parameter	Conditions	Symbol	Values	Unit
Repetitive peak off-state voltage	$T_vj = 25^{\circ}C$	V_{DRM}	2000	V
Repetitive peak reverse voltage	$T_vj = 25^{\circ}C$	V_{RRM}	2000	V
Non-repetitive peak off-state voltage	$T_vj = 25^{\circ}C$	V_{DSM}	2100	V
Non-repetitive peak reverse voltage	$T_vj = 25^{\circ}C$	V_{RSM}	2100	V
Average forward current	$T_C = 85^{\circ}C$	$I_{T(AV)}$	140	A
Forward surge current	1/2 cycle, Sine wave, 50Hz $T_vj = 25^{\circ}C$	I_{TSM}	2800	A
I^2t value for fusing		I^2t	39200	A^2s
Critical rate of rise of on-state current	$I_G=2 \times I_{GT}$	di/dt	150	$A/\mu s$
RMS isolation voltage	A.C 50Hz(1s/1min)	V_{ISO}	3600/3000	V
Junction temperature range		T_J	-40 ~ +125	$^{\circ}C$
Storage temperature range		T_{stg}	-40 ~ +125	$^{\circ}C$

**Electrical Characteristics (@ $T_C = 25^\circ\text{C}$ unless otherwise specified)**

Parameter	Conditions	Symbol	Values			Unit
			Min.	Typ.	Max.	
Peak forward voltage	$I_T=420\text{A}$, $t_P=380\mu\text{s}$	V_T			1.80	V
Repetitive peak off-state current	$V_D = V_{\text{DRM}}$, $T_{vj} = 25^\circ\text{C}$	I_{DRM}			100	μA
	$V_D = V_{\text{DRM}}$, $T_{vj} = 125^\circ\text{C}$				40	mA
Reverse leakage current	$V_R = V_{\text{RRM}}$, $T_{vj} = 25^\circ\text{C}$	I_{RRM}			100	μA
	$V_R = V_{\text{RRM}}$, $T_{vj} = 125^\circ\text{C}$				40	mA
Threshold voltage	For power loss calculation only $T_{vj} = 125^\circ\text{C}$,	V_{TO}			0.89	V
Dynamic resistance	$T_{vj} = 125^\circ\text{C}$,	r_T			2	$\text{m}\Omega$
Triggering gate current	$V_D=12\text{V}$ $R_L=30\Omega$	I_{GT}	20		120	mA
Holding current	$I_T=1\text{A}$	I_H			250	mA
Latching current	$I_G=1.2 I_{\text{GT}}$	I_L			300	mA
Critical rate of rise of voltage	$V_D=2/3V_{\text{DRM}}$ $T_{vj}=125^\circ\text{C}$ Gate Open	dv/dt	1000			$\text{V}/\mu\text{s}$
Triggering gate voltage	$V_D=12\text{V}$ $R_L=30\Omega$	V_{GT}			1.8	V
Non triggering gate voltage	$V_D=0.5V_{\text{DRM}}$ $T_{vj}=125^\circ\text{C}$	V_{GD}	0.25			V

Thermal Characteristics (@ $T_C = 25^\circ\text{C}$ unless otherwise specified)

Parameter	Conditions	Symbol	Values			Unit
			Min.	Typ.	Max.	
Thermal resistance, junction to case	per Thyristor	$R_{\text{th(j-c)}}$		0.181		$^\circ\text{C}/\text{W}$
Thermal resistance, case to heatsink	per Thyristor	$R_{\text{th(c-s)}}$		0.10		$^\circ\text{C}/\text{W}$
Mounting torque	Module and heatsink fixed torque M5	M	4.25		5.75	$\text{N}\cdot\text{m}$
	Electrode connection torque M5		2.55		3.45	$\text{N}\cdot\text{m}$



Ordering Information

Device	Marking	Package	Weight	Inner Box	Per Carton
JMT140KB20T1	JMT140KB20T1	T1	100±5g/PCS	10 PCS	120 PCS

Typical Electrical & Thermal Characteristics

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

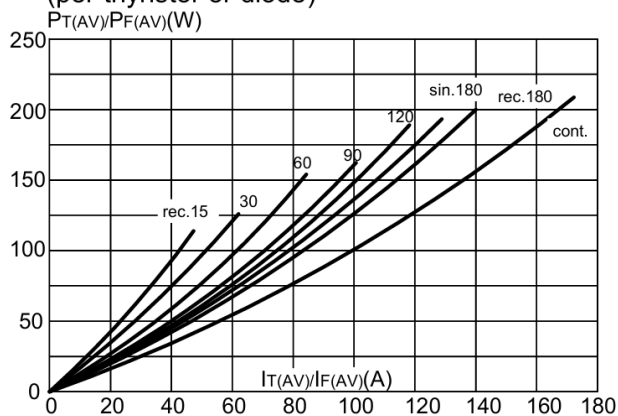


FIG.2: Maximum transient thermal impedance
junction to case(per thyristor or diode)

