株洲南车时代电气股份有限公司
ZHUZHOU CSR TIMES ELECTRIC Co., Ltd

KP_8 300-70~85

Phase Control Thyristor

Ver：0906B

Key Parameters

V_{DSM}	7000~8500	V
$I_{T(AV)}$	300	A
I_{TSM}	4.5	kA
V_{TO}	1.47	V
r_T	2.95	mΩ

Applications

- SVC
- Motor drive
- Industry converter

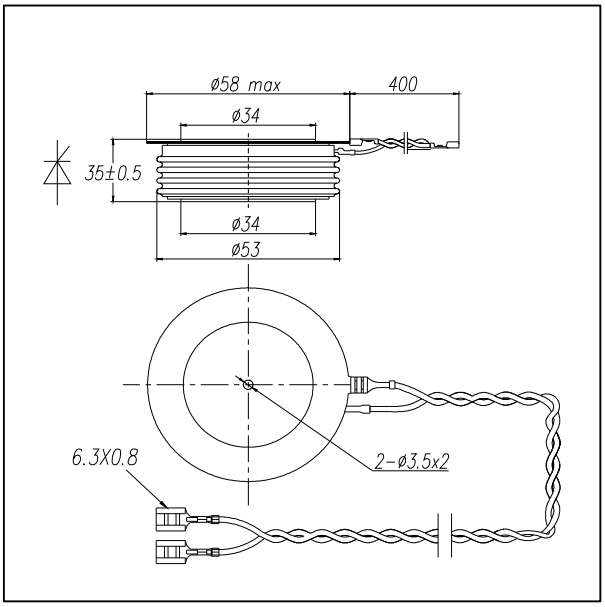
Features

- Double-side cooling
- High power capability
- Low loss

Voltage Ratings

Device Type	V_{DSM}/V_{RSM}(V)	Test Conditions
KP_8 300-70	7000	T_{vj} = 125 °C
KP_8 300-75	7500	I_{DRM} = 150 mA
KP_8 300-80	8000	I_{RRM} = 150 mA
KP_8 300-85	8500	
		$V_{DM}=V_{DRM}$, $V_{RM}=V_{RRM}$
		t_p = 10 ms
		$V_{DRM}=V_{DSM}$ - 500
		$V_{RRM}=V_{RSM}$ - 500

Outline



Thermal & Mechanical Data

Symb.	Parameter	Min	Type	Max	Unit
R_{thjc}	Thermal Resistance Junction to Case	-	-	0.045	K / W
R_{thcs}	Thermal Resistance Case ro Heatsink	-	-	0.008	K / W
T_{vj}	Junction Temperature	-40	-	125	°C
T_{stg}	Storage Temperature	-40	-	140	°C
F	Mounting Force	-	15	-	kN
m	Weight	-	0.35	-	kg

Current Ratings

Symb.	Parameter	Test Conditions	Min	Type	Max	Unit
$I_{T(AV)}$	Mean On-State Current	Half Sine Wave, T_C=70 °C	-	-	300	A
$I_{T(RMS)}$	RMS On-State Current	T_C =70 °C	-	-	471	A
I_{TSM}	Surge (non-repetitive) On-State Current	10ms, Half Sine Wave, T_C =125 °C, V_R = 0	-	-	4.5	kA
I^2t	Limiting load integral	Sine Wave, 10ms	-	-	10.1	10^4A^2s

Characteristics

Symb.	Parameter	Test Conditions	Min	Type	Max	Unit
V_{TM}	Peak on-state voltage	T_{vj} = 125 °C， I_{TM} = 500 A	-	-	2.95	V
I_{DRM}	Forward leakage current	T_{vj} = 125 °C， V_{DRM}	-	-	150	mA
I_{RRM}	Reverse leakage current	T_{vj} = 125 °C， V_{RRM}	-	-	150	mA
V_{TO}	Threshold voltage	T_{vj} = 125 °C	-	-	1.47	V
r_T	Slope resistance	T_{vj} = 125 °C	-	-	2.95	mΩ
I_H	Holding current	T_{vj} = 25 °C	-	-	200	mA
I_L	Latching current	T_{vj} = 25 °C	-	-	1000	mA

Dynamic Parameters

Symb.	Parameter	Test Conditions	Min	Type	Max	Unit
dv/dt	Critical rate of rise of off-state voltage	T_{vj} = 125 °C, Exp. to 0.67 V_{DRM}	1500	-	-	V/μs
di/dt	Critical rate of rise of on-state current	T_{vj} = 125 °C， $V_{DM} \leqslant 0.67\ V_{DRM}$， f = 50 Hz， I_{TRM} = 500 A I_{FG} = 2 A， tr = 0.5 μs	-	-	100	A/μs
t_q	Turn-off time	T_{vj} = 125 °C， I_T = 500A, V_R = 200V di_T/dt = -1.5 A/μs， $V_D \leqslant 0.67V_{DRM}$， dV_D/dt = 20 V/μs	-	1200	-	μs
Q_{rr}	Recovery Charge	T_{vj} = 125 °C， I_T = 500A,V_R = 200 V, di_T/dt = -1.5 A/μs	-	2200	-	μC

