



Optimum power handling
Low on-state and switching losses
Designed for traction and industrial applications

Phase Control Stud Thyristor
Type T175-200-16

Mean on-state current	I_{TAV}		200 A													
Repetitive peak off-state voltage*	V_{DRM}		100÷1600 V													
Repetitive peak reverse voltage*	V_{RRM}															
Turn-off time	t_q		125 μ s													
V_{DRM}, V_{RRM}, V	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600
Voltage code	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
$T_{jv}, ^\circ C$	-60÷125															

* **1800 V** – Voltage class on demand

MAXIMUM ALLOWABLE RATINGS

Symbols and parameters		Units	Values	Test conditions	
ON-STATE					
I_{TAV}	Mean on-state current	A	200 305	$T_c = 103\ ^\circ C$; $T_c = 85\ ^\circ C$; 180° half-sine wave; 50 Hz	
I_{TRMS}	RMS on-state current	A	314	$T_c = 103\ ^\circ C$; 180° half-sine wave; 50 Hz	
I_{TSM}	Surge on-state current	kA	9.0 10.4	$T_j = T_{jmax}$ $T_j = 25\ ^\circ C$ 180° half-sine wave; 50 Hz ($t_p = 10$ ms); single pulse; $V_D = V_R = 0$ V; Gate pulse: $I_G = 2$ A; $t_{GP} = 50\ \mu s$; $di_G/dt \geq 1$ A/ μs	
			10.0 11.5	$T_j = T_{jmax}$ $T_j = 25\ ^\circ C$ 180° half-sine wave; 60 Hz ($t_p = 8.3$ ms); single pulse; $V_D = V_R = 0$ V; Gate pulse: $I_G = 2$ A; $t_{GP} = 50\ \mu s$; $di_G/dt \geq 1$ A/ μs	
I^2t	Safety factor	$A^2s \cdot 10^3$	405 540	$T_j = T_{jmax}$ $T_j = 25\ ^\circ C$ 180° half-sine wave; 50 Hz ($t_p = 10$ ms); single pulse; $V_D = V_R = 0$ V; Gate pulse: $I_G = 2$ A; $t_{GP} = 50\ \mu s$; $di_G/dt \geq 1$ A/ μs	
			415 545	$T_j = T_{jmax}$ $T_j = 25\ ^\circ C$ 180° half-sine wave; 60 Hz ($t_p = 8.3$ ms); single pulse; $V_D = V_R = 0$ V; Gate pulse: $I_G = 2$ A; $t_{GP} = 50\ \mu s$; $di_G/dt \geq 1$ A/ μs	
BLOCKING					
V_{DRM}, V_{RRM}	Repetitive peak off-state and Repetitive peak reverse voltages	V	100÷1600	$T_{jmin} < T_j < T_{jmax}$; 180° half-sine wave; 50 Hz; Gate open	
V_{DSM}, V_{RSM}	Non-repetitive peak off-state and Non-repetitive peak reverse voltages	V	110÷1700	$T_{jmin} < T_j < T_{jmax}$; 180° half-sine wave; 50 Hz; single pulse; Gate open	
V_D, V_R	Direct off-state and Direct reverse voltages	V	$0.75 \cdot V_{DRM}$ $0.75 \cdot V_{RRM}$	$T_j = T_{jmax}$; Gate open	

TRIGGERING				
I_{FGM}	Peak forward gate current	A	6	$T_j = T_{j\max}$
V_{RGM}	Peak reverse gate voltage	V	5	
P_G	Gate power dissipation	W	3	$T_j = T_{j\max}$ for DC gate current
SWITCHING				
$(di_T/dt)_{crit}$	Critical rate of rise of on-state current non-repetitive (f=1 Hz)	A/ μ s	320	$T_j = T_{j\max}$; $V_D = 0.67 \cdot V_{DRM}$; $I_{TM} = 2 I_{TAV}$; Gate pulse: $I_G = 2$ A; $t_{GP} = 50 \mu$ s; $di_G/dt \geq 1$ A/ μ s
THERMAL				
T_{stg}	Storage temperature	$^{\circ}$ C	-60÷125	
T_j	Operating junction temperature	$^{\circ}$ C	-60÷125	
MECHANICAL				
F	Mounting force	kN	1.5÷2.5	
a	Acceleration	m/s ²	100	

