



KK2000-FAST SWITCHING THYRISTOR

2500-2800 V_{DRM}

HIGH POWER THYRISTOR FOR INVERTER APPLICATION

Features:

- . All Diffused Structure
- . Amplifying Gate Configuration
- . Blocking capability up to 2800 volts
- . High dv/dt Capability
- . Pressure Assembled Device

ELECTRICAL CHARACTERISTICS AND RATINGS

Blocking - Off State

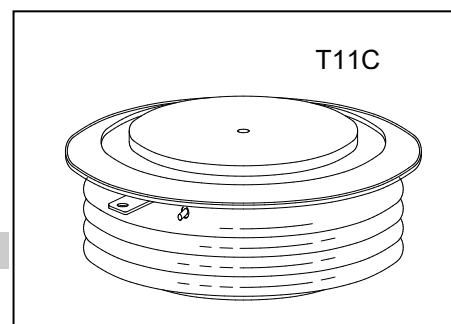
Device Type	V_{RRM} (1)	V_{DRM} (1)	V_{RSM} (1)
KK2000/25	2500	2500	2500
KK2000/28	2800	2800	2800

V_{RRM} = Repetitive peak reverse voltage

V_{DRM} = Repetitive peak off state voltage

V_{RSM} = Non repetitive peak reverse voltage (2)

Repetitive peak reverse leakage and off state leakage	I_{RRM}/I_{DRM}	5 mA 150 mA (3)
Critical rate of voltage rise	dv/dt (4)	1000 V/ μ s



Notes:

All ratings are specified for $T_j=25^\circ\text{C}$ unless otherwise stated.

(1) All voltage ratings are specified for an applied 50Hz/60Hz sinusoidal waveform over the temperature range 0 to $+125^\circ\text{C}$

(2) 10 msec. Max. Pulse width

(3) Maximum value for $T_j=125^\circ\text{C}$.

(4) Minimum value for linear and exponential waveshape to 67% rated V_{DRM} . Gate open, $T_j=125^\circ\text{C}$

(5) The value of di/dt is established in accordance with JB/T4193-2013.

Conducting - On State

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Average value of on-state current	$I_{T(AV)}$		2000		A	Sinewave, 180° conduction, $T_c=55^\circ\text{C}$
RMS value of on-state current	$I_{T(RMS)}$		3140		A	Nominal value
Peak one cycle surge (non repetitive) current	I_{TSM}		24000		A	10 msec (50Hz), sinusoidal waveshape, 180° conduction, $T_j = 125^\circ\text{C}$
I square t	I^2t		2.9×10^6		A^2s	10 msec
Latching current	I_L		1000		mA	$V_D=12V$; $R_L=12\text{ohms}$
Holding current	I_H		200		mA	$V_D=12V$; $I=2.5A$
Peak on-state voltage	V_{TM}		2.4		V	$I_{TM}= 3000A$; $T_j = 25^\circ\text{C}$
Threshold voltage, low-level	V_{TO}		1.48		V	$T_j=125^\circ\text{C}$
Slope resistance, low-level	r_T		0.2		$m\Omega$	3000A to 5000A
Critical rate of rise of on-state current(5)	di/dt		200		A/ μ s	$T_j=125^\circ\text{C}$; $V_D = 0.67 V_{DRM}$; $f=50\text{Hz}$; $I_{TM}=2500A$

ELECTRICAL CHARACTERISTICS AND RATINGS KK2000-FAST SWITCHING THYRISTOR

Gating

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Peak gate power dissipation	P_{GM}		20		W	
Average gate power dissipation	$P_{G(AV)}$		4		W	
Gate-trigger current	I_{GT}		150		mA	$V_D=12V; R_L=3ohms; T_j=+25^{\circ}C$
Gate- trigger voltage	V_{GT}	0.70	2.5		V	$V_D=12V; R_L=3ohms; T_j=+25^{\circ}C$
Peak negative voltage	V_{GRM}		5		V	

