



High power cycling capability
Low on-state and switching losses
Designed for traction and industrial applications

Phase Control Thyristor
Type T183-2500-44

Maximum allowable mean on-state current		I _{TAV}		2500 A	
Repetitive peak off-state voltage		V _{DRM}		3800...4400 V	
Repetitive peak reverse voltage		V _{RRM}			
Turn-off time		t _q		800 μs	
V _{DRM} , V _{RRM} , V	3800	4000	4200	4400	
Voltage code	38	40	42	44	
T _j , °C	-60...+125				

MAXIMUM ALLOWABLE RATINGS

Symbols and parameters		Units	Values	Test conditions	
ON-STATE					
I_{TAV}	Maximum allowable mean on-state current	A	2500 2747 3355	$T_c=95\text{ }^{\circ}\text{C}$, Double side cooled $T_c=85\text{ }^{\circ}\text{C}$, Double side cooled $T_c=70\text{ }^{\circ}\text{C}$, Double side cooled 180° half-sine wave; 50 Hz	
I_{TRMS}	RMS on-state current	A	3925	$T_c=95\text{ }^{\circ}\text{C}$, Double side cooled 180° half-sine wave; 50 Hz	
I_{TSM}	Surge on-state current	kA	51.0 59.0	$T_j=T_{j\text{ max}}$ $T_j=25\text{ }^{\circ}\text{C}$	180° half-sine wave; $t_p=10\text{ ms}$; single pulse; $V_D=V_R=0\text{ V}$; Gate pulse: $I_G=2\text{ A}$; $t_{GP}=50\text{ }\mu\text{s}$; $di_G/dt\geq 1\text{ A}/\mu\text{s}$
			54.0 62.0	$T_j=T_{j\text{ max}}$ $T_j=25\text{ }^{\circ}\text{C}$	180° half-sine wave; $t_p=8.3\text{ ms}$; single pulse; $V_D=V_R=0\text{ V}$; Gate pulse: $I_G=2\text{ A}$; $t_{GP}=50\text{ }\mu\text{s}$; $di_G/dt\geq 1\text{ A}/\mu\text{s}$
I^2t	Safety factor	$A^2s\cdot 10^3$	13000 17400	$T_j=T_{j\text{ max}}$ $T_j=25\text{ }^{\circ}\text{C}$	180° half-sine wave; $t_p=10\text{ ms}$; single pulse; $V_D=V_R=0\text{ V}$; Gate pulse: $I_G=2\text{ A}$; $t_{GP}=50\text{ }\mu\text{s}$; $di_G/dt\geq 1\text{ A}/\mu\text{s}$
			12100 15900	$T_j=T_{j\text{ max}}$ $T_j=25\text{ }^{\circ}\text{C}$	180° half-sine wave; $t_p=8.3\text{ ms}$; single pulse; $V_D=V_R=0\text{ V}$; Gate pulse: $I_G=2\text{ A}$; $t_{GP}=50\text{ }\mu\text{s}$; $di_G/dt\geq 1\text{ A}/\mu\text{s}$
BLOCKING					
V_{DRM}, V_{RRM}	Repetitive peak off-state and Repetitive peak reverse voltages	V	3800...4400	$T_{j\text{ min}}<T_j<T_{j\text{ max}}$; 180° half-sine wave; 50 Hz; Gate open	
V_{DSM}, V_{RSM}	Non-repetitive peak off-state and Non-repetitive peak reverse voltages	V	3900...4500	$T_{j\text{ min}}<T_j<T_{j\text{ max}}$; 180° half-sine wave; single pulse; Gate open	
V_D, V_R	Direct off-state and Direct reverse voltages	V	$0.6\cdot V_{DRM}$ $0.6\cdot V_{RRM}$	$T_j=T_{j\text{ max}}$; Gate open	

