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

KP_8 800-**12~20**

Phase Control Thyristor

Ver：0807A

Key Parameters

V_{DRM}	**1200~2000**	**V**
$I_{T(AV)}$	**850**	**A**
I_{TSM}	**14.0**	**kA**
V_{TO}	**0.91**	**V**
r_T	**0.36**	**mΩ**

Applications

- Traction drive
- Motor drive
- Industry converter

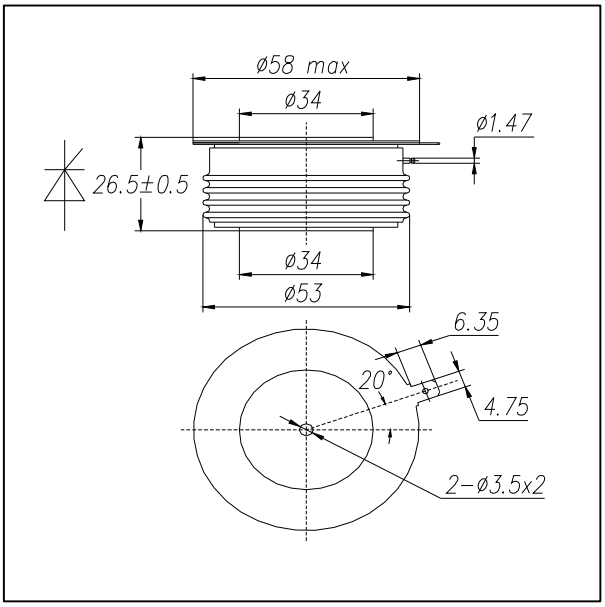
Features

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

Voltage Ratings

Device Type	V_{DRM}/V_{RRM}(V)	Test Conditions
KP_8 800-12	1200	T_{vj} = 125 °C
KP_8 800-14	1400	I_{DRM} = 60 mA
KP_8 800-16	1600	I_{RRM} = 60 mA
KP_8 800-18	1800	
KP_8 800-20	2000	$V_{DM}=V_{DRM}$, $V_{RM}=V_{RRM}$
		t_p = 10 ms
		$V_{DSM} = V_{DRM}$
		$V_{RSM} = V_{RRM}$ + 100

Outline



Thermal & Mechanical Data

Symb.	Parameter	Min	Type	Max	Unit
R_{thjc}	Thermal Resistance Junction to Case	-	-	0.037	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	-	0.26	-	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	-	-	850	A
$I_{T(RMS)}$	RMS On-State Current	T_C =70 °C	-	-	1335	A
I_{TSM}	Surge (non-repetitive) On-State Current	10ms, Half Sine Wave, T_C =125 °C, V_R = 0	-	-	14.0	kA
I^2t	Limiting load integral	Sine Wave, 10ms	-	-	98	10^4A^2s

Characteristics

Symb.	Parameter	Test Conditions	Min	Type	Max	Unit
V_{TM}	Peak on-state voltage	T_{vj} = 125 °C， I_{TM} = 1500 A	-	-	1.45	V
I_{DRM}	Forward leakage current	T_{vj} = 125 °C， V_{DRM}	-	-	60	mA
I_{RRM}	Reverse leakage current	T_{vj} = 125 °C， V_{RRM}	-	-	60	mA
V_{TO}	Threshold voltage	T_{vj} = 125 °C	-	-	0.91	V
r_T	Slope resistance	T_{vj} = 125 °C	-	-	0.36	mΩ
I_H	Holding current	T_{vj} = 25 °C	-	-	100	mA
I_L	Latching current	T_{vj} = 25 °C	-	-	500	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}	1000	-	-	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} = 1000 A I_{FG} = 2 A， tr = 0.5 μs	-	-	200	A/μs
t_q	Turn-off time	T_{vj} = 125 °C， I_T = 2000A, V_R = 50V di_T/dt = -10 A/μs， $V_D \leqslant 0.67V_{DRM}$， dV_D/dt = 20 V/μs	-	250	-	μs
Q_{rr}	Recovery Charge	T_{vj} = 125 °C， I_{TRM} = 2000A V_R = 50 V, di_T/dt = -10 A/μs	-	1500	-	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} = 25 °C， V_D = 0.4V_{DRM}	10	-	-	mA
V_{GD}	Gate non-trigger voltage	T_{vj} = 25 °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