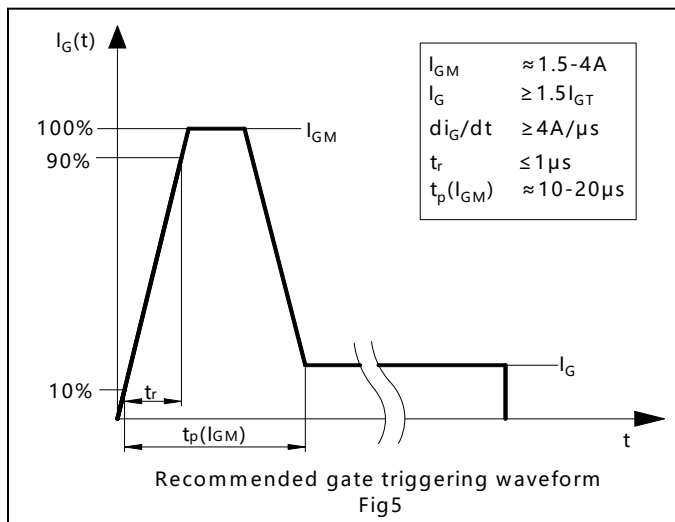
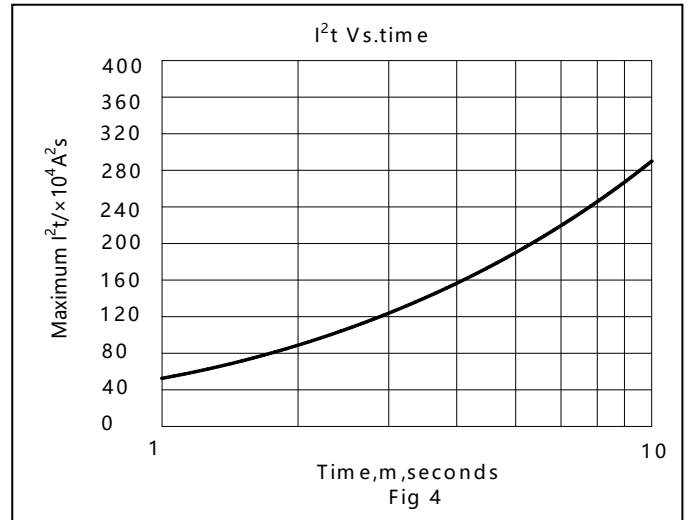
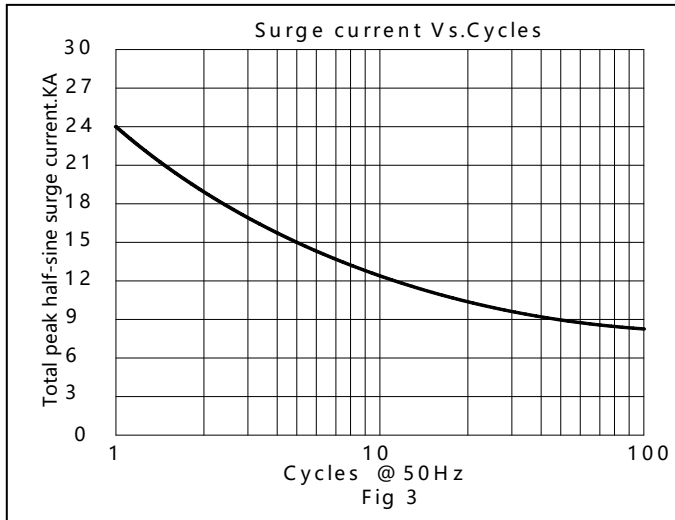
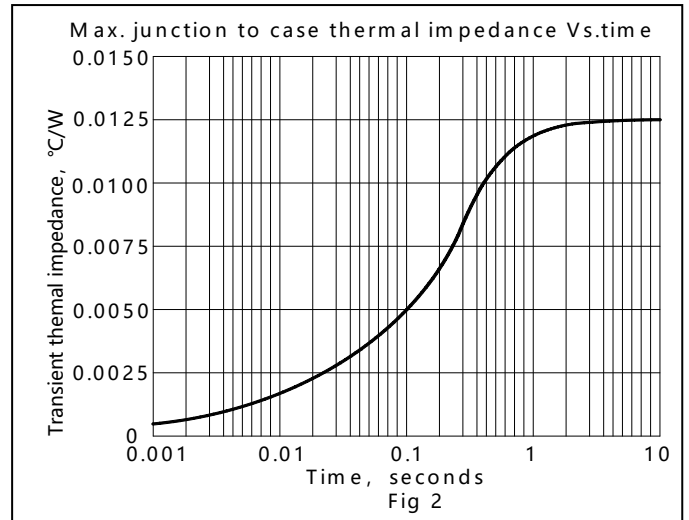
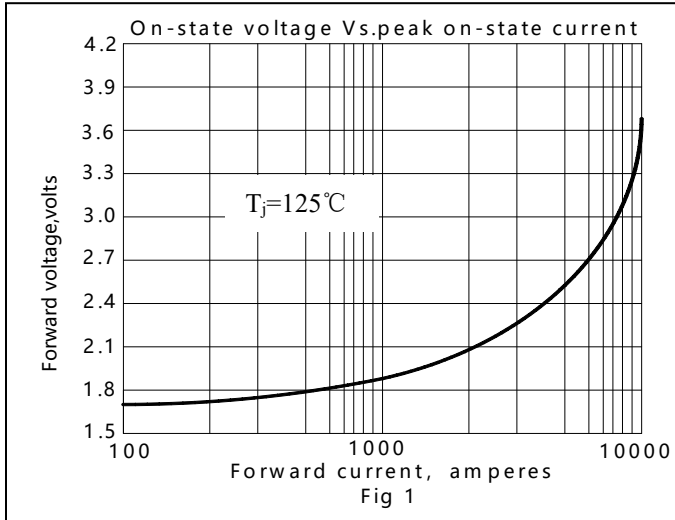
Dynamic

