



High-end Power Semiconductor Manufacturer

KP2500A 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}	2500 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
$T_{jr}, ^\circ C$	– 60 – 125			

MAXIMUM ALLOWABLE RATINGS

Symbols and parameters		Units	Values	Test conditions	
ON-STATE					
I_{TAV}	Mean on-state current	A	2500	$T_c=85^\circ C$, Double side cooled 180° half-sine wave; 50 Hz	
I_{TRMS}	RMS on-state current	A	3925	$T_c=85^\circ C$, Double side cooled 180° half-sine wave; 50 Hz	
I_{TSM}	Surge on-state current	kA	40.0	$T_j=125^\circ C$	10ms half sine wave $V_R=0.6V_{RRM}$
I^2t	Safety factor	$A^2s \cdot 10^3$	8000	$T_j=125^\circ C$	10ms half sine wave $V_R=0.6V_{RRM}$
BLOCKING					
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	

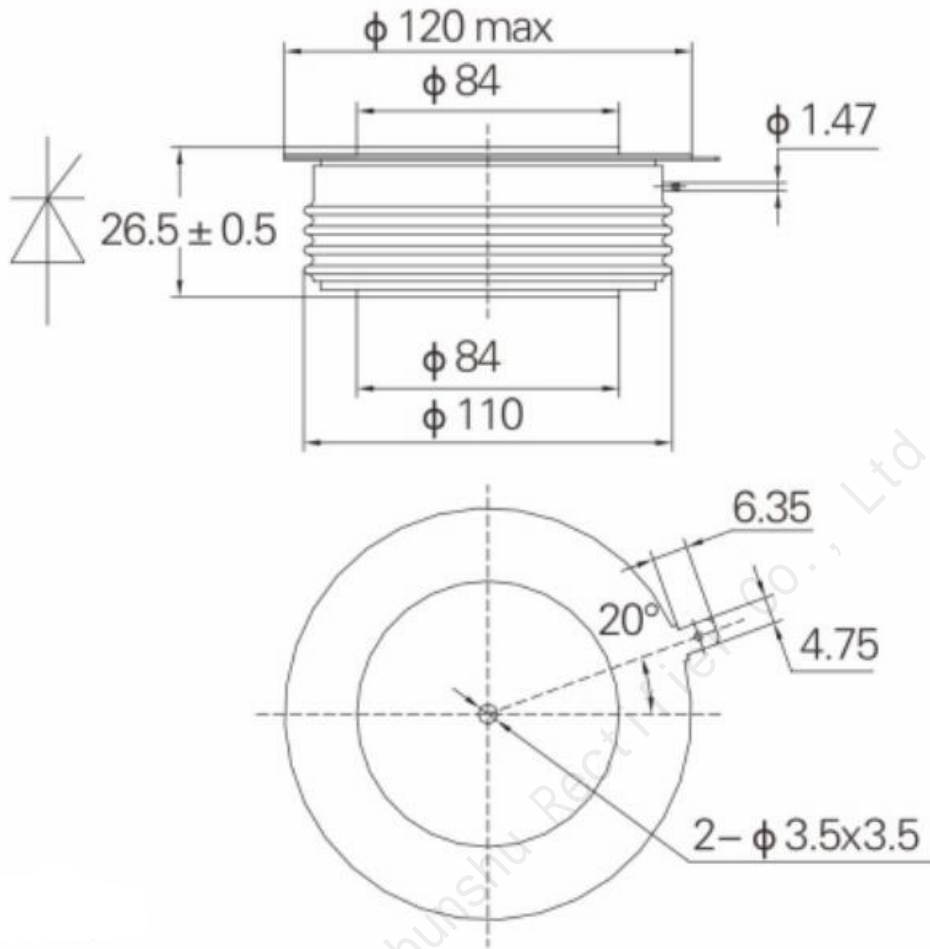
SWITCHING				
$(di_T/dt)_{crit}$	Critical rate of rise of on-state current non-repetitive (f=1 Hz)	A/ μ s	250	$V_{DM} = 67\%V_{DRM}$ to 3000A, Gate pulse tr $\leq 0.5\mu$ s $I_{GM}=1.5A$
THERMAL				
T_{stg}	Storage temperature	$^{\circ}C$	-40-140	
T_j	Operating junction temperature	$^{\circ}C$	-60 -125	
MECHANICAL				
F	Mounting force	kN	63.0-84.0	

