



High-end Power Semiconductor Manufacturer

KK3000A 1900V-3000V

Fast Switching Thyristor

- Low switching losses
- Low reverse recovery charge
- Distributed amplified gate for high di_T/dt



Mean on-state current	I_{TAV}	3000 A
Repetitive peak off-state voltage	V_{DRM}	1900-3000 V
Repetitive peak reverse voltage	V_{RRM}	
Turn-off time	t_q	40.0-110.0 μs
$T_{j,r}$ °C	- 60-125	

MAXIMUM ALLOWABLE RATINGS

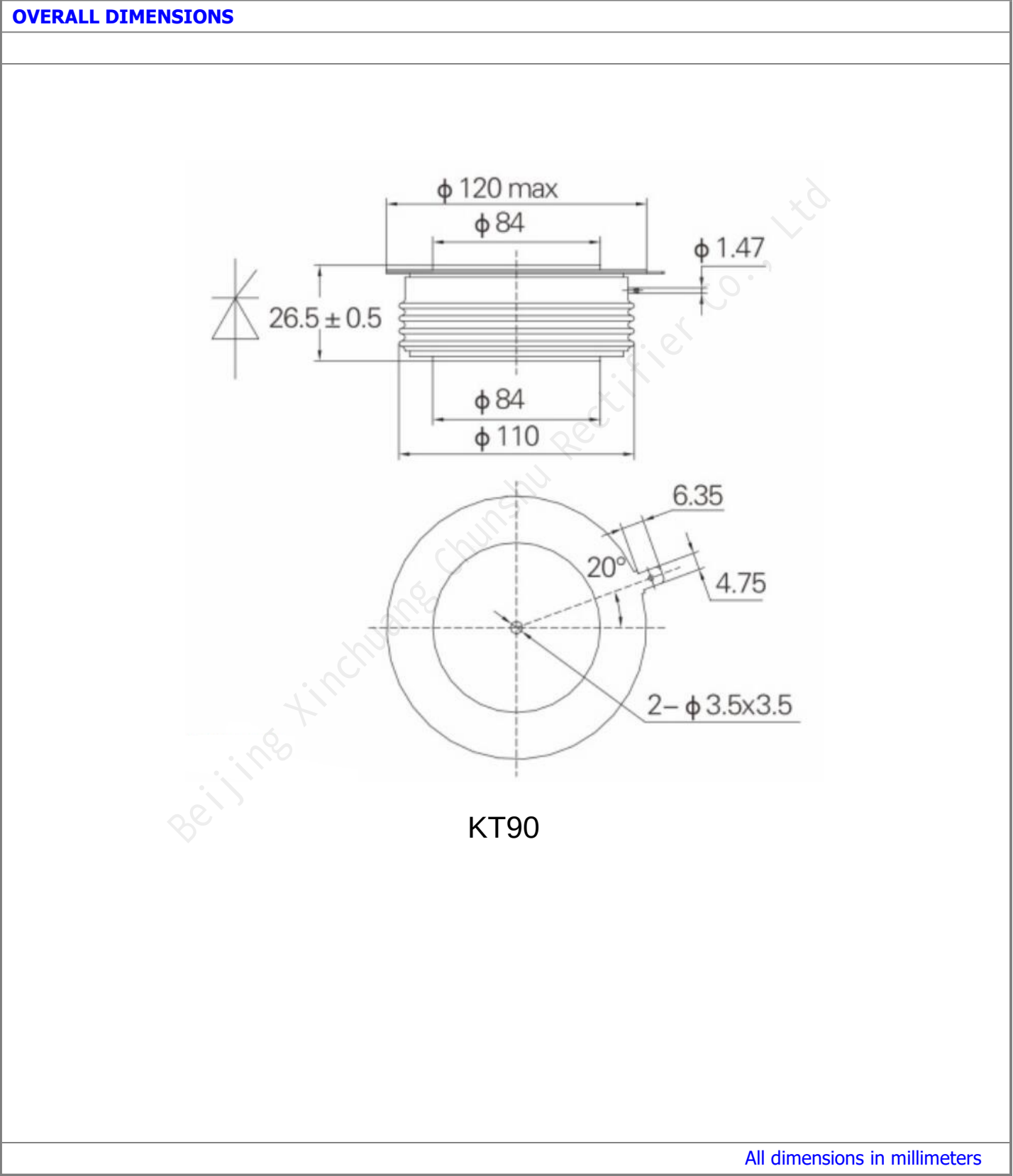
Symbols and parameters		Units	Values	Test conditions	
ON-STATE					
I_{TAV}	Mean on-state current	A	3000 4500	$T_c=85^{\circ}\text{C}$; Double side cooled; $T_c=55^{\circ}\text{C}$; Double side cooled; 180° half-sine wave; 50 Hz	
I_{TSM}	Surge on-state current	kA	44.0	$T_j=125^{\circ}\text{C}$	10ms half sine wave $V_R=0.6V_{RRM}$
I^2t	Safety factor	$A^2s\cdot10^3$	9680.0	$T_j=125^{\circ}\text{C}$	10ms half sine wave $V_R=0.6V_{RRM}$
BLOCKING					
V_{DRM}, V_{RRM}	Repetitive peak off-state and Repetitive peak reverse voltages	V	1900–3000	$T_j=125^{\circ}\text{C}$, $t_q=10\text{ms}$	

