



High-end Power Semiconductor Manufacturer

KK500A 800V-1800V

Fast Switching Thyristor

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



Mean on-state current	I_{TAV}	500 A
Repetitive peak off-state voltage	V_{DRM}	800-1800 V
Repetitive peak reverse voltage	V_{RRM}	
Turn-off time	t_q	18.0-50.0 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	500 800	$T_c=85^{\circ}\text{C}$; 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	9.0	$T_j=125^{\circ}\text{C}$	10ms half sine wave $V_R=0.6V_{RRM}$
I^2t	Safety factor	$A^2s\cdot10^3$	405.0	$T_j=125^{\circ}\text{C}$	10ms half sine wave $V_R=0.6V_{RRM}$
BLOCKING					
V_{DRM}, V_{RRM}	Repetitive peak off-state and Repetitive peak reverse voltages	V	800–1800	$T_j=125^{\circ}\text{C}$, $t_q=10\text{ms}$	

SWITCHING				
$(di_T/dt)_{crit}$	Critical rate of rise of on-state current	A/ μ S	1200	$V_{DM}= 67\%V_{DRM}$ to 1000A, 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	10.0-20.0	

CHARACTERISTICS

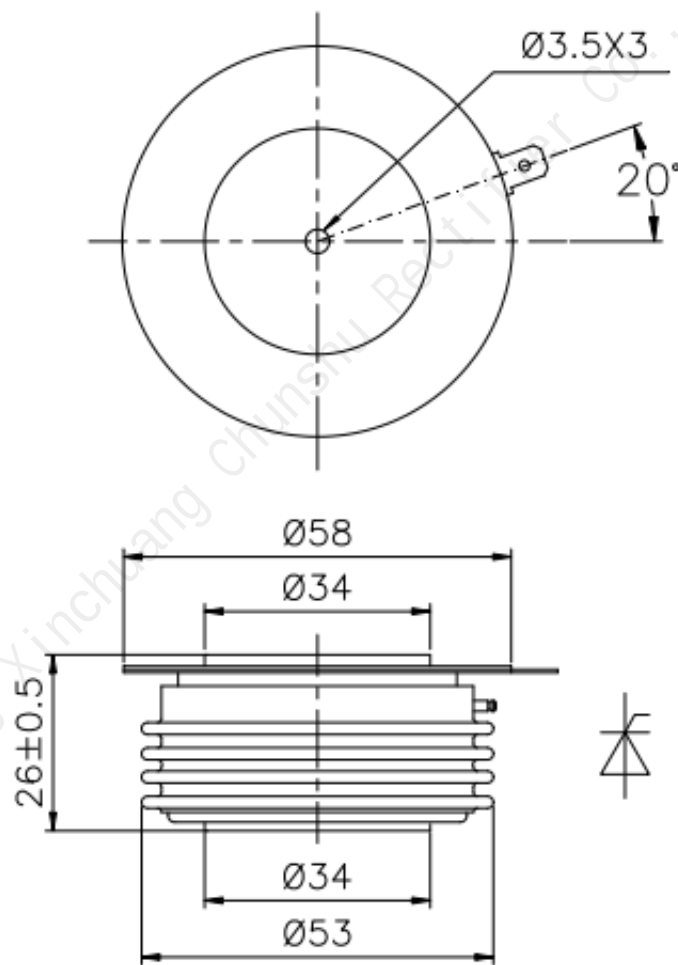
Symbols and parameters		Units	Values	Conditions	
ON-STATE					
V_{TM}	Peak on-state voltage, max	V	3.15	$T_j=25\text{ }^{\circ}\text{C}$; $I_{TM}=1500\text{A}$, $F=15.0\text{kN}$	
$V_{T(TO)}$	On-state threshold voltage, max	V	1.36	$T_j=125\text{ }^{\circ}\text{C}$	
r_T	On-state slope resistance, max	$\text{m}\Omega$	0.53		
I_H	Holding current, max	mA	400	$V_A=12\text{V}$, $I_A=1\text{A}$	
BLOCKING					
I_{DRM} , I_{RRM}	Repetitive peak off-state and Repetitive peak reverse currents, max	mA	40	$T_j=125\text{ }^{\circ}\text{C}$ $V_D=V_{DRM}$; $V_R=V_{RRM}$	
$(dv_D/dt)_{crit}$	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 2.50Max	$T_j=25\text{ }^{\circ}\text{C}$	$V_A=12\text{ V}$; $I_A=1\text{ A}$;
I_{GT}	Gate trigger direct current,	mA	40Min 250Max	$T_j=25\text{ }^{\circ}\text{C}$	
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	18.0Min	$I_{TM}=800\text{A}$, $t_p=1000\mu\text{s}$, $V_R=50\text{V}$	
			50.0Max	$dv/dt=30\text{V}/\mu\text{s}$, $di/dt=-20\text{A}/\mu\text{s}$	
Q_{rr}	Total recovered charge, max	μC	460	$T_j=125\text{ }^{\circ}\text{C}$; $I_{TM}=1000\text{A}$, $t_p=2000\mu\text{s}$, $di/dt=-60\text{A}/\mu\text{s}$, $V_R=50\text{V}$	

