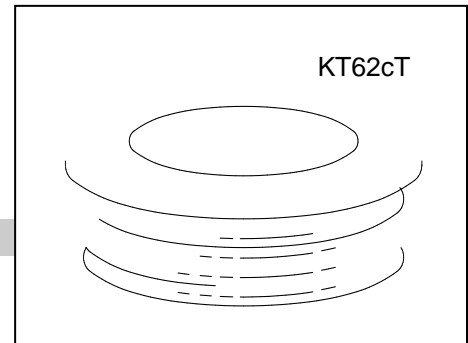




HIGH POWER THYRISTOR FOR INVERTER APPLICATION

Features:

- . All Diffused Structure
- . Amplifying Gate Configuration
- . Blocking capability up to 2000 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)
KK1500/16	1600	1600	1800
KK1500/18	1800	1800	2000
KK1500/20	2000	2000	2100

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 80 mA (3)
Critical rate of voltage rise	dv/dt (4)	1000 V/sec (min)

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	$I_{T(AV)}$		1500		A	Sinewave, 180° conduction, $T_c=55^\circ\text{C}$
RMS value of on-state current	I_{TRMS}		2355		A	Nominal value
Peak one cycle surge (non repetitive) current	I_{TSM}		21000		A	10 msec (50Hz), sinusoidal waveshape, 180° conduction, $T_j = 125^\circ\text{C}$
I square t	I^2t		2.2×10^6		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}		2.20		V	$I_{TM}= 3000A$; $T_j = 25^\circ\text{C}$
Threshold voltage, low level	V_{TO}		1.39		V	$T_j=125^\circ\text{C}$
Slope resistance, low-level	r_T		0.27		$m\Omega$	1500A to 3000A
Critical rate of rise of on-state current(5)	di/dt		200		$A/\mu s$	Repetition

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}		200	150	mA	$V_D=12V; R_L=30\text{ohms}; T_j=+25^\circ\text{C}$
Gate trigger voltage	V_{GT}	0.70	3.0	2.5	V	$V_D=12V; R_L=30\text{ohms}; T_j=+25^\circ\text{C}$
Peak negative voltage	V_{GRM}		5		V	

Dynamic

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Delay time	t_d		3.0	2.5	μs	$I_{TM}=50\text{A}; V_D=67\%V_{DRM}$ Gate pulse: $V_G=30\text{V}; R_G=10\text{ohms};$ $t_r=0.1\mu\text{s}; t_p=20\mu\text{s}$
Turn-off time ($V_R=-5\text{V}$)	t_q		30		μs	$I_{TM}=1500\text{A}; di/dt=-10\text{A}/\mu\text{s};$ $V_R=-50\text{V}; dV/dt=30\text{V}/\mu\text{s};$ $V_D=67\%V_{DRM}; T_j=125^\circ\text{C}$
Reverse recovery current	Q_{rr}				μC	$I_{TM}=1500\text{A}; di/dt=-10\text{A}/\mu\text{s};$ $V_R=50\text{V}; T_j=125^\circ\text{C}$

THERMAL AND MECHANICAL CHARACTERISTICS AND RATINGS

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Operating temperature	T_j	-40	+125		$^\circ\text{C}$	
Storage temperature	T_{stg}	-40	+140		$^\circ\text{C}$	
Thermal resistance-junction to case	$R_{\Theta(j-c)}$		0.016		$^\circ\text{C}/\text{W}$	Double sided cooled
Thermal resistance - case to heatsink	$R_{\Theta(c-s)}$		0.005		$^\circ\text{C}/\text{W}$	Double sided cooled
Mounting force	P	25	31	28	kN	
Weight	W			0.65	kg.	

* Mounting surfaces smooth, flat and greased

