



High-end Power Semiconductor Manufacturer

KK4000A 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}	4000 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
$T_j, ^\circ C$	- 60-125	

MAXIMUM ALLOWABLE RATINGS

Symbols and parameters		Units	Values	Test conditions	
ON-STATE					
I_{TAV}	Mean on-state current	A	4000 6000	$T_c=85^{\circ}\text{C}$; 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	$\text{A}^2\text{s}\cdot 10^3$	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	$T_j=125^{\circ}\text{C}$, $t_q=10\text{ms}$	

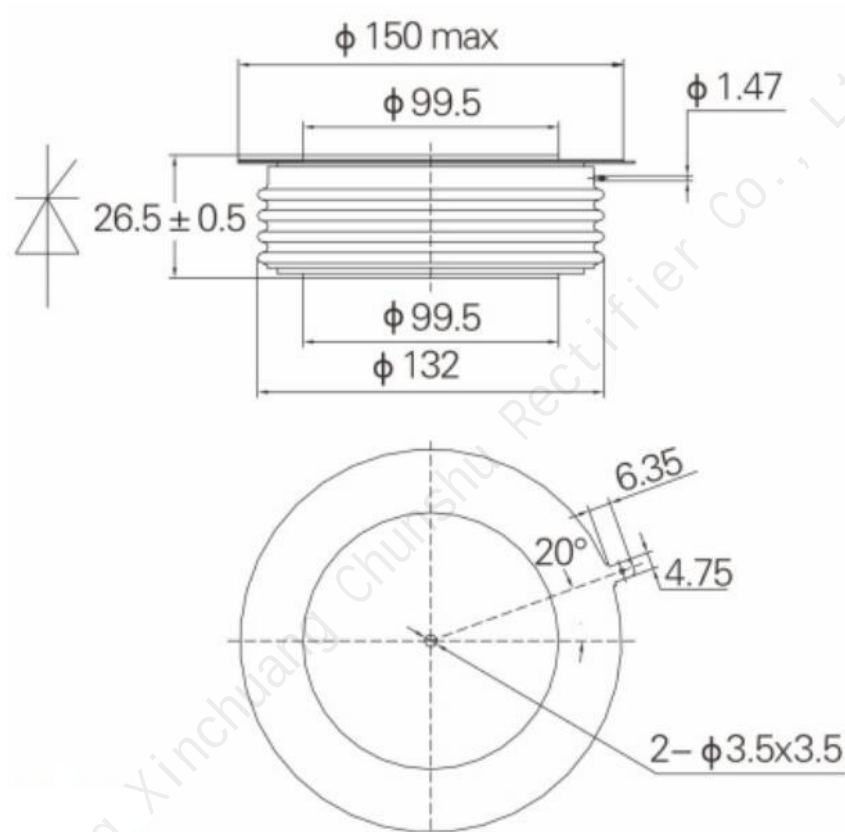
SWITCHING				
$(di_T/dt)_{crit}$	Critical rate of rise of on-state current	A/ μ S	1200	$V_{DM}=67\%V_{DRM}$ to 4000A, Gate pulse $t_r \leq 0.5\mu$ s $I_{GM}=1.5A$
THERMAL				
T_{stg}	Storage temperature	$^{\circ}C$	- 40-140	
T_j	Operating junction temperature	$^{\circ}C$	- 60-125	
MECHANICAL				
F	Mounting 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	$T_j=25\text{ }^{\circ}\text{C}$; $I_{TM}=5000\text{A}$, $F=70.0\text{kN}$	
$V_{T(TO)}$	On-state threshold voltage, max	V	1.32	$T_j=125\text{ }^{\circ}\text{C}$	
r_T	On-state slope resistance, max	$\text{m}\Omega$	0.14		
I_H	Holding current, max	mA	1000	$V_A=12\text{V}$, $I_A=1\text{A}$	
BLOCKING					
I_{DRM} , I_{RRM}	Repetitive peak off-state and Repetitive peak reverse currents, max	mA	250	$T_j=125\text{ }^{\circ}\text{C}$ $V_D=V_{DRM}$; $V_R=V_{RRM}$	
$(dv_D/dt)_{crit}$	Critical rate of rise of off-state voltage ¹⁾ , min	$\text{V}/\mu\text{s}$	1000	$T_j=125\text{ }^{\circ}\text{C}$ $V_D=0.67\cdot V_{DRM}$; Gate open	
TRIGGERING					
V_{GT}	Gate trigger direct voltage,	V	0.90Min 4.50Max	$T_j=25\text{ }^{\circ}\text{C}$	$V_A=12\text{ V}$; $I_A=1\text{ A}$;
I_{GT}	Gate trigger direct current,	mA	40Min 450Max	$T_j=25\text{ }^{\circ}\text{C}$	
V_{GD}	Gate non-trigger direct voltage, min	V	0.30	$T_j=125\text{ }^{\circ}\text{C}$; $V_D=0.67\cdot V_{DRM}$;	
SWITCHING					
t_q	Turn-off time ²⁾ ,	μs	40.0Min	$I_{TM}=2000\text{A}$, $t_p=1000\mu\text{s}$, $V_R=50\text{V}$ $dv/dt=30\text{V}/\mu\text{s}$, $di/dt=-20\text{A}/\mu\text{s}$	
			120.0Max		
Q_{rr}	Total recovered charge, max	μC	2100	$T_j=125\text{ }^{\circ}\text{C}$; $I_{TM}=2000\text{A}$, $t_p=2000\mu\text{s}$, $di/dt=-60\text{A}/\mu\text{s}$, $V_R=50\text{V}$	