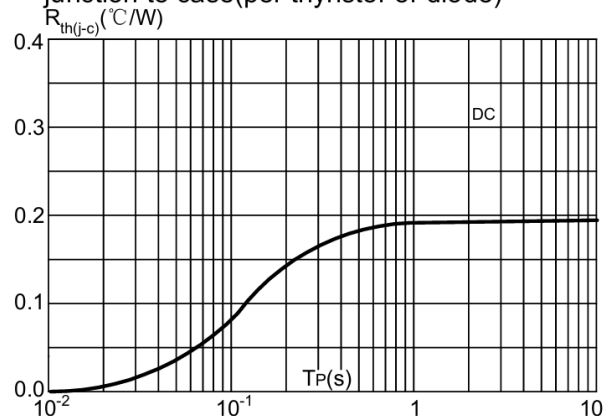


FIG.3:Forward characteristics
(per thyristor or diode)

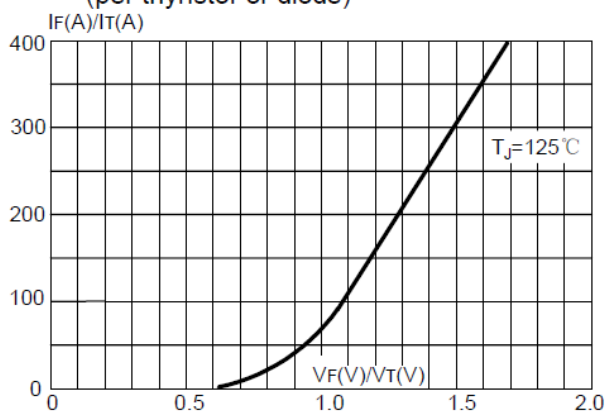


FIG.4: Relative variations of gate trigger current, holding current and latching current versus junction temperature
 $I_{GT}, I_H, I_L(T_J)/I_{GT}, I_H, I_L(T_J=25^\circ\text{C})$