CHARACTERISTICS

Symbols and parameters		Units	Values	Conditions	
ON-STATE					
V_{TM}	Peak on-state voltage, max	V	2.60	$I_{TM}=5000A, F=70kN$	
$V_{T(TO)}$	On-state threshold voltage, max	V	1.00	$T_j=T_{jmax}$	
r_T	On-state slope resistance, max	m Ω	0.18		
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	250	$T_j=T_{jmax}; V_D=V_{DRM}; V_R=V_{RRM}$	
$(dv_D/dt)_{crit}$	Critical rate of rise of off-state voltage ¹⁾ , min	V/ μ 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	μ C	3500	$T_j=T_{jmax}; I_{TM}=2000A, tp=2000\mu$ s, $di/dt=-20A/\mu$ s, $V_R =50V$	

THERMAL					
R_{thjc}	Thermal resistance, junction to case, max	$^{\circ}C/W$	0.007	Direct current	At 180 $^{\circ}$ sine, double side cooled, Clamping force 70kN
R_{thck}	Thermal resistance, case to heatsink, max	$^{\circ}C/W$	0.002	Direct current	
MECHANICAL					
w	Weight, max	g	1920		

OVERALL DIMENSIONS



KT90

All dimensions in millimeters

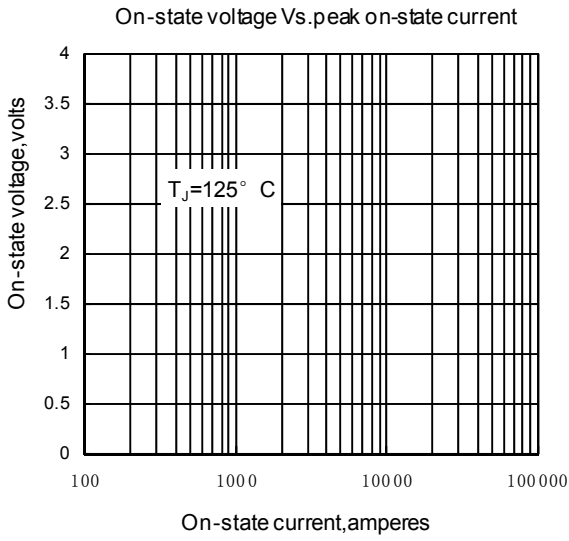


Fig1

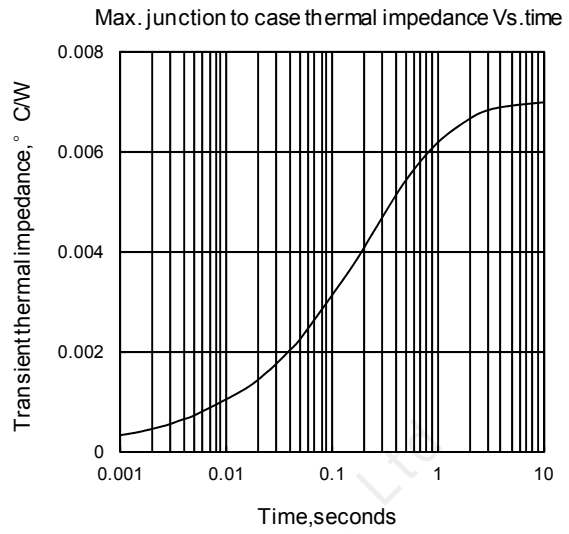


Fig2

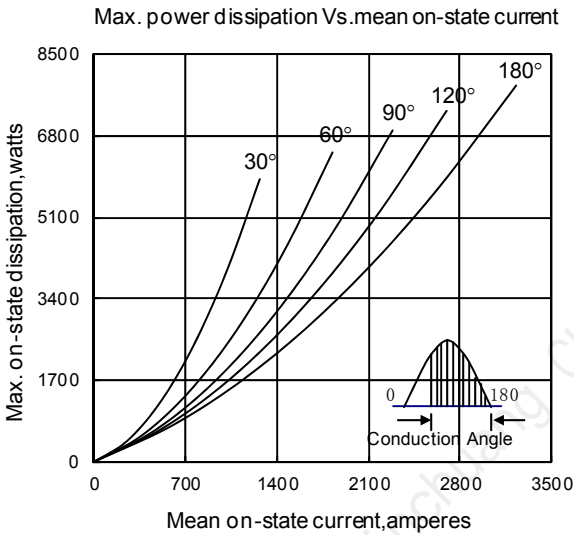


Fig3

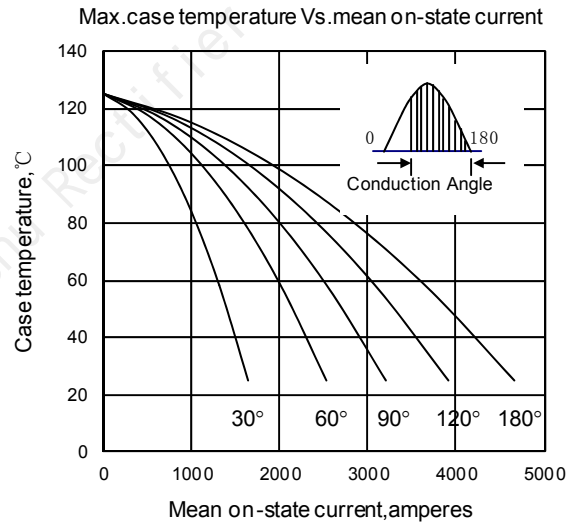


Fig4

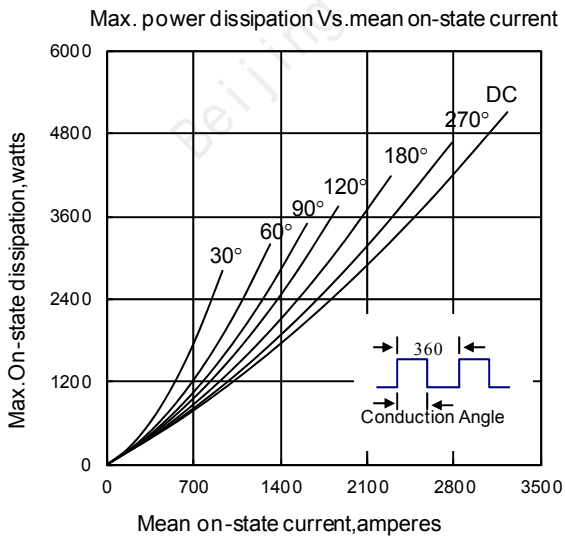


Fig5

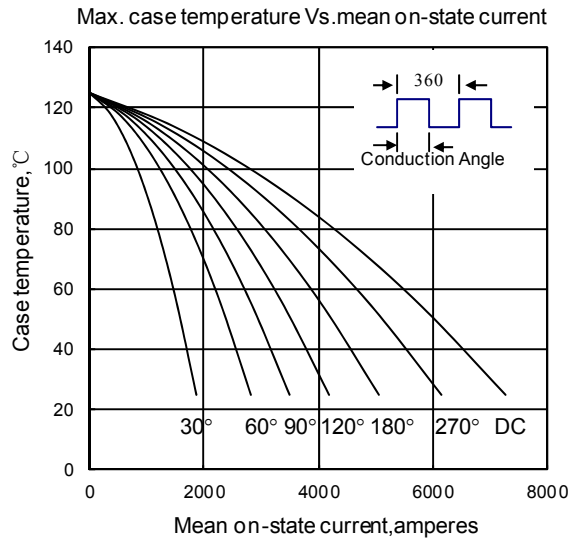


Fig6

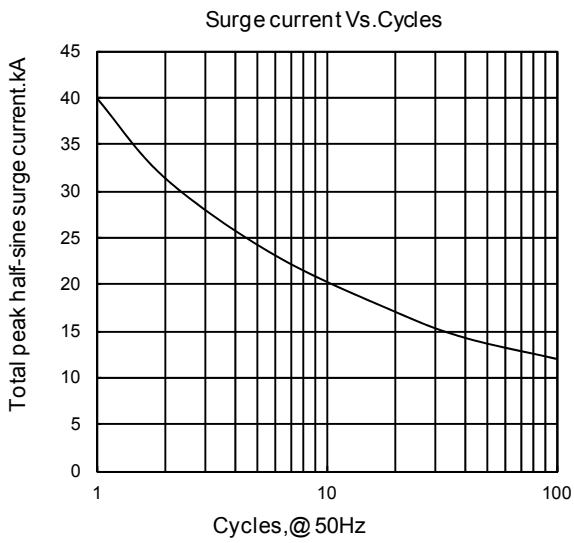


Fig7

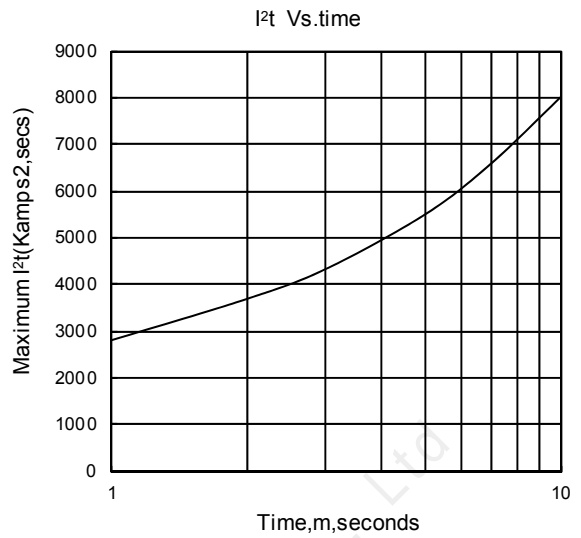


Fig8

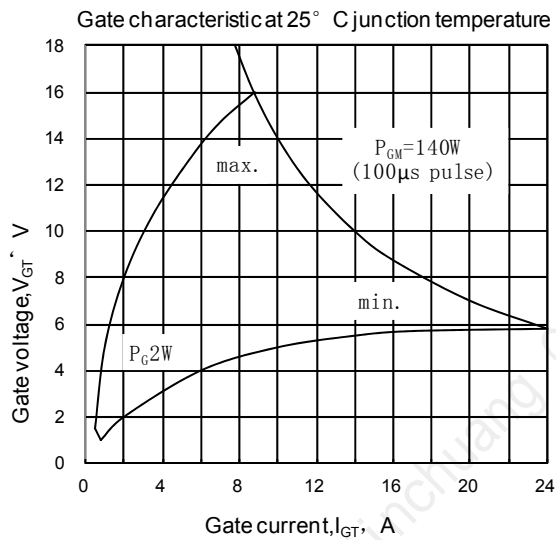


Fig9

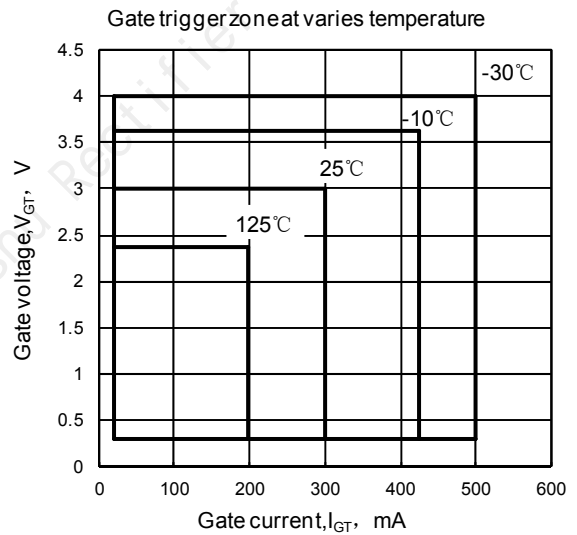


Fig10