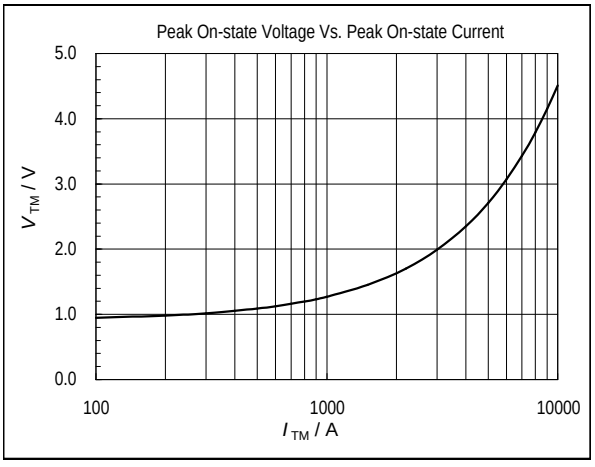


Fig1. Peak On-state Voltage Vs. Peak On-state Current

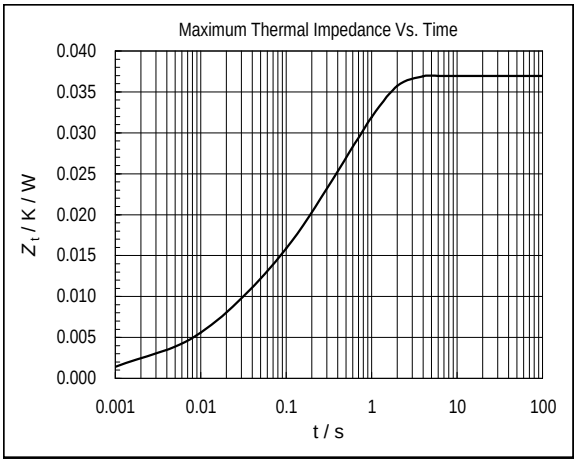


Fig2. Maximum Thermal Impedance Vs. Time

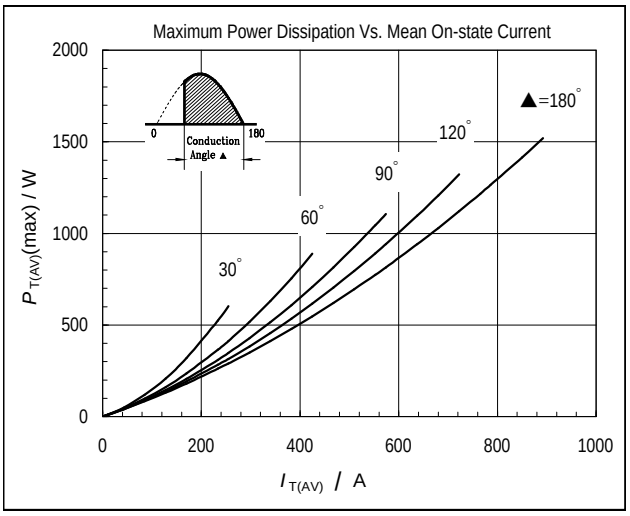


Fig3. Maximum Power Dissipation Vs. Mean On-state Current

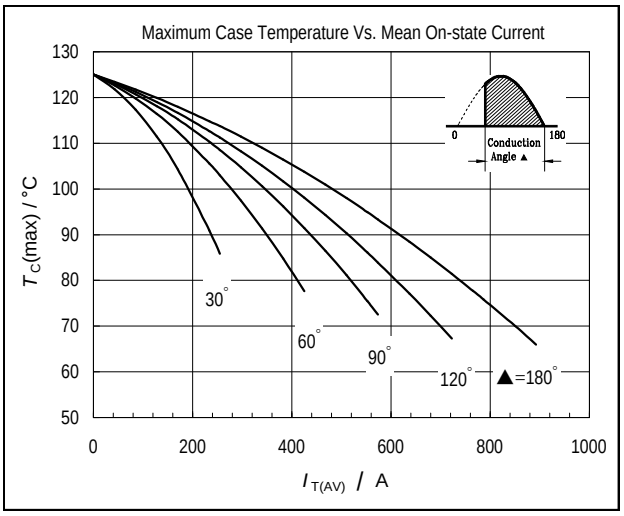


Fig4. Maximum Case Temperature Vs. Mean On-state Current

