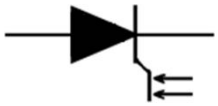
High-end Power Semiconductor Manufacturer

TLI193-2000

High Power Light Triggered Thyristor

- V_{DRM} = **7000-7200 V**
- V_{RRM} = **7000-7200 V**
- I_{TRM} = **80 kA** (t_p = 700 µs)
- $I_{T(AV)}$ = **2083 A** (T_C = 70 °C)
- I_{TSM} = **45 kA** (T_j = 120 °C)
- P_{LM} = **25 mW**



- Light triggering
- Low on-state and switching losses
- High critical rate of rise of on-state current

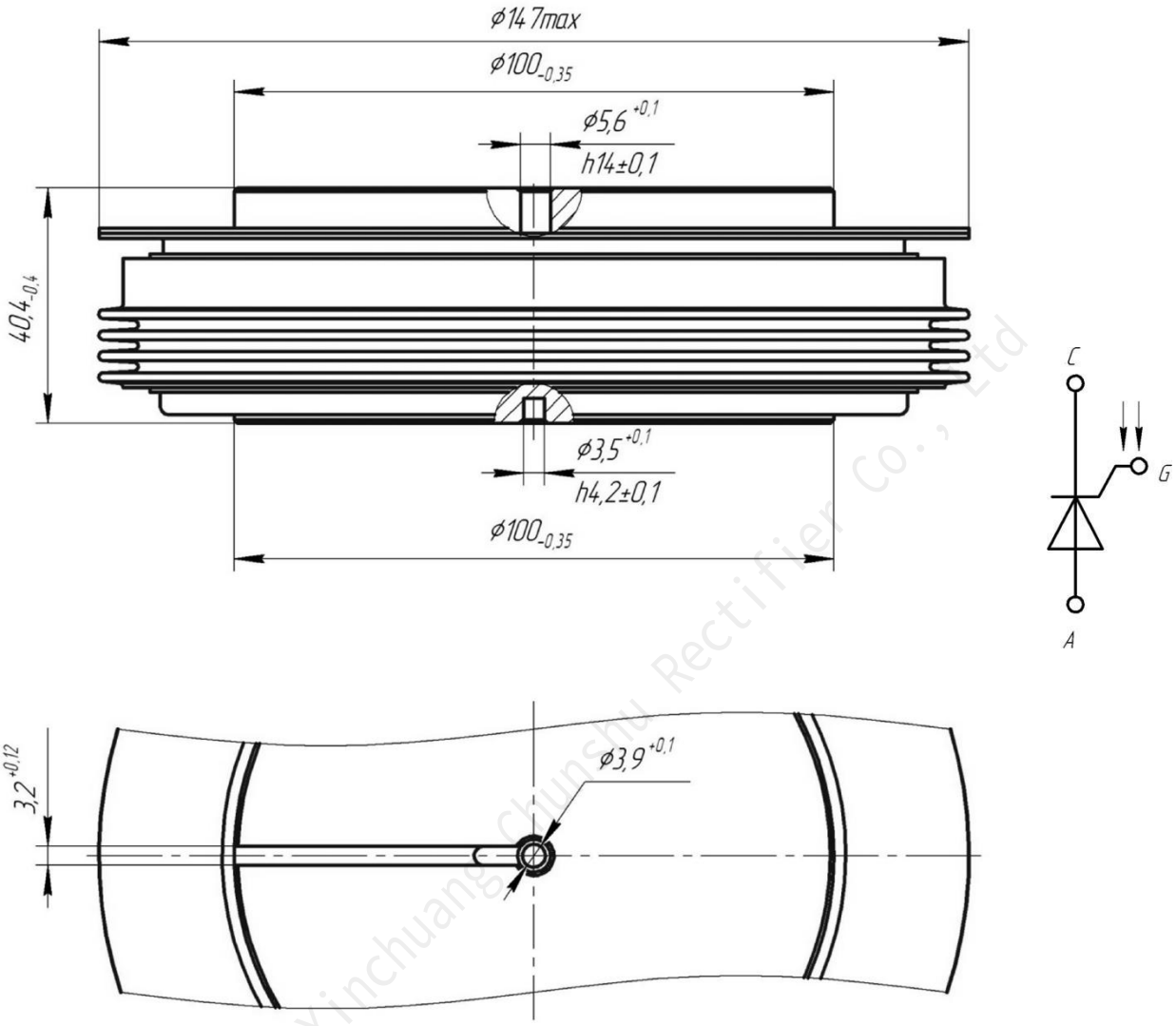
MAXIMUM RATED VALUES

Parameter and conditions	Symbol	Values	Units
Repetitive peak off-state voltage, T_j = -60 …+ 120 °C	V_{DRM}	7000-7200	V
Repetitive peak reverse voltage, T_j = -60 …+ 120 °C	V_{RRM}	7000-7200	
Direct off-state voltage, T_j = -60 …+ 120 °C	V_D	5000	
Direct reverse voltage, T_j = -60 …+ 120 °C	V_R	5000	
Repetitive peak off-state current/ Repetitive peak reverse current, T_j = 120 °C, V_D / V_R = V_{DRM} / V_{RRM}	I_{DRM} / I_{RRM}	300	mA
Average on-state current, f = 50 Hz, double side cooling T_C = 85 °C T_C = 70 °C	$I_{T(AV)}$	 1671 2083	A
Repetitive peak on-state current, T_j = 25 °C, V_D = V_{DRM}, t_p = 700 µs (single pulse) t_p = 10 ms (single pulse)	I_{TRM}	 80 25	kA
Surge non-repetitive on-state current, T_j = 120 °C, V_R = 0, t_p = 10 ms	I_{TSM}	45	kA
Critical rate of rise of on-state current, T_j = 120 °C, V_D = 0,67V_{DRM}, I_T = 5000 A, P_{LM} = 25 mW, t_L = 10 µs, f = 1 Hz f = 50 Hz	$(di_T/dt)_{crit}$	 5000 1000	A/µs
Critical rate of rise of off-state voltage, T_j = 120 °C, V_D = 0,67V_{DRM}	$(dv_D/dt)_{crit}$	1000	V/µs
Minimum gate trigger light power, T_j = 25 °C, V_D = 12 V	P_{LM}	25	mW