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	

OVERALL DIMENSIONS



KT110

All dimensions in millimeters

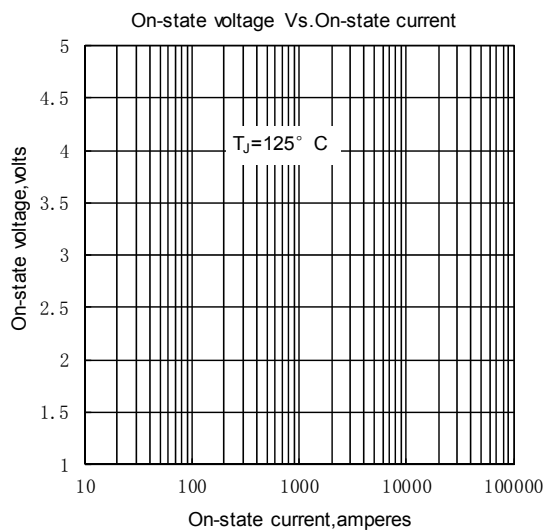


Fig. 1

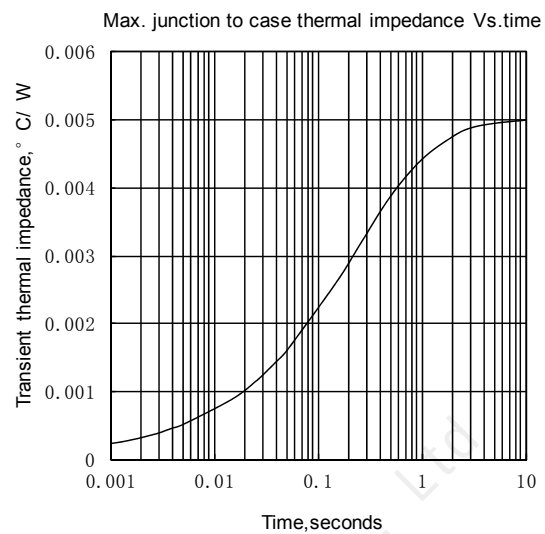