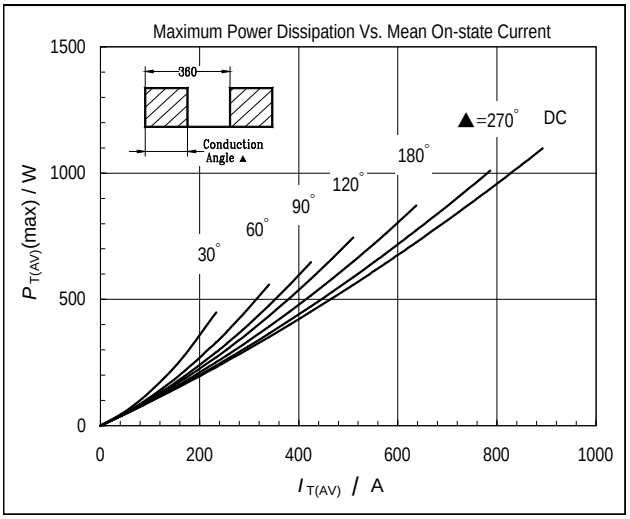


Fig5. Maximum Power Dissipation Vs. Mean On-state Current

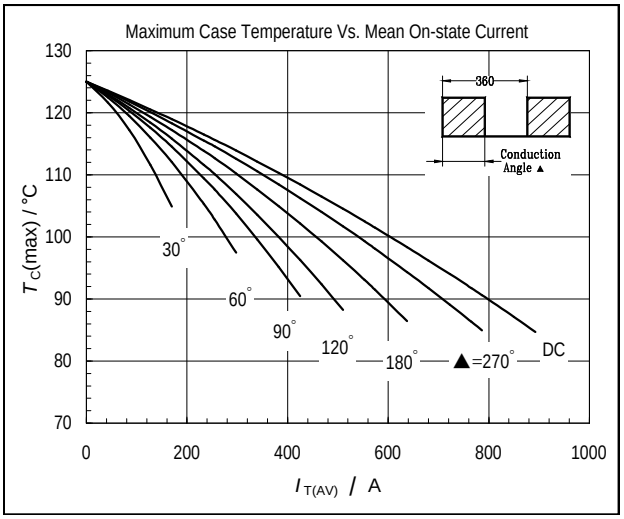


Fig6. Maximum Case Temperature Vs. Mean On-state Current

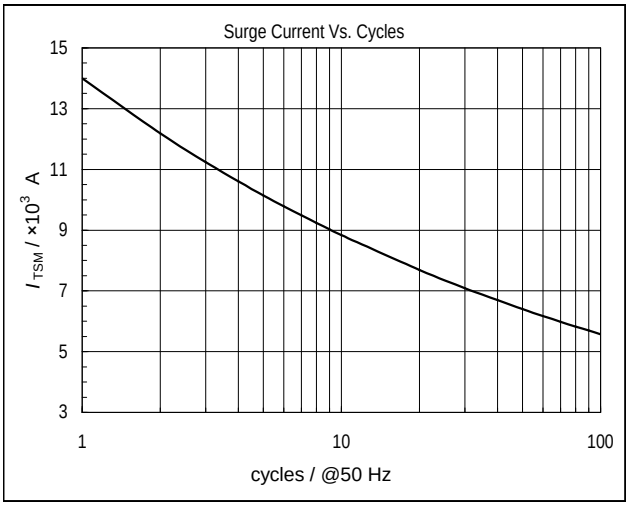


Fig7. Surge Current Vs. Cycles

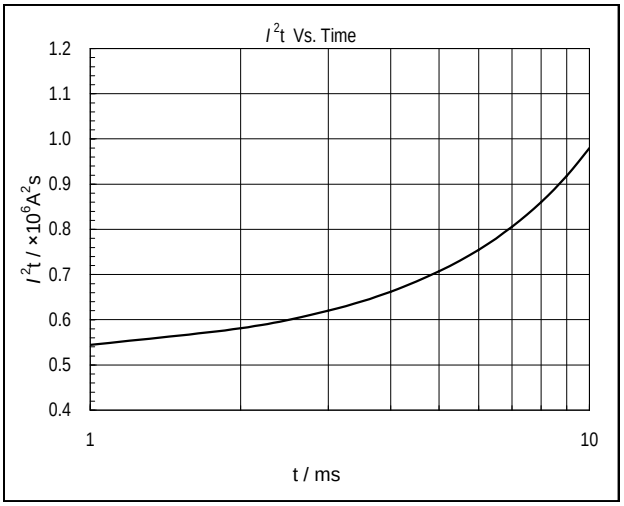


Fig8. I^2t Vs. Time