SWITCHING				
$(di_T/dt)_{crit}$	Critical rate of rise of on-state current	A/ μ s	1200	$V_{DM} = 67\%V_{DRM}$ to 4000A, Gate pulse $t_r \leq 0.5\mu s$ $I_{GM} = 1.5A$
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	3.15	$T_j = 25^{\circ}C$; $I_{TM} = 5000A$, $F = 70.0kN$
$V_{T(TO)}$	On-state threshold voltage, max	V	1.32	$T_j = 125^{\circ}C$
r_T	On-state slope resistance, max	m Ω	0.14	
I_H	Holding current, max	mA	1000	$V_A = 12V$, $I_A = 1A$
BLOCKING				
I_{DRM} , I_{RRM}	Repetitive peak off-state and Repetitive peak reverse currents, max	mA	250	$T_j = 125^{\circ}C$ $V_D = V_{DRM}$; $V_R = V_{RRM}$
$(dv_D/dt)_{crit}$	Critical rate of rise of off-state voltage ¹⁾ , min	V/ μ s	1000	$T_j = 125^{\circ}C$ $V_D = 0.67 \cdot V_{DRM}$; Gate open
TRIGGERING				
V_{GT}	Gate trigger direct voltage,	V	0.90Min 4.50Max	$T_j = 25^{\circ}C$ $V_A = 12V$; $I_A = 1A$;
I_{GT}	Gate trigger direct current,	mA	40Min 450Max	
V_{GD}	Gate non-trigger direct voltage, min	V	0.30	$T_j = 125^{\circ}C$; $V_D = 0.67 \cdot V_{DRM}$;
SWITCHING				
t_q	Turn-off time ²⁾ ,	μ s	40.0Min 120.0Max	$I_{TM} = 2000A$, $t_p = 1000\mu s$, $V_R = 50V$ $dv/dt = 30V/\mu s$, $di/dt = -20A/\mu s$
Q_{rr}	Total recovered charge, max	μC	2100	$T_j = 125^{\circ}C$; $I_{TM} = 2000A$, $t_p = 2000\mu s$, $di/dt = -60A/\mu s$, $V_R = 50V$

THERMAL				
R _{thjc}	Thermal resistance, junction to case, max	°C/W	0.007	At 180°sine, double side cooled Clamping force 70.0kN
R _{thch}	Thermal resistance, case to heatsink, max	°C/W	0.002	
MECHANICAL				
w	Weight, typ	g	1390	



