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

Phase Control Stud Thyristor
Type T271-250-8

Mean on-state current	I_{TAV}	250 A	
Repetitive peak off-state voltage	V_{DRM}	100÷800 V	
Repetitive peak reverse voltage	V_{RRM}		
Turn-off time	t_q	125 μs	

V_{DRM}, V_{RRM}, V	100	200	400	600	800
Voltage code	1	2	4	6	8
T_j, °C	-60÷150				

MAXIMUM ALLOWABLE RATINGS

Symbols and parameters		Units	Values	Test conditions
ON-STATE				
I_{TAV}	Mean on-state current	A	250 450	T_c= 121 °C; T_c= 85 °C; 180° half-sine wave; 50 Hz
I_{TRMS}	RMS on-state current	A	393	T_c= 121 °C; 180° half-sine wave; 50 Hz
I_{TSM}	Surge on-state current	kA	10.0 12.0	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 μs; di_G/dt≥1 A/μs (T_j=$T_{j\,max}$, T_j=25 °C)
			11.0 13.0	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 μs; di_G/dt≥1 A/μs (T_j=$T_{j\,max}$, T_j=25 °C)
I^2t	Safety factor	$A^2s \cdot 10^3$	500 720	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 μs; di_G/dt≥1 A/μs (T_j=$T_{j\,max}$, T_j=25 °C)
			500 700	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 μs; di_G/dt≥1 A/μs (T_j=$T_{j\,max}$, T_j=25 °C)
BLOCKING				
V_{DRM}, V_{RRM}	Repetitive peak off-state and Repetitive peak reverse voltages	V	100÷800	$T_{j\,min}$< T_j <$T_{j\,max}$; 180° half-sine wave; 50 Hz; Gate open
V_{DSM}, V_{RSM}	Non-repetitive peak off-state and Non-repetitive peak reverse voltages	V	200÷900	$T_{j\,min}$< T_j <$T_{j\,max}$; 180° half-sine wave; 50 Hz;single pulse; Gate open
V_D, V_R	Direct off-state and Direct reverse voltages	V	0.75·V_{DRM} 0.75·V_{RRM}	T_j=$T_{j\,max}$; 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/μs	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/μs
	THERMAL			
T_{stg}	Storage temperature	°C	-60÷150	
T_j	Operating junction temperature	°C	-60÷150	
	MECHANICAL			
M	Tightening torque	Nm	25÷35	
a	Acceleration	m/s^2	100	

CHARACTERISTICS

	Symbols and parameters	Units	Values	Conditions	
	ON-STATE				
V_{TM}	Peak on-state voltage, max	V	1.50	$T_j=25$ °C; $I_{TM}=785$ A	
$V_{T(TO)}$	On-state threshold voltage, max	V	0.95	$T_j=T_{j\ max}$; $0.5\ \pi\ I_{TAV} < I_T < 1.5\ \pi\ I_{TAV}$	
r_T	On-state slope resistance, max	mΩ	0.760		
I_L	Latching current, max	mA	700	$T_j=25$ °C; $V_D=12$ V; Gate pulse: $I_G=2$ A; $t_{GP}=50\ \mu$s; $di_G/dt{\geq}1$ A/μs	
I_H	Holding current, max	mA	300	$T_j=25$ °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/μs	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	$T_j=T_{j\ min}$	$V_D=12$ V; $I_D=3$ A; Direct gate current
			2.50	$T_j=25$ °C	
			2.00	$T_j=T_{j\ max}$	
I_{GT}	Gate trigger direct current, max	mA	400	$T_j=T_{j\ min}$	
			250	$T_j=25$ °C	
			200	$T_j=T_{j\ max}$	
V_{GD}	Gate non-trigger direct voltage, min	V	0.25	$T_j=T_{j\ max}$; $V_D=0.67{\cdot}V_{DRM}$; Direct gate current	
I_{GD}	Gate non-trigger direct current, min	mA	10.00		
	SWITCHING				
t_{gd}	Delay time	μs	1.60	$T_j=25$ °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/μs	
t_q	Turn-off time[2], max	μs	125	$dv_D/dt=50$ V/μs; $T_j=T_{j\ max}$; $I_{TM}=I_{TAV}$; $di_R/dt=-10$ A/μs; $V_R=100$V; $V_D=0.67{\cdot}V_{DRM}$;	

THERMAL				
R_{thjc}	Thermal resistance, junction to case, max	°C/W	0.0800	Direct current
MECHANICAL				
w	Weight, typ	g	440	
D_s	Surface creepage distance	mm (inch)	12.4 (4.882)	
D_a	Air strike distance	mm (inch)	12.4 (4.882)	

PART NUMBERING GUIDE

T	271	250	8	N
1	2	3	4	5

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

8 (0.315)

ø4,3 (0.169) DIA.

