



High-end Power Semiconductor Manufacturer

# KP1000A 3000V-3600V Phase Control Thyristor

- High power cycling capability
- Low on-state and switching losses
- Designed for traction and industrial applications



Mean on-state current	$I_{TAV}$		1000 A	
Repetitive peak off-state voltage	$V_{DRM}$		3000 – 3600 V	
Repetitive peak reverse voltage	$V_{RRM}$			
$V_{DRM}, V_{RRM}, V$	3000	3200	3400	3600
Voltage code	30	32	34	36
$T_j, ^\circ C$	– 60 – 125			

## MAXIMUM ALLOWABLE RATINGS

Symbols and parameters		Units	Values	Test conditions	
<b>ON-STATE</b>					
$I_{TAV}$	Mean on-state current	A	1000	$T_c=85^\circ C$ , Double side cooled 180° half-sine wave; 50 Hz	
$I_{TRMS}$	RMS on-state current	A	1570	$T_c=85^\circ C$ , Double side cooled 180° half-sine wave; 50 Hz	
$I_{TSM}$	Surge on-state current	kA	20.0	$T_j=125^\circ C$	10ms half sine wave $V_R=0.6V_{RRM}$
$I^2t$	Safety factor	$A^2s \cdot 10^3$	2000	$T_j=125^\circ C$	10ms half sine wave $V_R=0.6V_{RRM}$
<b>BLOCKING</b>					
$V_{DRM}, V_{RRM}$	Repetitive peak off-state and Repetitive peak reverse voltages	V	3000 – 3600	$T_{j\ min} < T_j < T_{j\ max}$ ; 180° half-sine wave; 50 Hz; Gate open	
$V_{DSM}, V_{RSM}$	Non-repetitive peak off-state and Non-repetitive peak reverse voltages	V	3100 – 3700	$T_{j\ min} < T_j < T_{j\ max}$ ; 180° half-sine wave; single pulse; Gate open	
$V_D, V_R$	Direct off-state and Direct reverse voltages	V	$0.6 \cdot V_{DRM}$ $0.6 \cdot V_{RRM}$	$T_j = T_{j\ max}$ ; Gate open	

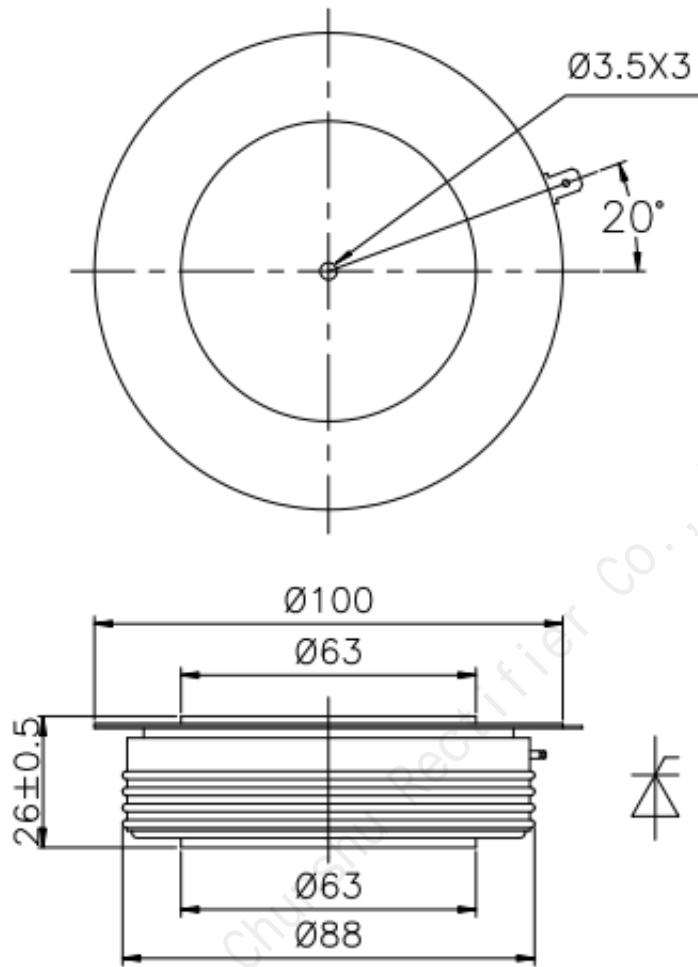
SWITCHING				
$(di_T/dt)_{crit}$	Critical rate of rise of on-state current non-repetitive (f=1 Hz)	A/ $\mu$ s	200	$V_{DM} = 67\%V_{DRM}$ to 2000A, Gate source 1.5A $tr \leq 0.5\mu s$
THERMAL				
$T_{stg}$	Storage temperature	$^{\circ}C$	-40-140	
$T_j$	Operating junction temperature	$^{\circ}C$	-60-125	
MECHANICAL				
F	Mounting force	kN	27.0-34.0	

