



High-end Power Semiconductor Manufacturer

KP1512A 2800V

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}	1512 A
Repetitive peak off-state voltage	V_{DRM}	2800 V
Repetitive peak reverse voltage	V_{RRM}	
Turn-off time	t_q	200 μ s
T_{vj} , °C	-40 – 125	

MAXIMUM ALLOWABLE RATINGS

Symbols and parameters		Units	Values	Test conditions	
ON-STATE					
I_{TAV}	Mean on-state current	A	1512	$T_c=70$ °C, half-sine wave	
I_{TRMS}	RMS on-state current	A	2375	$T_c=70$ °C, half-sine wave	
I_{TSM}	Surge on-state current	kA	23.6	$t_p = 10$ ms	$T_{vj} = 125$ °C, $V_D = V_R = 0$ V
			25.2	$t_p = 8.3$ ms	$T_{vj} = 125$ °C, $V_D = V_R = 0$ V
I^2t	Safety factor	$A^2s \cdot 10^3$	2790	$t_p = 10$ ms	$T_{vj} = 125$ °C, $V_D = V_R = 0$ V
			2640	$t_p = 8.3$ ms	$T_{vj} = 125$ °C, $V_D = V_R = 0$ V
BLOCKING					
V_{DRM}, V_{RRM}	Repetitive peak off-state and Repetitive peak reverse voltages	V	2800	$f = 50$ Hz, $t_p = 10$ ms	
V_D, V_R	Direct off-state and Direct reverse voltages	V	$0.6 \cdot V_{DRM}$ $0.6 \cdot V_{RRM}$	$T_j = T_{jmax}$; Gate open	

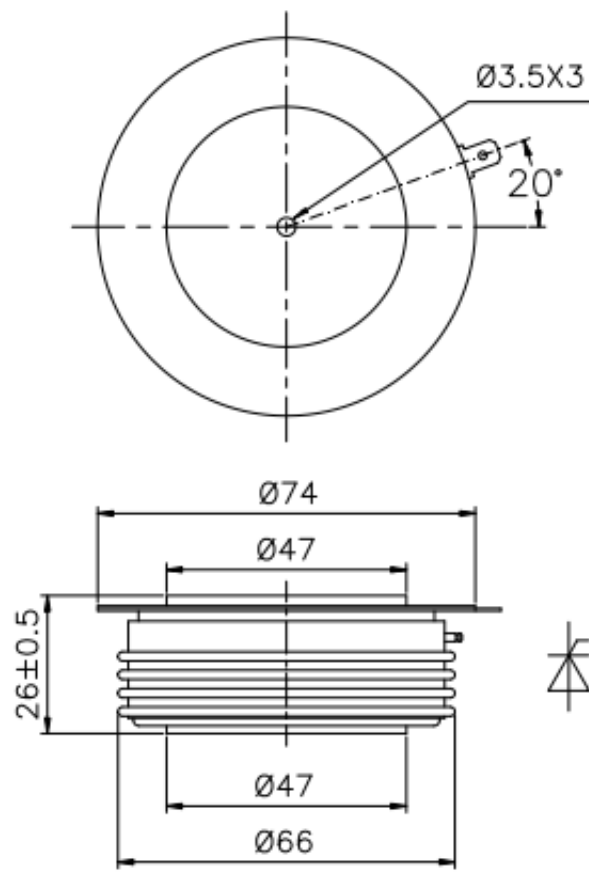
TRIGGERING				
I_{FGM}	Peak forward gate current	A	10	$T_j = T_{j\max}$
V_{RGM}	Peak reverse gate voltage	V	10	
P_G	Gate power dissipation	W	3	
SWITCHING				
$(di_T/dt)_{crit}$	Critical rate of rise of on-state current non-repetitive (f=1 Hz)	A/ μ s	1000	$T_{vj} = 125\text{ }^\circ\text{C}$, $I_T = I_{T(AV)}$, $V_D \leq 1880\text{ V}$, $I_{FG} = 2\text{ A}$, $t_r = 0.3\text{ }\mu\text{s}$
THERMAL				
T_{stg}	Storage temperature	$^\circ\text{C}$	-40-125	
T_{vj}	Operating junction temperature	$^\circ\text{C}$	-40-125	
MECHANICAL				
F	Mounting force	kN	20-24	
a	Acceleration	m/s^2	50 100	Device unclamped Device clamped

CHARACTERISTICS

Symbols and parameters		Units	Values	Conditions	
ON-STATE					
V_{TM}	Peak on-state voltage, max	V	1.55	$I_T = 2000\text{ A}$, $T_{vj} = 125\text{ }^\circ\text{C}$	
$V_{T(TO)}$	On-state threshold voltage, max	V	1.02	$I_T = 1900\text{ A} - 5800\text{ A}$, $T_{vj} = 125\text{ }^\circ\text{C}$	
r_T	On-state slope resistance, max	$\text{m}\Omega$	0.265		
I_L	Latching current, max	mA	450	$T_{vj} = 25\text{ }^\circ\text{C}$	
I_H	Holding current, max	mA	170	$T_{vj} = 25\text{ }^\circ\text{C}$	
BLOCKING					
I_{DRM} , I_{RRM}	Repetitive peak off-state and Repetitive peak reverse currents, max	mA	150	V_{DRM} , $T_{vj} = 125\text{ }^\circ\text{C}$	
$(dv_D/dt)_{crit}$	Critical rate of rise of off-state voltage ¹⁾	V/ μ s	1000	Exp. to 1880V, $T_{vj} = 125\text{ }^\circ\text{C}$	
TRIGGERING					
V_{GT}	Gate trigger direct voltage, max	V	3.00	$T_{vj} = 25\text{ }^\circ\text{C}$	
I_{GT}	Gate trigger direct current, max	mA	250	$T_{vj} = 25\text{ }^\circ\text{C}$	
SWITCHING					
t_{gd}	Delay time	μ s	2.00	$T_{vj} = 25\text{ }^\circ\text{C}$, $V_D = 0.4 \cdot V_{RM}$, $I_{FG} = 2\text{ A}$, $t_r = 0.3\text{ }\mu\text{s}$	
t_q	Turn-off time ²⁾	μ s	200	$T_{vj} = 125\text{ }^\circ\text{C}$, $I_{TRM} = 2000\text{ A}$, $V_R = 200\text{ V}$, $di_T/dt = -12.5\text{ A}/\mu\text{s}$, $V_D \leq 0.67 \cdot V_{DRM}$, $dv_D/dt = 50\text{ V}/\mu\text{s}$	
Q_{rr}	Total recovered charge, max	μAs	2600	$T_{vj} = 125\text{ }^\circ\text{C}$, $I_{TRM} = 2000\text{ A}$, $V_R = 200\text{ V}$, $di_T/dt = -12.5\text{ A}/\mu\text{s}$	

THERMAL					
R_{thjc}	Thermal resistance, junction to case, max	K/kW	16	Direct current	Double side cooled
R_{thjc-A}			25		Anode side cooled
R_{thjc-K}			45		Cathode side cooled
R_{thck}	Thermal resistance, case to heatsink, max	K/kW	4.0	Double-side cooled	
MECHANICAL					
w	Weight, typ	g	480		
D_s	Surface creepage distance	mm	25		
D_a	Air strike distance	mm	13		

OVERALL DIMENSIONS



KT55

All dimensions in millimeters