CHARACTERISTICS

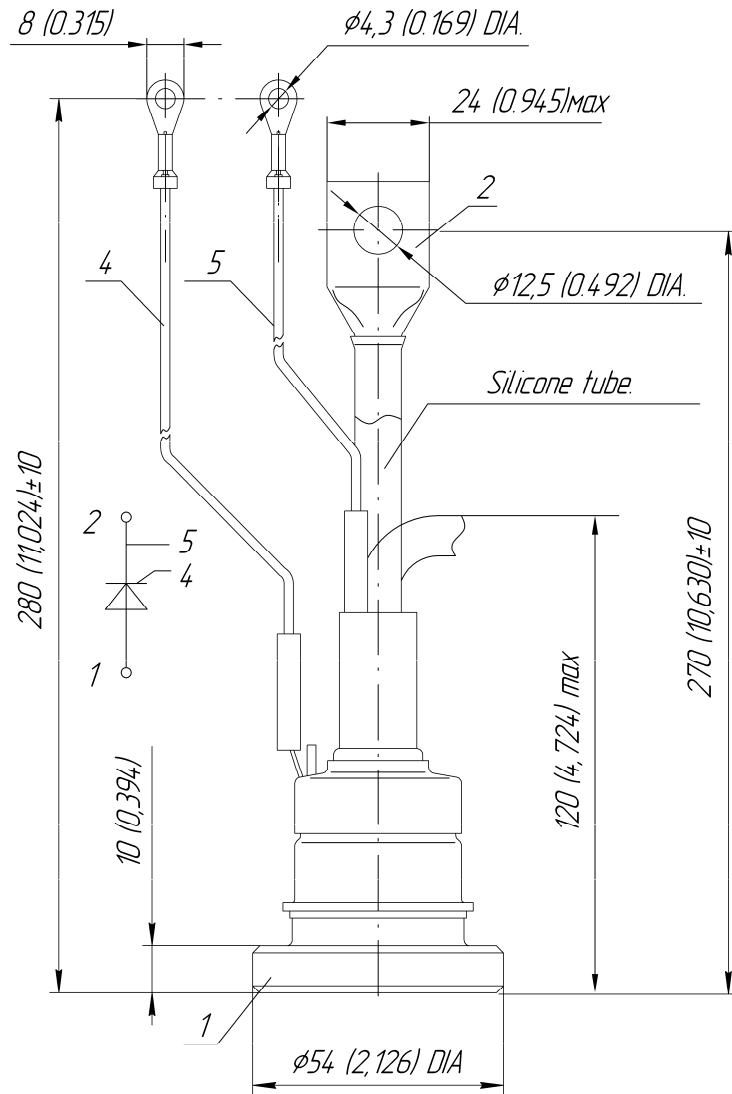
Symbols and parameters		Units	Values	Conditions	
ON-STATE					
V_{TM}	Peak on-state voltage, max	V	1.75	$T_j = 25$ $^{\circ}$ C; $I_{TM} = 628$ A	
$V_{T(TO)}$	On-state threshold voltage, max	V	1.00	$T_j = T_{j\max}$;	
r_T	On-state slope resistance, max	m Ω	1.12	$0.5 \pi I_{TAV} < I_T < 1.5 \pi I_{TAV}$	
I_L	Latching current, max	mA	700	$T_j = 25$ $^{\circ}$ C; $V_D = 12$ V; Gate pulse: $I_G = 2$ A; $t_{GP} = 50 \mu$ s; $di_G/dt \geq 1$ A/ μ s	
I_H	Holding current, max	mA	300	$T_j = 25$ $^{\circ}$ C; $V_D = 12$ V; Gate open	
BLOCKING					
I_{DRM} , I_{RRM}	Repetitive peak off-state and Repetitive peak reverse currents, max	mA	70	$T_j = T_{j\max}$; $V_D = V_{DRM}$; $V_R = V_{RRM}$	
$(dv_D/dt)_{crit}$	Critical rate of rise of off-state voltage ¹⁾ , min	V/ μ s	1000	$T_j = T_{j\max}$; $V_D = 0.67 \cdot V_{DRM}$; Gate open	
TRIGGERING					
V_{GT}	Gate trigger direct voltage, max	V	4.00 2.50 2.00	$T_j = T_{j\min}$ $T_j = 25$ $^{\circ}$ C $T_j = T_{j\max}$	$V_D = 12$ V; $I_D = 3$ A; Direct gate current
I_{GT}	Gate trigger direct current, max	mA	400 250 200	$T_j = T_{j\min}$ $T_j = 25$ $^{\circ}$ C $T_j = T_{j\max}$	
V_{GD}	Gate non-trigger direct voltage, min	V	0.25	$T_j = T_{j\max}$; $V_D = 0.67 \cdot V_{DRM}$;	
I_{GD}	Gate non-trigger direct current, min	mA	10.00	Direct gate current	
SWITCHING					
t_{gd}	Delay time	μ s	2.00	$T_j = 25$ $^{\circ}$ C; $V_D = 0.4 \cdot V_{DRM}$; $I_{TM} = I_{TAV}$; Gate pulse: $I_G = 2$ A; $t_{GP} = 50 \mu$ s; $di_G/dt \geq 1$ A/ μ s	
t_q	Turn-off time ²⁾ , max	μ s	125	$dv_D/dt = 50$ V/ μ s; $T_j = T_{j\max}$; $I_{TM} = I_{TAV}$; $di_R/dt = -10$ A/ μ s; $V_R = 100$ V; $V_D = 0.67 \cdot V_{DRM}$;	

THERMAL				
R _{thjc}	Thermal resistance, junction to case, max	°C/W	0.0700	Direct current
MECHANICAL				
w	Weight, typ	g	500	
D _s	Surface creepage distance	mm (inch)	12.40 (4.882)	
D _a	Air strike distance	mm (inch)	12.40 (4.882)	

PART NUMBERING GUIDE

T	175	200	16	N
1	2	3	4	5

1. High Frequency Inverter Grade Thyristor
2. Design version
3. Mean on-state current, A
4. Voltage code
5. Ambient conditions: N – normal; T – tropical



Polarity	Example of code designation	Reference designation	Colors		
			Anode	Cathode	Gate
Anode to stud	T175-200-16		-	Red tube	White

All dimensions in millimeters (inches)