### CHARACTERISTICS

Symbols and parameters		Units	Values	Conditions	
ON-STATE					
$V_{TM}$	Peak on-state voltage, max	V	2.60	$I_{TM}=3000A, F=32kN$	
$V_{T(TO)}$	On-state threshold voltage, max	V	1.17	$T_j = T_{jmax}$	
$r_T$	On-state slope resistance, max	m $\Omega$	0.35		
$I_H$	Holding current, max	mA	300	$V_A=12V, I_A=1A$	
BLOCKING					
$I_{DRM}, I_{RRM}$	Repetitive peak off-state and Repetitive peak reverse currents, max	mA	120	$T_j = T_{jmax}; V_D = V_{DRM}; V_R = V_{RRM}$	
$(dv_D/dt)_{crit}$	Critical rate of rise of off-state voltage <sup>1)</sup> , min	V/ $\mu$ s	1000	$T_j = T_{jmax}; V_D = 0.67 \cdot V_{DRM};$ Gate open	
TRIGGERING					
$V_{GT}$	Gate trigger direct voltage	V	3.00 Max 0.80 Min	$T_j = 25^{\circ}C$	$V_A=12V, I_A=1A$
$I_{GT}$	Gate trigger direct current	mA	300 Max 40 Min	$T_j = 25^{\circ}C$	
$V_{GD}$	Gate non-trigger direct voltage, min	V	0.30	$T_j = T_{jmax}; V_D = 0.67 \cdot V_{DRM};$ Direct gate current	
SWITCHING					
$Q_{rr}$	Total recovered charge, max	$\mu C$	2000	$T_j = T_{jmax}; I_{TM}=2000A, tp=2000\mu s,$ $di/dt=-20A/\mu s, V_R = 50V$	

THERMAL					
$R_{thjc}$	Thermal resistance, junction to case, max	$^{\circ}C/W$	0.0130	Direct current	At 180 $^{\circ}$ sine, double side cooled, Clamping force 32kN
$R_{thck}$	Thermal resistance, case to heatsink, max	$^{\circ}C/W$	0.0035	Direct current	
MECHANICAL					
w	Weight, max	g	820		