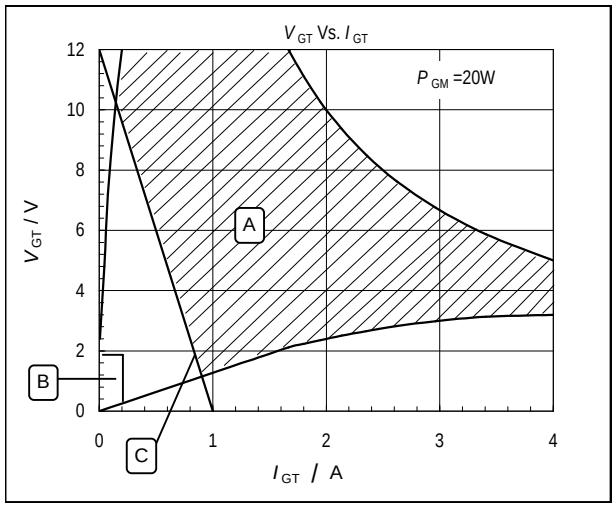


Fig9. V_{GT} Vs. I_{GT}

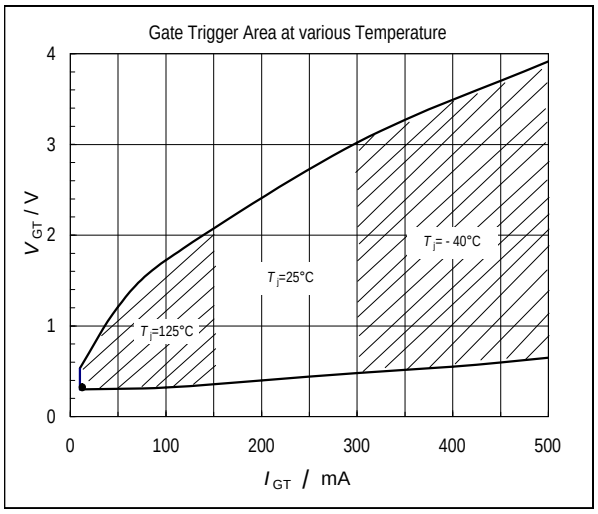
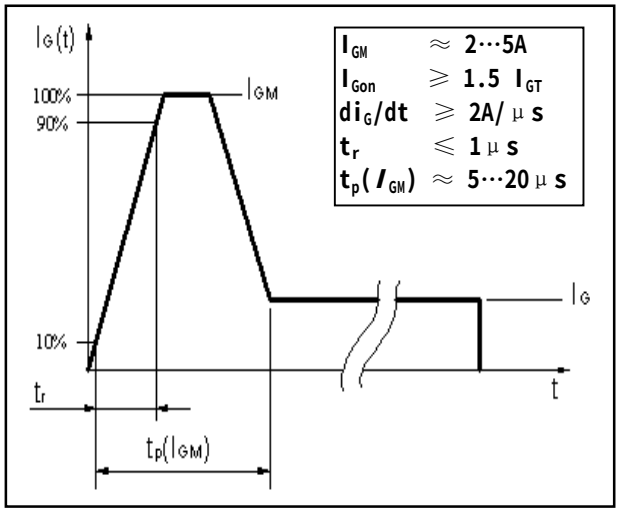


Fig10. Gate Trigger Area at various Temperature



A is Recommended Triggering Area.

B is Unreliable Triggering Area.

C is Recommended Gate Load Line.

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