THERMAL

R_{thjc}	Thermal resistance, junction to case, max	$^{\circ}\text{C}/\text{W}$	0.035	At 180°sine, double side cooled Clamping force 15.0kN
R_{thch}	Thermal resistance, case to heatsink, max	$^{\circ}\text{C}/\text{W}$	0.008	

MECHANICAL

w	Weight, typ	g	250	
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OVERALL DIMENSIONS

All dimensions in millimeters

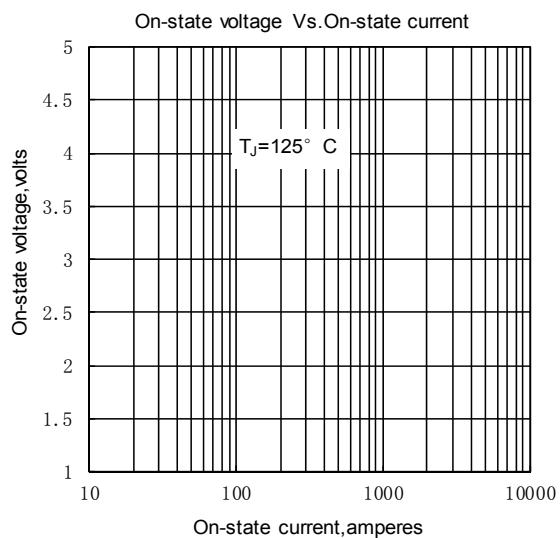


Fig. 1

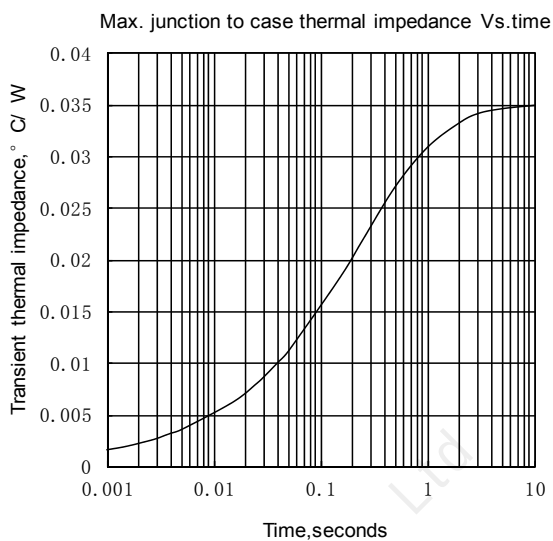


Fig. 2

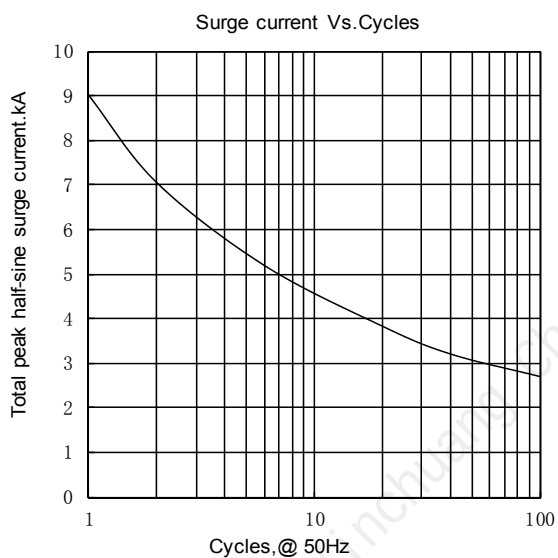


Fig. 3

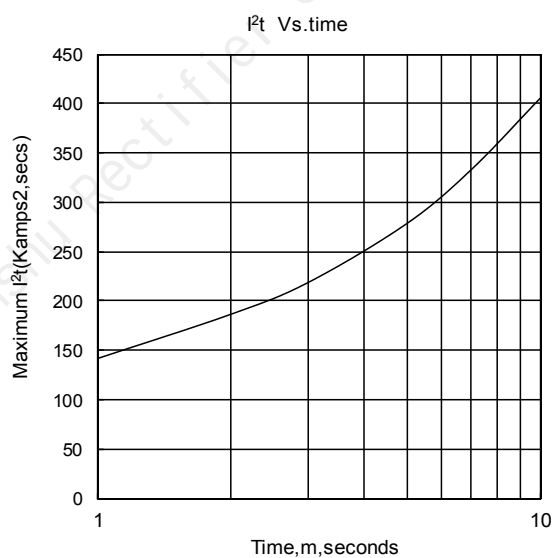


Fig. 4

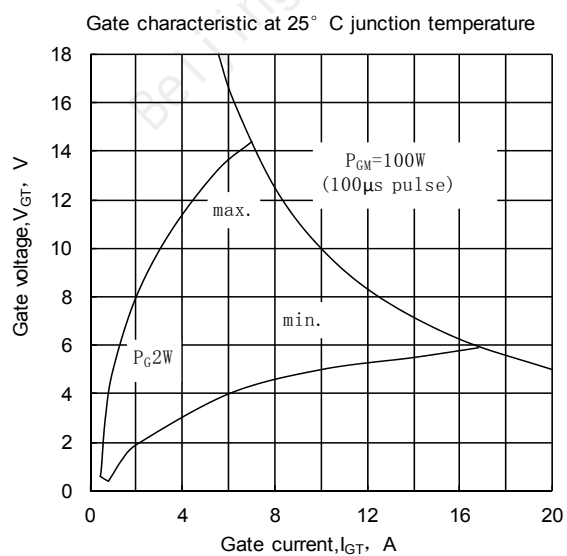


Fig. 5

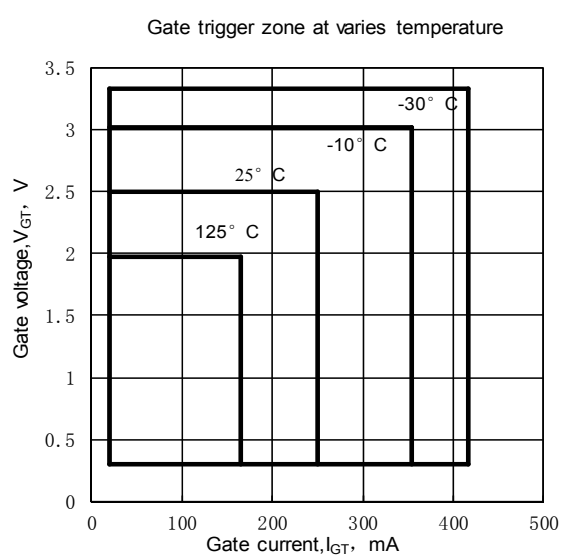


Fig. 6