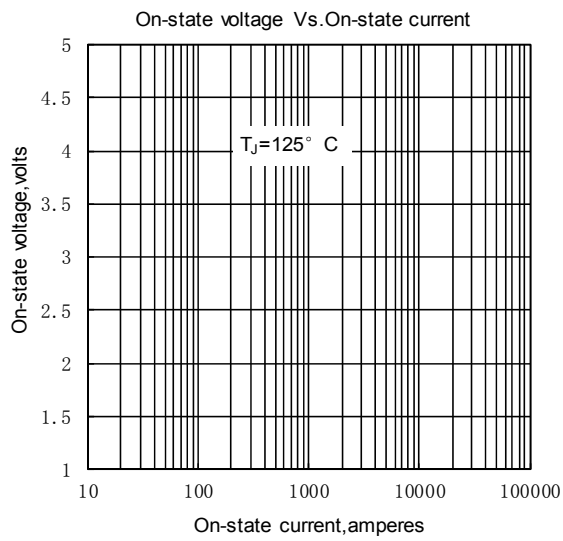


Fig. 1

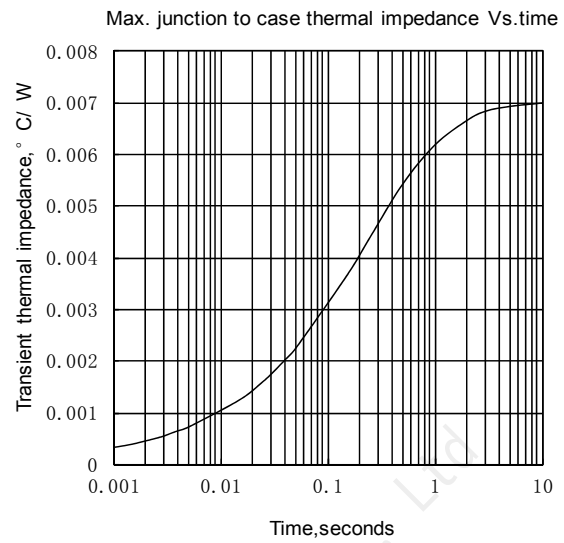


Fig. 2

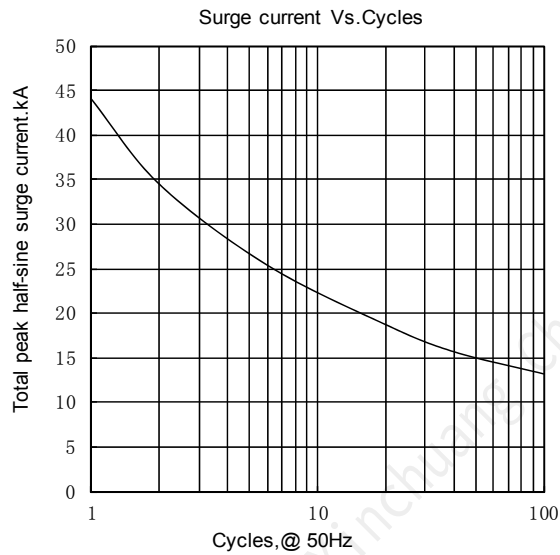


Fig. 3

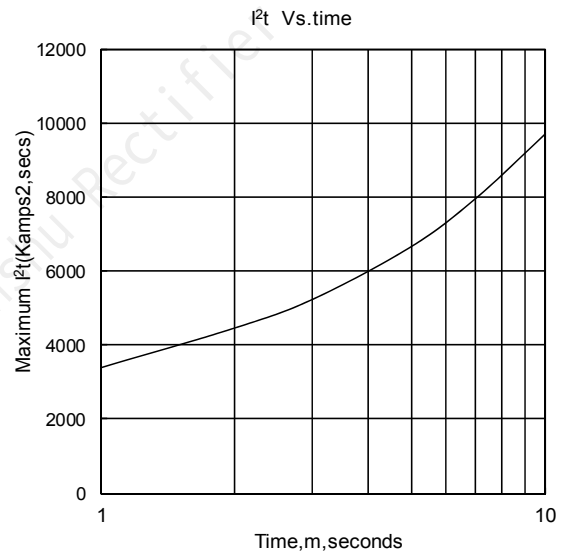


Fig. 4

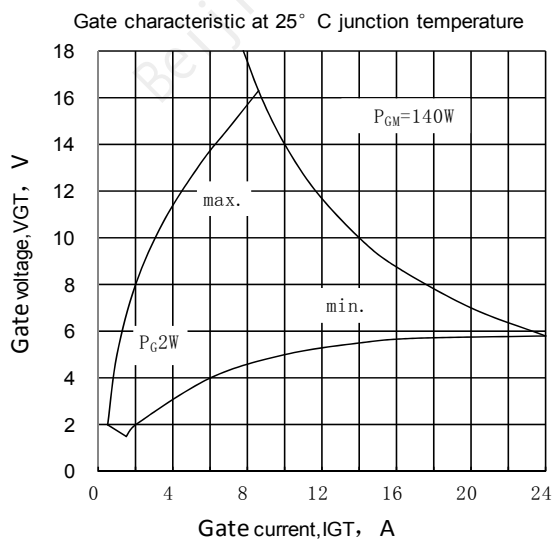


Fig. 5

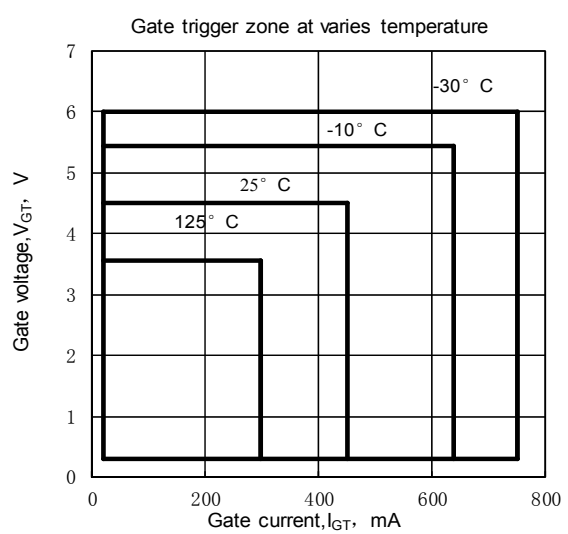


Fig. 6