Gate Parameters

Symb.	Parameter	Test Conditions	Min	Type	Max	Unit
I_{GT}	Gate trigger current	T_{vj} = 25 °C	-	-	300	mA
V_{GT}	Gate trigger voltage	T_{vj} = 25 °C	-	-	3.0	V
I_{GD}	Gate non-trigger current	T_{vj} = 125 °C， $V_D = 0.4V_{DRM}$	10	-	-	mA
V_{GD}	Gate non-trigger voltage	T_{vj} = 125 °C， $V_D = 0.4V_{DRM}$	0.3	-	-	V
V_{FGM}	Peak forward gate voltage		-	-	12	V
V_{RGM}	Peak reverse gate voltage		-	-	5	V
I_{FGM}	Peak forward gate current		-	-	4	A
P_{GM}	Gate power losses		-	-	20	W
$P_{G(AV)}$	Gate power losses (mean)		-	-	4	W

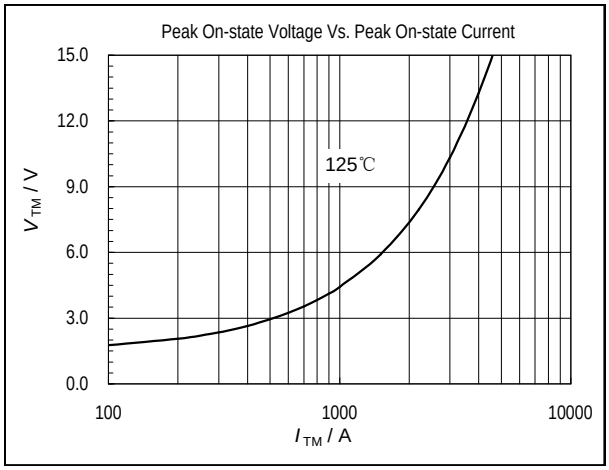


Fig1. Peak On-state Voltage Vs. Peak On-state Current

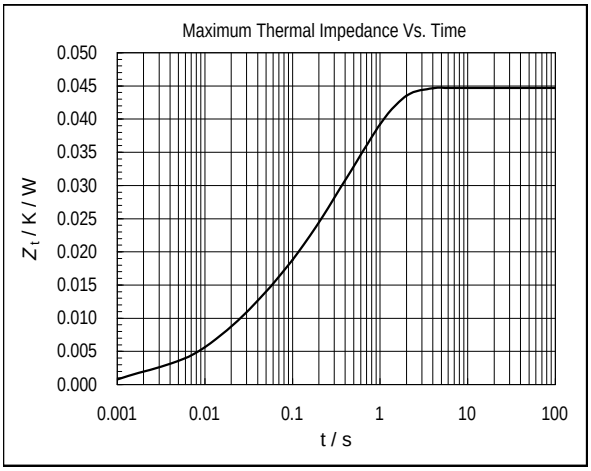


Fig2. Maximum Thermal Impedance Vs. Time

Zhuzhou CSR Times Electric Co., LTD, PEBU reserves the right to change specifications without notice.

