



R U N A U

Jiangsu Runau Electronics Manufacturing Co., Ltd

KA500-High Frequency Thyristor

800-1200V_{DRM}

HIGH FREQUENCY THYRISTOR

Features:

- . All Diffused Structure
- . Amplifying Gate Configuration
- . Blocking capability up to 1200 volts
- . High dV/dt Capability
- . Pressure Assembled Device

ELECTRICAL CHARACTERISTICS AND RATINGS

Blocking off-state

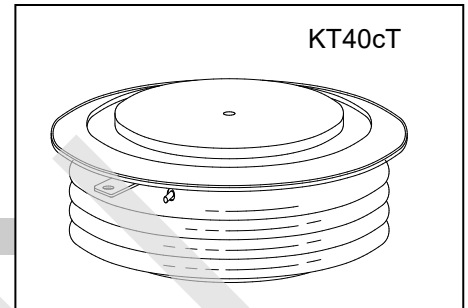
Blocking Voltage	V_{RRM} (1)	V_{DRM} (1)	V_{RSM} (1)
1200	1200	1200	1325

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}	10 mA 50 mA (3)
Critical rate of voltage rise	dV/dt (4)	800 V/ μ sec



Notes:

- (1) All voltage ratings are specified for an applied 50Hz/60Hz sinusoidal waveform over the temperature range -40 to +125 °C
- (2) 10 msec. Max. Pulse width
- (3) Maximum value for $T_j=125$ °C.
- (4) Minimum value for linear and exponential waveshape to 67% rated V_{DRM} . Gate open, $T_j=125$ °C
- (5) Non repetitive value
- (6) The value of di/dt is established in accordance with EIA/NIMA Standard RS-397, Section5-2-2-6.

Conducting on-state

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Average on-state current	$I_{T(AV)}$		500		A	Sinewave, 180° conduction, $T_c=55^\circ\text{C}$
RMS on-state current	I_{TRMS}		790		A	Nominal value
Peak one cycle surge (non repetitive) current	I_{TSM}		9000		A	10 msec (50Hz), sinusoidal waveshape, 180° conduction, $T_j = 125$
I square t	I^2t		4×10^5		A ² s	10 msec
Latching current	I_L		200		mA	$V_D=24V$; $R_L=12\text{ohms}$
Holding current	I_H		200		mA	$V_D=24V$; $I=2.5A$
Peak on-state voltage	V_{TM}		3.2		V	$I_{TM}=1570A$; $T_j = 25^\circ\text{C}$
Critical rate of rise of on-state current(5,6)	di/dt		800		A/ μ s	Non repetitive
Critical rate of rise of on-state current(5)	di/dt		400		A/ μ s	Repetitive

Gating

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Peak gate power dissipation	P_{GM}		200		W	$t_p = 40 \mu s$
Average gate power dissipation	$P_{G(AV)}$		5		W	
Gate trigger current	I_{GT}		300		mA	$V_D = 6V; R_L = 3 \text{ ohms}; T_j = -40^\circ C$
			200		mA	$V_D = 6V; R_L = 3 \text{ ohms}; T_j = +25^\circ C$
			125		mA	$V_D = 6V; R_L = 3 \text{ ohms}; T_j = +125^\circ C$
Gate trigger voltage	V_{GT}		5		V	$V_D = 6V; R_L = 3 \text{ ohms}; T_j = -40^\circ C$
			2		V	$V_D = 6V; R_L = 3 \text{ ohms}; T_j = 0-125^\circ C$
		0.30			V	$V_D = \text{Rated } V_{DRM}; R_L = 1000 \text{ ohms}; T_j = +125^\circ C$
Gate reverse repetitive voltage	V_{GRM}		5		V	

Switching

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Turn-on time	t_{gt}		3	2.4	μs	$I_{TM} = 50 A; V_D = 67\% V_{DRM}$ Gate pulse: $V_G = 30V$; $R_G = 10 \text{ ohms}; t_r = 0.1 \mu s; t_p = 20 \mu s$
Turn-off time ($V_R = -5V$)	t_q	10	20	15	μs	$I_{TM} > 500A; di/dt = 25A/\mu s; V_R \geq -5V$; Re-applied $dV/dt = 30V/\mu s$ linear to $67\% V_{DRM}; T_j = 125^\circ C$; Duty cycle $\geq 0.01\%$
Reverse recovery current	I_{rr}				A	$I_{TM} > 500 A; di/dt = 50 A/\mu s$; $V_R \geq -50 V; T_j = 125^\circ C$

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	$R_{\theta(j-c)}$		0.04		$^\circ C/W$	Double sided cooled
Thermal resistance - case to heatsink	$R_{\theta(c-s)}$		0.02		$^\circ C/W$	Double sided cooled
Mounting force	P		15		kN	
Weight	W			0.26	kg	

* Mounting surfaces smooth, flat and greased