**OVERALL DIMENSIONS**



KT70

All dimensions in millimeters

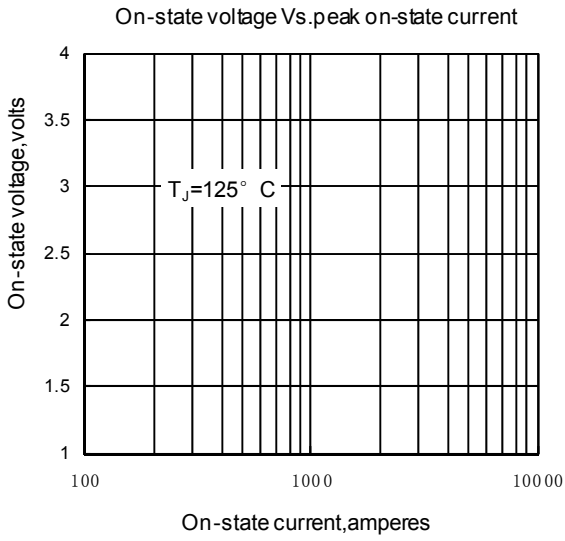


Fig1

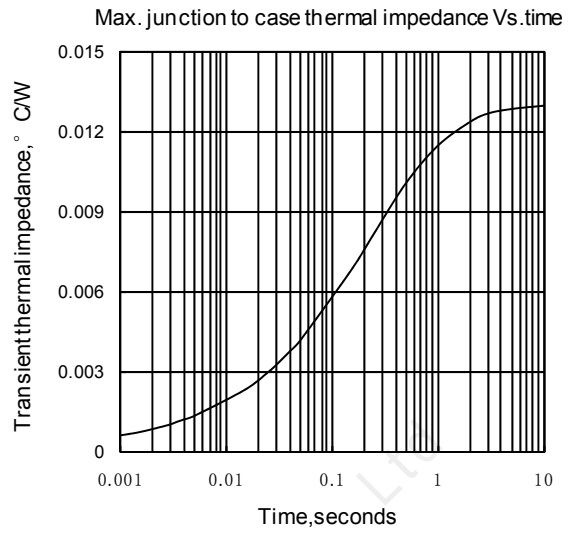


Fig2

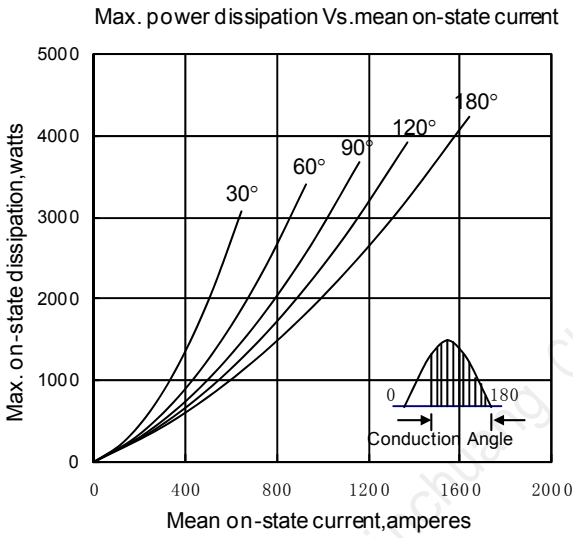


Fig3

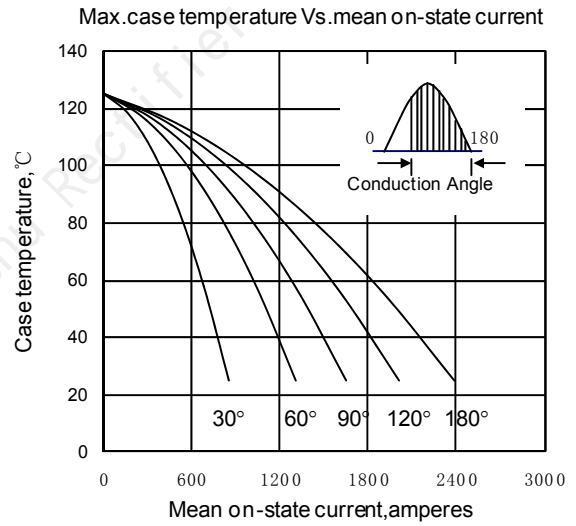


Fig4