Operation junction temperature range	T_j	-40 … +120	°C
Storage temperature range	T_{stg}	-40 … +50	°C

ELECTRICAL CHARACTERISTICS

Parameter and conditions	Symbol	Values			Units
		min	typ.	max	
Peak on-state voltage, T_j = 25 °C, I_T = 7850 A	V_{TM}	-	-	3,0	V
On-state threshold voltage, T_j = 120 °C, I_T = 4000 - 12000 A	$V_{T(TO)}$	-	-	1,27	
On-state slope resistance, T_j = 120 °C, I_T = 4000 - 12000 A	r_T	-	-	0,45	mΩ
Delay time, T_j = 25 °C, V_D = 1000 V, I_T = 2500 A, P_{LM} = 25 mW, t_L = 10 µs, t_{rise} = 0,5 µs	t_d	-	-	5,0	µs
Turn off-time, T_j = 120 °C, I_T = 2500 A, di_T/dt = - 5 A/µs, $V_R \geq$ 100 V, V_D = 0,67V_{DRM}, dv_D/dt = 50 V/µs	t_q	-	800	-	
Reverse recovery charge, T_j = 120 °C, I_T = 2500 A, di_T/dt = - 5 A/µs, $V_R \geq$ 100 V	Q_{RR}	-	-	6000	µAs
Holding current, T_j = 25 °C, V_D = 12 V	I_H	-	-	300	mA
Latching current, T_j = 25 °C, V_D = 12 V, P_{LM} = 25 mW, t_L = 10 µs, t_{rise} = 0,5 µs	I_L	-	-	1000	
THERMAL PARAMETERS					
Thermal junction to case resistance, sin 180°: double side cooled DC: double side cooled	 $R_{th(j-c)}$ $R_{th(j-c)}$	-	-	 0,0067 0,0064	°C/W
Thermal resistance case to heatsink, double side cooled single side cooled	$R_{th(c-h)}$	-	-	 0,0015 0,0030	
MECHANICAL PARAMETERS					
Weight	w	-	3,0	-	kg
Clamping force	F	70	-	90	kN
Maximum acceleration (at nominal mounting force)	a	-	-	50	m/s^2
Minimal cathode-anode distance on insulator surface	D_s	-	62	-	mm
Air strike distance	D_a	-	27	-	mm

TLI193-2000---PACKAGE DETAILS



C – Cathode, A – Anode, G –Gate

Fig. 1. Device Outline Drawing (dimensions in mm)

Recommended optical interface cable – OA65.