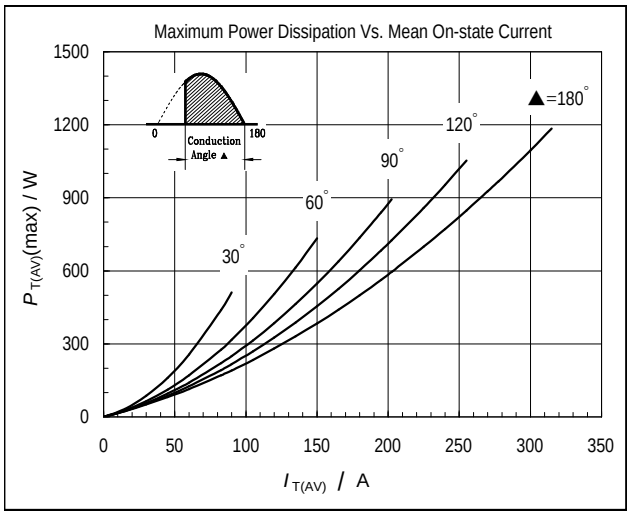


Fig3. Maximum Power Dissipation Vs. Mean On-state Current

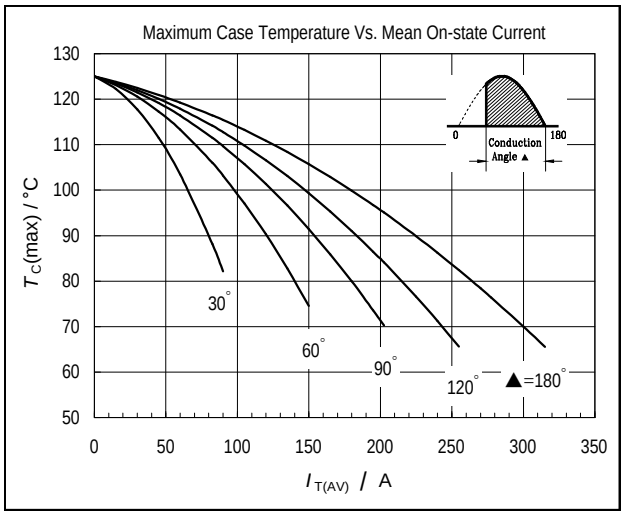


Fig4. Maximum Case Temperature Vs. Mean On-state Current

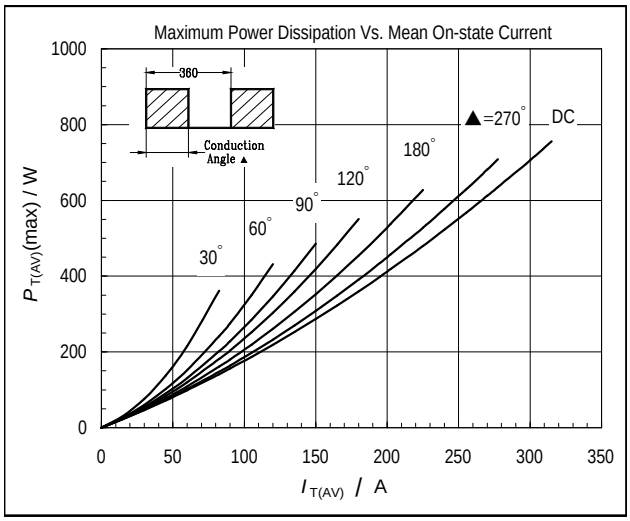


Fig5. Maximum Power Dissipation Vs. Mean On-state Current

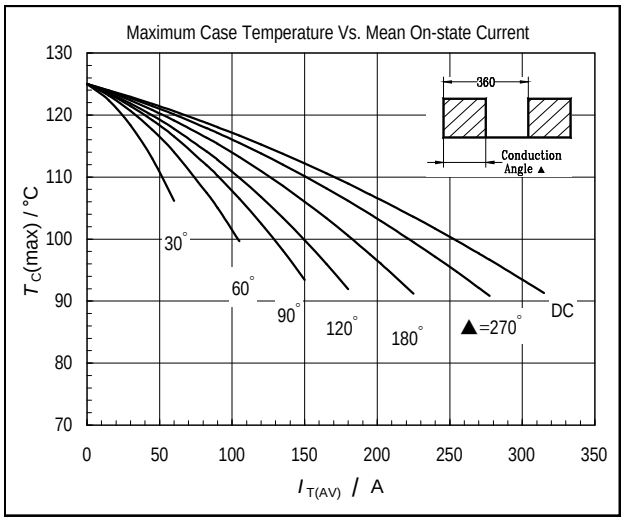


Fig6. Maximum Case Temperature Vs. Mean On-state Current

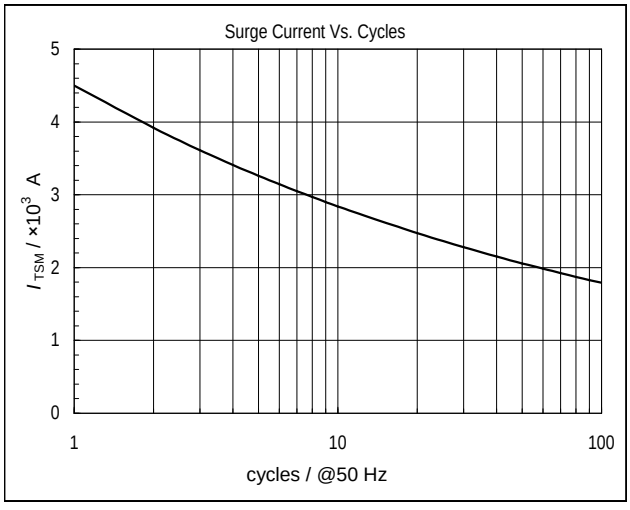


Fig7. Surge Current Vs. Cycles

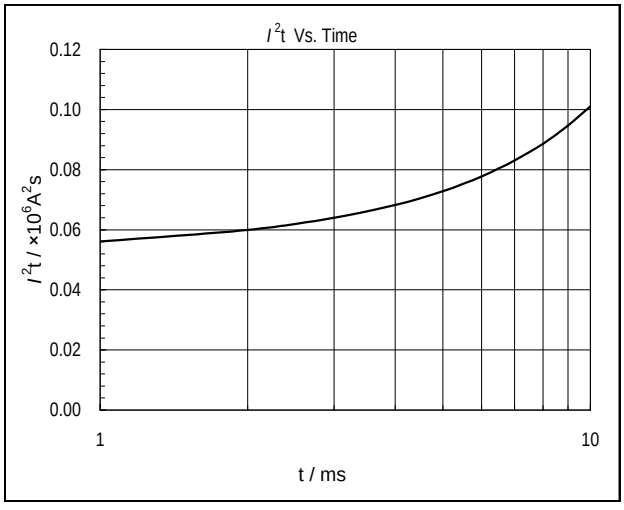


Fig8. I^2t Vs. Time

Zhuzhou CSR Times Electric Co., LTD, PEBU reserves the right to change specifications without notice.

