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High Power Thyristor 3940 Amps – 7000 Volts T36A7KV

Features:

- . All Diffused Structure
- . Spoke Amplifying Gate Configuration
- . Blocking capability up to 5200 volts
- . Guaranteed Maximum Turn-Off Time
- . 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)	V _{DSM} (1)
T36A7KV	7000	7000	7100	7100

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}	20 mA 600 mA (3)
Critical rate of voltage rise	dV/dt (4)	2000 V/μsec

Conducting - on state

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Average value of on-state current	I _{T(AV)}		3600		A	Sinewave, 180° conduction, T _c =70°C
RMS value of on-state current	I _{TRMS}		3940		A	Nominal value
Peak one cycle surge (non repetitive) current	I _{TSM}		50000		A	10.0 msec (50Hz), sinusoidal wave-shape, 180° conduction, T _j = 125 °C
I square t	I ² t		1.15x10 ⁶		A ² s	10.0 msec
Latching current	I _L		2500		mA	V _D = 24 V; R _L = 12 ohms
Holding current	I _H		350		mA	V _D = 24 V; I = 2.5 A
Peak on-state voltage	V _{TM}		3.2		V	I _{TM} = 4000 A; Duty cycle ≤ 0.01%
Critical rate of rise of on-state current (5, 6)	di/dt		300		A/μs	Switching from V _{DRM} ≤ 3000 V, non-repetitive
Critical rate of rise of on-state current (6)	di/dt		200		A/μs	Switching from V _{DRM} ≤ 3000 V

Notes:

All ratings are specified for T_j=25 °C unless otherwise stated.

- (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 70% 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, 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.

ELECTRICAL CHARACTERISTICS AND RATINGS (cont'd)

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	
Peak gate current	I_{GM}		10		A	
Gate current required to trigger all units	I_{GT}		400		mA	$V_D = 6 V; R_L = 3 \text{ ohms}; T_j = +25 \text{ }^\circ\text{C}$
Gate voltage required to trigger all units	V_{GT}		3		V	$V_D = 6 V; R_L = 3 \text{ ohms}; T_j = 125^\circ\text{C}$
Peak negative voltage	V_{GRM}		10		V	

Dynamic

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Delay time	t_d		3.0	2.5	μs	$I_{FG} = 2 A; V_D = 2000 V$ Gate pulse: $V_G = 20 V; R_G = 20 \text{ ohms}; t_r = 0.5 \mu s; t_p = 20 \mu s$
Turn-off time (with $V_R = -50 V$)	t_q		400	250	μs	$I_{TM} > 2000 A; di/dt = -1.5 A/\mu s;$ $V_R = 200 V T_j = 125 \text{ }^\circ\text{C};$ Duty cycle $\geq 0.01\%$
Reverse recovery current	I_{rr}	60	95		A	$I_{TM} > 2000 A; di/dt = -1.5 A/\mu s;$ $V_R = 200 V$

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	+150		$^\circ\text{C}$	
Thermal resistance - junction to case	$R_{\Theta(j-c)}$		0.0057		$^\circ\text{C/W}$	Double sided cooled
Thermal resistance - case to sink	$R_{\Theta(c-s)}$		0.001		$^\circ\text{C/W}$	Double sided cooled *
Mounting force	P	80	90		kN	
Weight	W			2.9	Kg.	

* Mounting surfaces smooth, flat and greased

CASE OUTLINE AND DIMENSIONS.