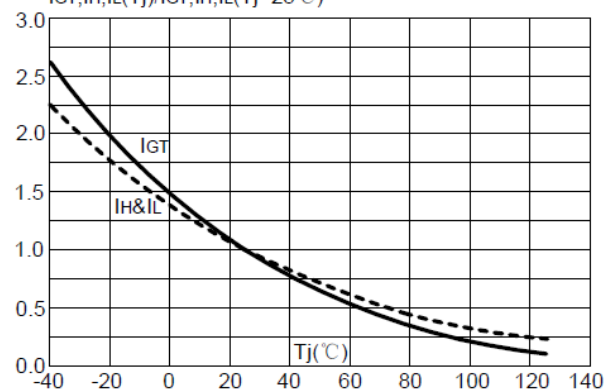


FIG.5: Gate trigger characteristics

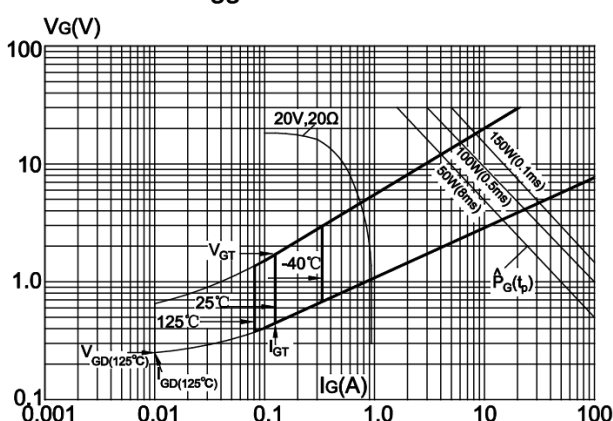
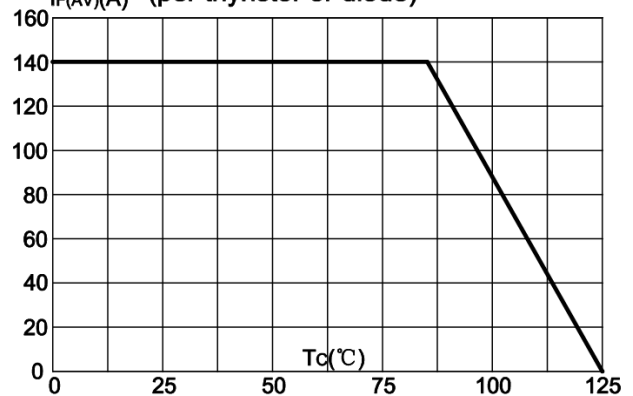
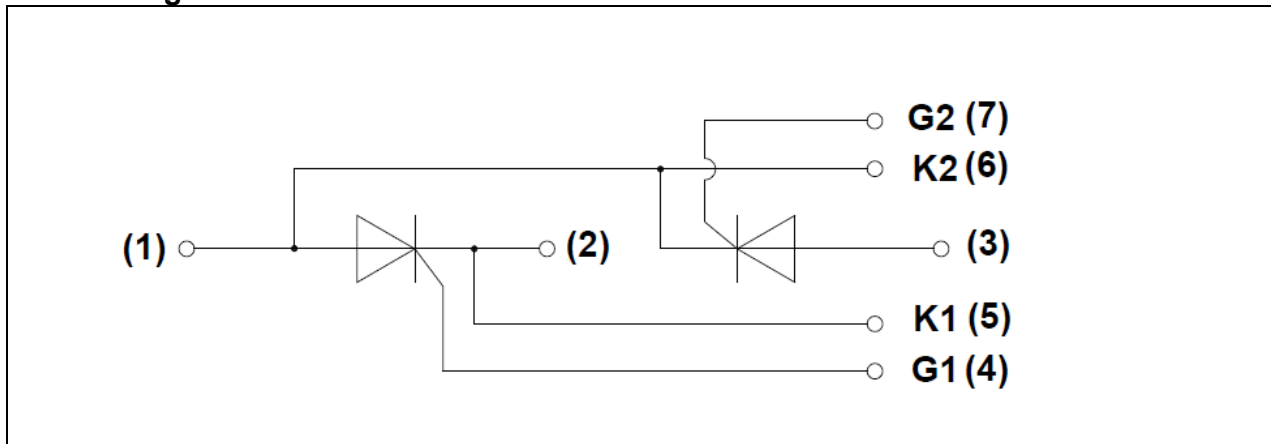
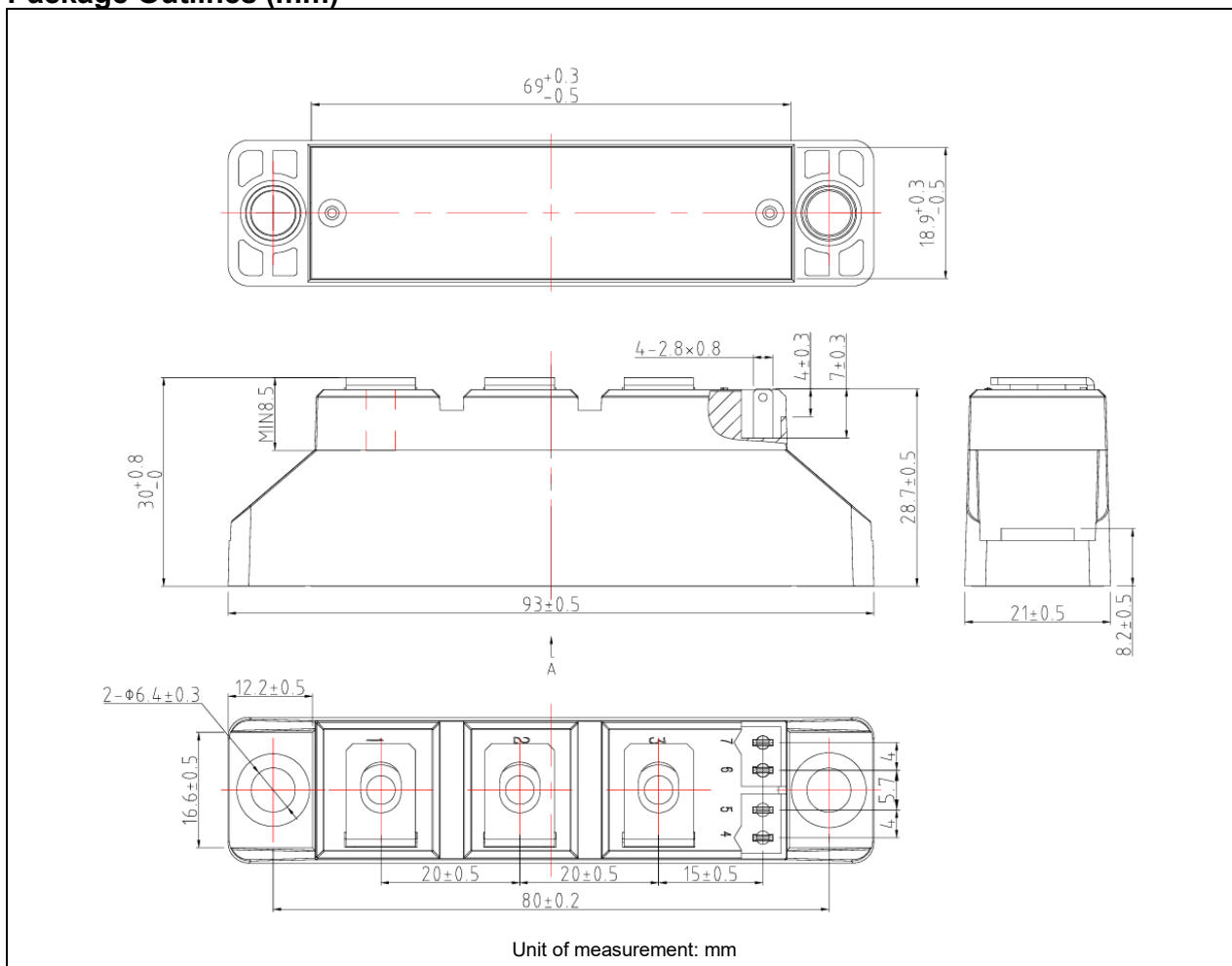


FIG.6: Forward current vs. case temperature
 $I_{F(AV)}(A)$ (per thyristor or diode)



Circuit Diagram

Package Outlines (mm)




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