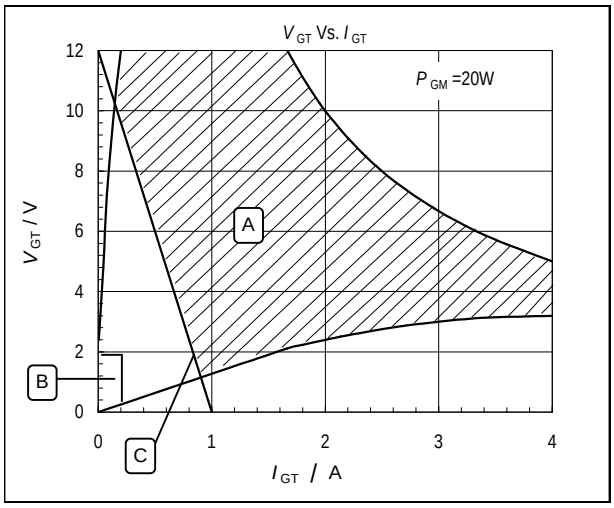


Fig9. V_{GT} Vs. I_{GT}

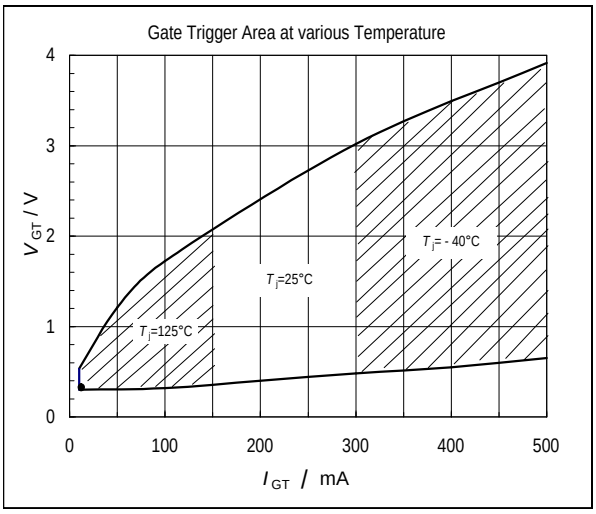
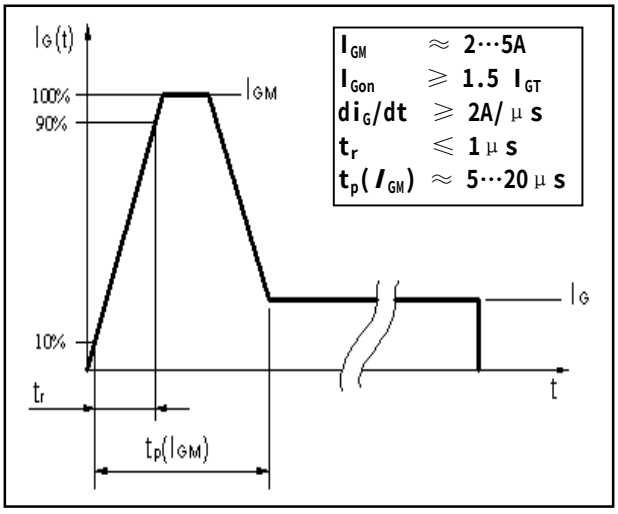


Fig10. Gate Trigger Area at various Temperature



A is Recommended Triggering Area.

B is Unreliable Triggering Area.

C is Recommended Gate Load Line.

Power Electronics Business Unit, Zhuzhou CSR Times Electric Co., LTD

Address	Tianxin，ZhuZhou City，Hunan Province，China
Zipcode	412001
Telephone	+ 86 (731) 28498268, 28498238, 28493472
Fax	+ 86 (731) 28498851, 28498494
Email	zesem@teg.cn
Web Site	http://www.zesem.com