24(0.945)max

2

ø12,5 (0.492) DIA.

4

5

Silicone tube.

265±10 (10.433)

250±10 (9.842)

110 (4.330)max

2

5

4

1

SW41

1

H*

W*

ø47,4 (1.866)max DIA.
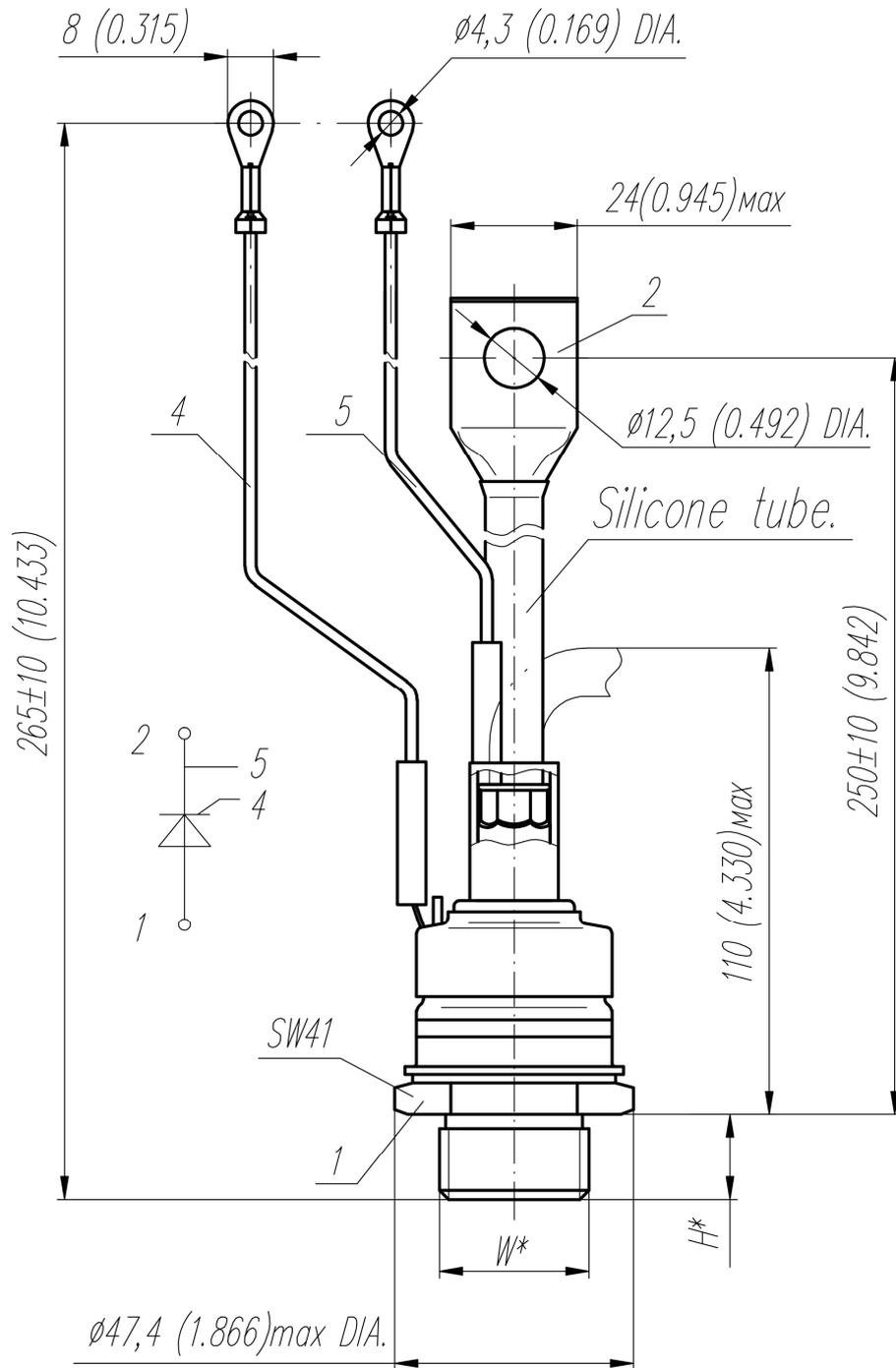
Type of screw	W	H
Metric Screw Type C	M24x1,5 – 8g	19
Metric Screw Type B(upon request)	M20x1,5 – 8g	15

Polarity	Example of code designation	Reference designation	Colors		
			Anode	Cathode	Gate
Anode to stud	T271-250-8		-	Red tube	White

All dimensions in millimeters (inches)