Fig. 2

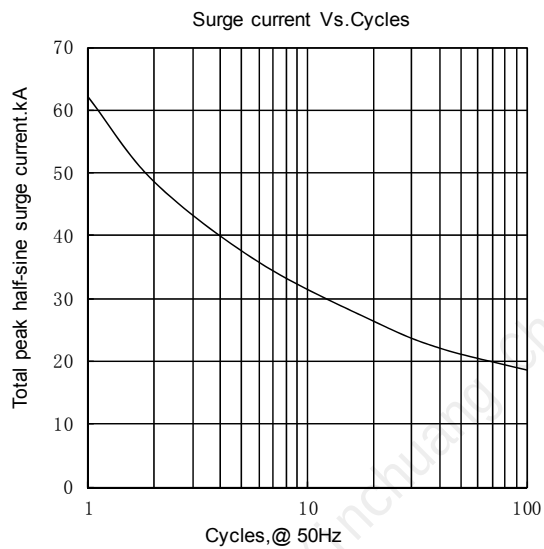


Fig. 3

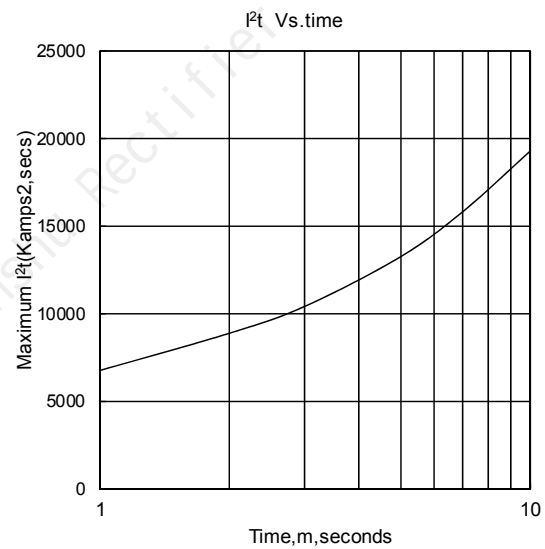


Fig. 4

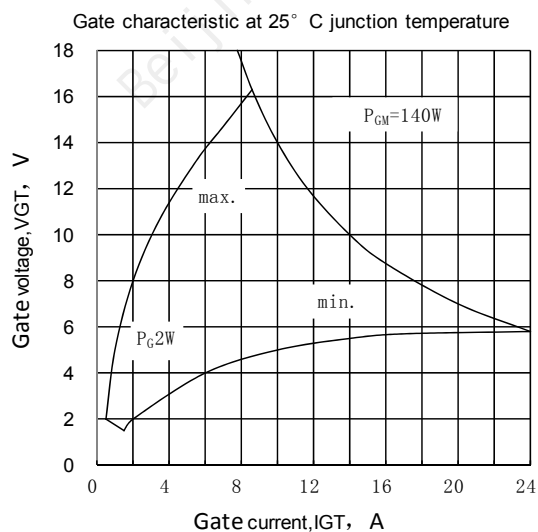


Fig. 5

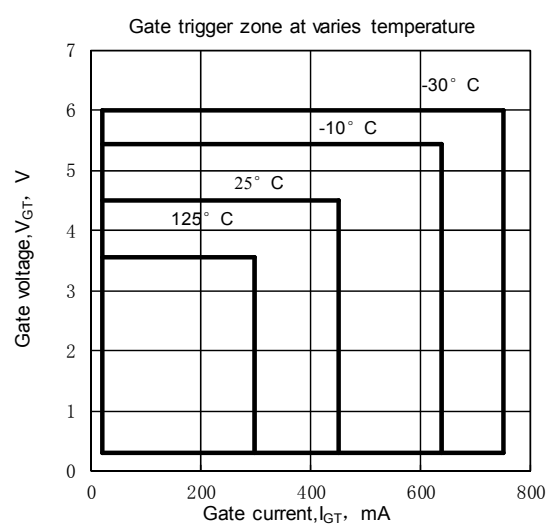


Fig. 6