TRIGGERING					
I_FGM	Peak forward gate current	A	10	T_j=T_j max	
V_RGM	Peak reverse gate voltage	V	5		
P_G	Gate power dissipation	W	5	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	1200	T_j=T_j max; V_D=0.67·V_DRM; I_TM=6900 A; Gate pulse: I_G=2 A; t_GP=50 μs; di_G/dt≥2 A/μs	
THERMAL					
T_stg	Storage temperature	°C	−60...+50		
T_j	Operating junction temperature	°C	−60...+125		
MECHANICAL					
F	Mounting force	kN	60.0...70.0		
a	Acceleration	m/s²	50	Device clamped	

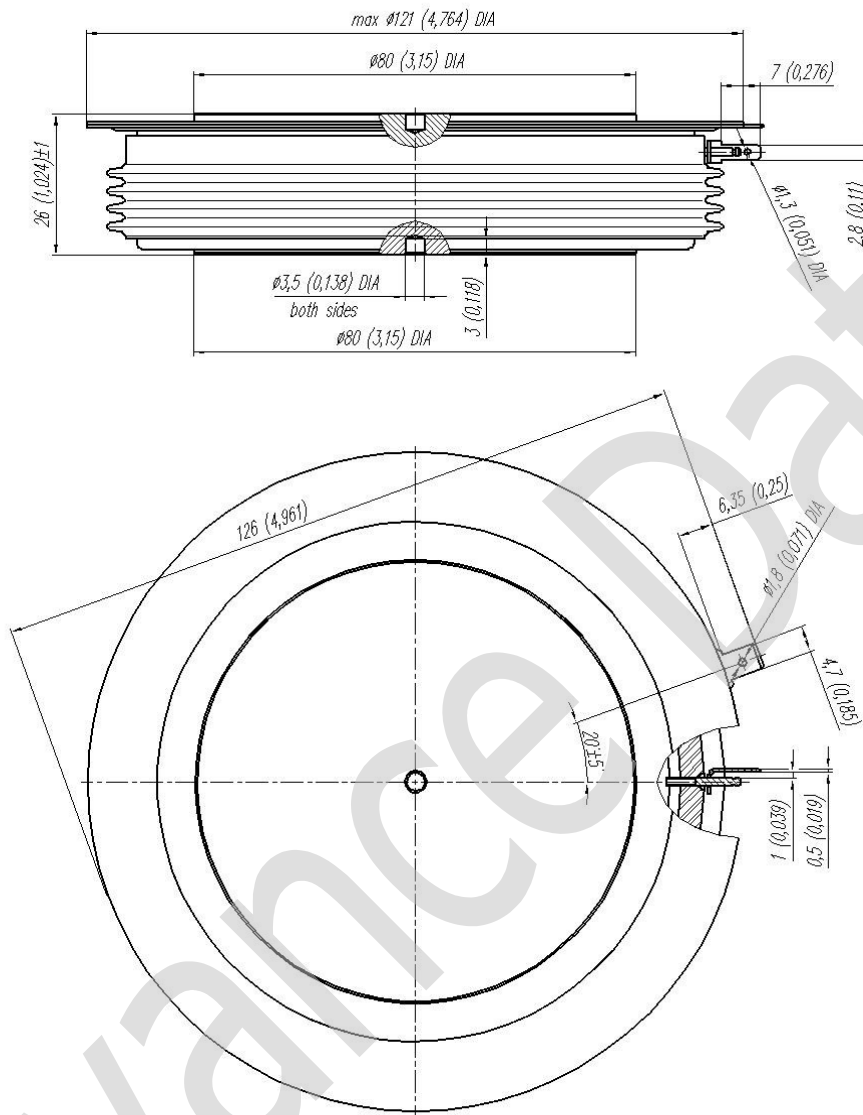
CHARACTERISTICS

Symbols and parameters		Units	Values	Conditions	
ON-STATE					
V_{TM}	Peak on-state voltage, max	V	2.10	$T_j=25\text{ }^{\circ}\text{C}$; $I_{TM}=6300\text{ A}$	
$V_{T(TO)}$	On-state threshold voltage, max	V	0.968	$T_j=T_{j\text{ max}}$;	
r_T	On-state slope resistance, max	m Ω	0.189	$0.5\pi I_{TAV} < I_T < 1.5\pi I_{TAV}$	
I_L	Latching current, max	mA	1500	$T_j=25\text{ }^{\circ}\text{C}$; $V_D=12\text{ V}$; Gate pulse: $I_G=2\text{ A}$; $t_{GP}=50\text{ }\mu\text{s}$; $di_G/dt\geq 1\text{ A}/\mu\text{s}$	
I_H	Holding current, max	mA	300	$T_j=25\text{ }^{\circ}\text{C}$; $V_D=12\text{ V}$; Gate open	
BLOCKING					
I_{DRM} , I_{RRM}	Repetitive peak off-state and Repetitive peak reverse currents, max	mA	300	$T_j=T_{j\text{ max}}$; $V_D=V_{DRM}$; $V_R=V_{RRM}$	
$(dv_D/dt)_{crit}$	Critical rate of rise of off-state voltage ¹⁾ , min	V/ μs	1000, 1600, 2000, 2500	$T_j=T_{j\text{ max}}$; $V_D=0.67\cdot V_{DRM}$; Gate open	
TRIGGERING					
V_{GT}	Gate trigger direct voltage, max	V	3.00 2.50 1.50	$T_j= T_{j\text{ min}}$ $T_j=25\text{ }^{\circ}\text{C}$ $T_j= T_{j\text{ max}}$	$V_D=12\text{ V}$; $I_D=3\text{ A}$; Direct gate current
I_{GT}	Gate trigger direct current, max	mA	400 250 150	$T_j= T_{j\text{ min}}$ $T_j= 25\text{ }^{\circ}\text{C}$ $T_j= T_{j\text{ max}}$	