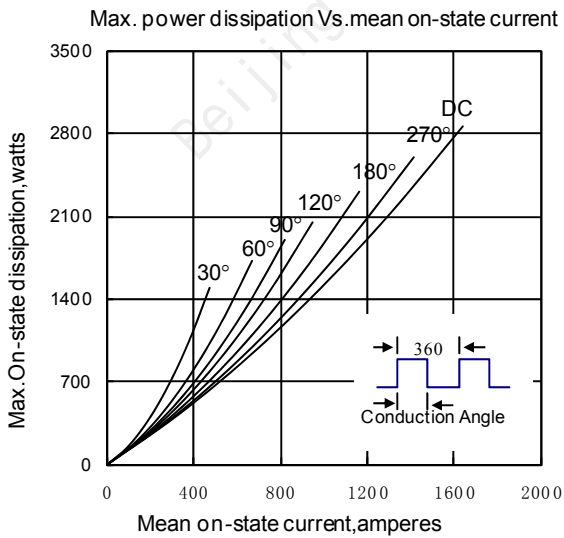


Fig5

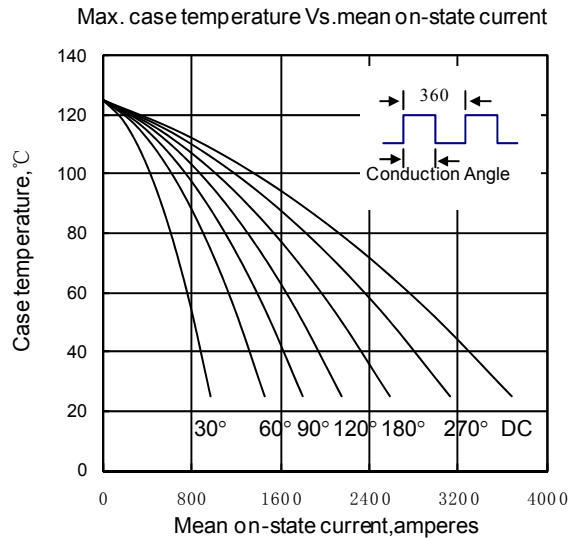


Fig6

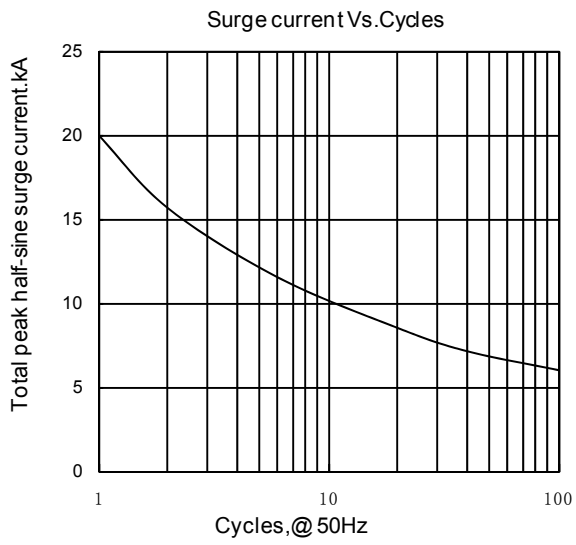


Fig7

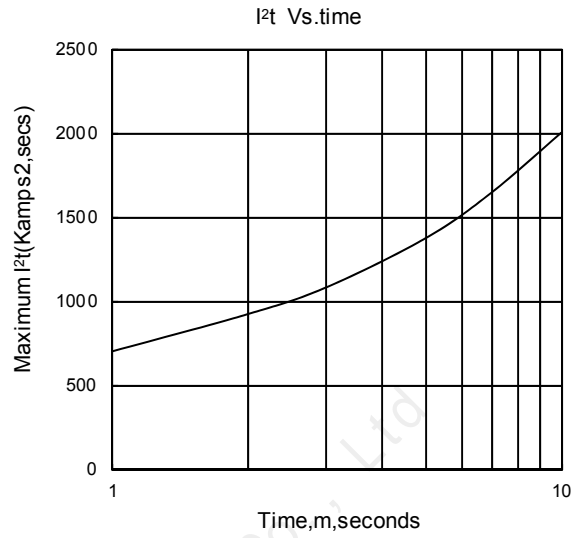


Fig8

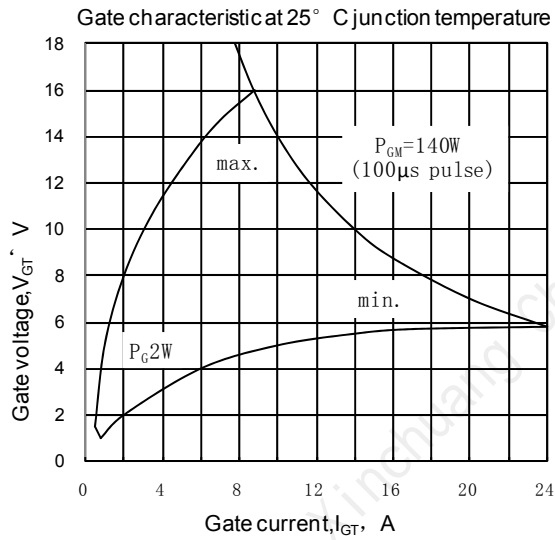


Fig9

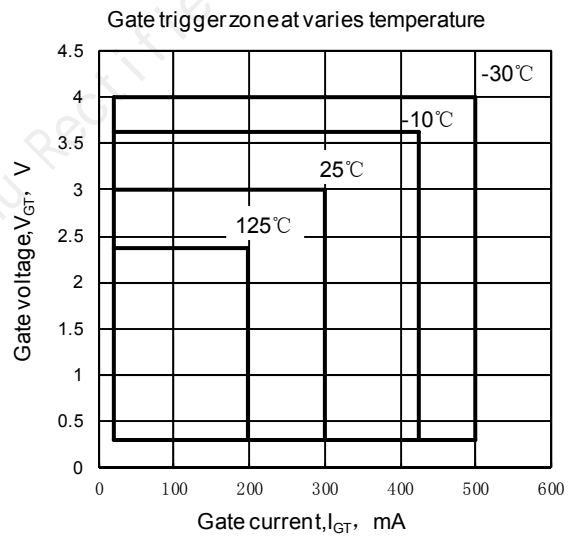


Fig10