R A E YC602-Power Thyristor

Jiangsu Runau Electronics Manufacturing Co.,Ltd 1700-2600 V_{DRM}
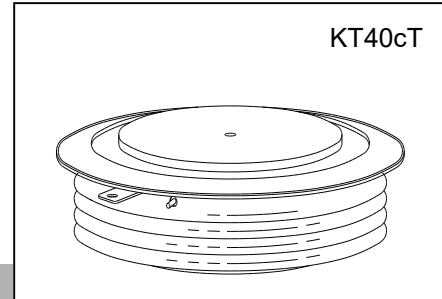
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HIGH POWER THYRISTOR FOR PHASE CONTROL APPLICATIONS

Features:

. All Diffused Structure
. Interdigitated Amplifying Gate Configuration
. Blocking capabilty up to 2600 volts
. Guaranteed Maximum Turn-Off Time
. High dV/dt Capability
. Pressure Assembled Device

KT40cT

ELECTRICAL CHARACTERISTICS AND RATINGS

Blocking - Off State

Device Type	V_{RRM} (1)	V_{DRM} (1)	V_{RSM} (1)
YC602PM	1700	1700	1800
YC602PN	1800	1800	1900
YC602L	2000	2000	2100
YC602LB	2200	2200	2300
YC602LD	2400	2400	2500
YC602LM	2600	2600	2700

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}	15 mA 35 mA (3)
Critical rate of voltage rise	dV/dt (4)	200 V/µsec

Notes:
All ratings are specified for Tj=25 ℃ unless otherwise stated.
(1) All voltage ratings are specified for an applied 50Hz/60zHz sinusoidal waveform over the temperature range -40 to +125 ℃.
(2) 10 msec. max. pulse width
(3) Maximum value for Tj = 125 ℃.
(4) Minimum value for linear and exponential waveshape to 80% rated V_{DRM}. Gate open. Tj = 125 ℃.
(5) Non-repetitive value.
(6) The value of di/dt is established in accordance with EIA/NIMA Standard RS-397, Section 5-2-2-6. The value defined would be in addition to that obtained from a snubber circuit, comprising a 0.2 µF capacitor and 20 ohms resistance in parallel with the thristor under test.

Conducting - on state

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Average value of on-state current	$I_{T(AV)}$		600		A	Sinewave,180° conduction,T_c=65℃
RMS value of on-state current	I_{TRMS}		942		A	Nominal value
Peak one cycle surge (non repetitive) current	I_{TSM}		9500		A	8.3 msec (60Hz), sinusoidal wave-shape, 180° conduction, T_j = 125 ℃
			10000		A	10.0 msec (50Hz), sinusoidal wave-shape, 180° conduction, T_i = 125 ℃
I square t	I^2t		500000		A^2s	8.3 msec
Latching current	I_L		800		mA	V_D = 24 V; R_L= 12 ohms
Holding current	I_H		400		mA	$V_{D=}$ 24 V; I = 2.5 A
Peak on-state voltage	V_{TM}		1.9		V	I_{TM} =1000 A;
Critical rate of rise of on-state current (5, 6)	di/dt		400		A/µs	Switching from $V_{DRM} \le 1000$ V, non-repetitive
Critical rate of rise of on-state current (6)	di/dt		150		A/µs	Switching from $V_{DRM} \le 1000$ V

Gating

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Peak gate power dissipation	P_{GM}		200		W	$t_p = 40$ us
Average gate power dissipation	$P_{G(AV)}$		5		W	
Peak gate current	I_{GM}		10		A	
Gate current required to trigger all units	I_{GT}		300 200 125		mA mA mA	$V_D = 6$ V;$R_L = 3$ ohms;$T_j = -40$ ℃ $V_D = 6$ V;$R_L = 3$ ohms;$T_j = +25$ ℃ $V_D = 6$ V;$R_L = 3$ ohms;$T_j = +125$℃
Gate voltage required to trigger all units	V_{GT}	0.30	5 3		V V V	$V_D = 6$ V;$R_L = 3$ ohms;$T_j = -40$ ℃ $V_D = 6$ V;$R_L = 3$ ohms;$T_j = 0$-125℃ $V_D =$ Rated V_{DRM}; $R_L = 1000$ ohms; $T_j = + 125$ ℃
Peak negative voltage	V_{GRM}		5		V	

Dynamic

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Delay time	t_d		1.5	0.7	μs	$I_{TM} = 50$ A; $V_D = 67\%$ V_{DRM} Gate pulse: $V_G = 30$ V; $R_G = 10$ ohms; $t_r = 0.1$ μs; $t_p = 20$ μs
Turn-off time (with $V_R = -5$ V)	t_q		250	**125**	μs	$I_{TM} > 1000$ A; $di/dt = 25$ A/μs; $V_R \geq -5$ V; Re-applied $dV/dt = 200$ V/μs linear to 67% V_{DRM} ; $T_j = 125$ ℃; Duty cycle $\geq 0.01\%$
Reverse recovery charge	I_{rr}				μC	$I_{TM} > 1000$ A; $di/dt = 25$ A/μs; $V_R \geq -50$ V; $T_j = 125$ ℃

THERMAL AND MECHANICAL CHARACTERISTICS AND RATINGS

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Operating temperature	T_j	-40	+125		℃	
Storage temperature	T_{stg}	-40	+150		℃	
Thermal resistance - junction to case	$R_{\Theta (j-c)}$		0.040 0.080		℃/W	Double sided cooled Single sided cooled
Thermal resistamce - case to sink	$R_{\Theta (c-s)}$		0.008 0.016		℃/W	Double sided cooled * Single sided cooled
Mounting force	P	3000 13.4	3500 15.7		lb. kN	
Weight	W			9 260	oz g.	

* Mounting surfaces smooth, flat and greased

φ 34

φ 34

φ 52

26±1

0.8min

2- φ 3.5×3.0

4.75

20°±5°

φ 58

35.5