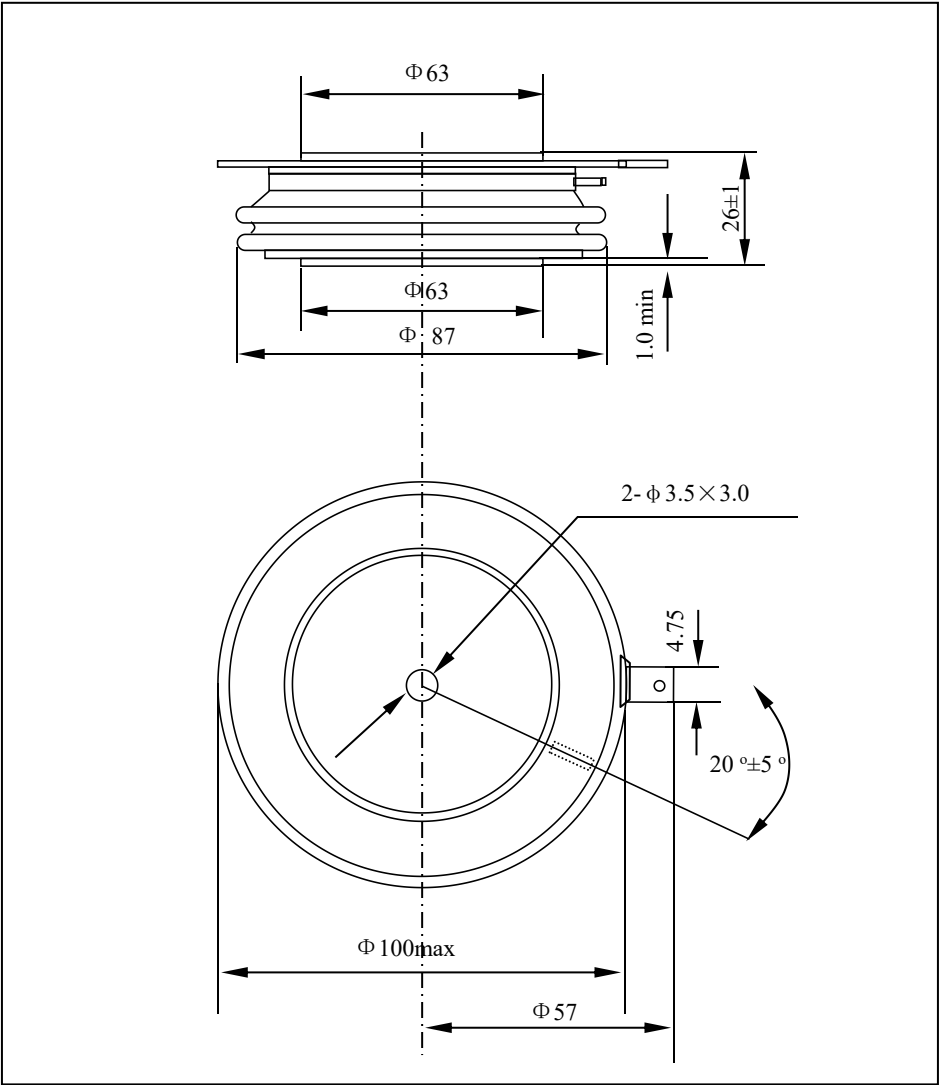
Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Delay time	t_d		3.0	2.5	μs	$I_{TM}=1000A; V_D=67\%V_{DRM}$ Gate pulse: $V_G=30V; R_G=10ohms;$ $t_r=0.1\mu s; t_p=20\mu s$
Turn-off time (with $V_R = -5 V$)	t_q		70		μs	$I_{TM} = 2000 A; di/dt = - 25 A/\mu s;$ $V_R = 50 V; dv/dt=30V/\mu s ;$ $V_D= 67\%V_{DRM}; T_j=125^{\circ}C$
Reverse recovery charge	Q_{rr}				μC	$I_{TM}=2000 A; di/dt=-10A/\mu s;$ $V_R=50 V; T_j=125^{\circ}C$

THERMAL AND MECHANICAL CHARACTERISTICS AND RATINGS

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Operating temperature	T_j	-40	+125		$^{\circ}C$	
Storage temperature	T_{stg}	-40	+140		$^{\circ}C$	
Thermal resistance - junction to case	$R_{\Theta(j-c)}$		0.0125		$^{\circ}C/W$	Double sided cooled
Thermal resistance - case to heatsink	$R_{\Theta(c-s)}$		0.004		$^{\circ}C/W$	Double sided cooled
Mounting force	F	31	35	33	kN	
Weight	m			0.85	kg	

* Mounting surfaces smooth, flat and greased





The information presented in this document is for reference only. Yangzhou Yangjie Electronic Technology Co., Ltd. reserves the right to make changes without notice for the specification of the products displayed herein to improve reliability, function, or design or otherwise.

The product listed herein is designed to be used with ordinary electronic equipment or devices, and not designed to be used with equipment or devices which require high level of reliability and the malfunction of which would directly endanger human life (such as medical instruments, transportation equipment, aerospace machinery, nuclear-reactor controllers, fuel controllers and other safety devices), Yangjie or anyone on its behalf, assumes no responsibility or liability for any damages resulting from such improper use of sale.

This publication supersedes & replaces all information previously supplied. For additional information, please visit our website <http://www.21yangjie.com> , or consult your nearest Yangjie's sales office for further assistance.