V_{GD}	Gate non-trigger direct voltage, min	V	0.35	$T_j=T_{j\text{ max}}$; $V_D=0.67\cdot V_{DRM}$; Direct gate current	
I_{GD}	Gate non-trigger direct current, min	mA	55.00		
SWITCHING					
t_{gd}	Delay time, max	μs	2.00	$T_j=25\text{ }^{\circ}\text{C}$; $V_D=1500\text{ V}$; $I_{TM}=I_{TAV}$; $di/dt=200\text{ A}/\mu\text{s}$;	
t_{gt}	Turn-on time, max	μs	6.00	Gate pulse: $I_G=2\text{ A}$; $V_G=20\text{ V}$; $t_{GP}=50\text{ }\mu\text{s}$; $di_G/dt=1\text{ A}/\mu\text{s}$	
t_q	Turn-off time ²⁾ , max	μs	800	$dv_D/dt=50\text{ V}/\mu\text{s}$; $T_j=T_{j\text{ max}}$; $I_{TM}= I_{TAV}$; $di_R/dt=-10\text{ A}/\mu\text{s}$; $V_R=100\text{ V}$; $V_D=0.67\text{ }V_{DRM}$;	

THERMAL					
R _{thjc}	Thermal resistance, junction to case, max	°C/W	0.0065	Direct current	Double side cooled
R _{thjc-A}			0.0143		Anode side cooled
R _{thjc-K}			0.0117		Cathode side cooled
R _{thck}	Thermal resistance, case to heatsink, max	°C/W	0.0015	Direct current	
MECHANICAL					
m	Weight, max	g	1370		
D _s	Surface creepage distance	mm (inch)	36.50 (1.437)		
D _a	Air strike distance	mm (inch)	16.50 (0.650)		

PART NUMBERING GUIDE						
T	183	2500	44	A2	B2	N
1	2	3	4	5	6	7
1. Phase Control Thyristor						
2. Design version						
3. Mean on-state current, A						
4. Voltage code						
5. Critical rate of rise of off-state voltage, V/μs						
6. Turn-off time (dv _D /dt=50 V/μs)						
7. Ambient conditions: N – normal; T – tropical						

NOTES				
1) Critical rate of rise of off-state voltage				
Symbol of Group	A2	T1	P1	M1
(dv _D /dt) _{crit} , V/μs	1000	1600	2000	2500
2) Turn-off time (dv _D /dt=50 V/μs)				
Symbol of Group	B2			
t _{gr} , μs	800			



All dimensions in millimeters (inches)