



**TET ESTEL AS**  
ESTONIA

**June**  
**2013**

**Series**  
**T173-3200**

**Phase Control Press-Pack**  
**Thyristor**  
**Type T173-3200**

Center amplifying gate  
Low on-state and switching losses  
Designed for traction and industrial applications

Maximum mean on-state current	$I_{TAV}$	<b>3200 A</b>					
Maximum repetitive peak off-state and reverse voltage	$U_{DRM}$	<b>400 ÷ 1000 V</b>					
Turn-off time	$U_{RRM}$	<b>125; 160; 200; 250 <math>\mu</math>s</b>					
	$t_q$						
$U_{DRM}, U_{RRM}, V$	400	500	600	700	800	900	1000
Voltage code	4	5	6	7	8	9	10
$T_{vj}, ^\circ C$	- 60 ÷ 140						

**MAXIMUM ALLOWABLE RATINGS**

Symbols and parameters		Units	T173-3200	Conditions
$I_{TAV}$	Mean on-state current	A	3200 4980	$T_c=95^\circ C,$ $T_c=55^\circ C,$ 180° half-sine wave, 50 Hz
$I_{TRMS}$	RMS on-state current	A	5024	$T_c=95^\circ C$
$I_{TSM}$	Surge on-state current	kA	65 71	$T_{vj}=140^\circ C$ $T_{vj}=25^\circ C$ tp=10 ms $U_R=0$
$I^2t$	Limiting load integral	$kA^2s$	21125 25205	$T_{vj}=140^\circ C$ $T_{vj}=25^\circ C$
$U_{DRM}, U_{RRM}$	Repetitive peak off-state and reverse voltage	V	400÷1000	$T_j \min \leq T_{vj} \leq T_{jM}$ 180° half-sine wave, 50 Hz Gate open
$U_{DSM}, U_{RSM}$	Non-repetitive peak off-state and reverse voltage	V	500÷1100	$T_j \min \leq T_{vj} \leq T_{jM}$ 180° half-sine wave tp=10 ms, Single pulse Gate open
$(di_T/dt)_{crit}$	Critical rate of rise of on-state current : non - repetitive repetitive	A/ $\mu$ s	400 200	$T_{vj}=140^\circ C ; U_D=0,67 U_{DRM},$ Gate pulse : 10V, 5 $\Omega,$ 1 $\mu$ s rise time, 10 $\mu$ s
$U_{RGM}$	Peak reverse gate voltage	V	5	$T_j \min \leq T_{vj} \leq T_{jM}$
$T_{stg}$	Storage temperature	$^\circ C$	-60÷80	
$T_{vj}$	Junction temperature	$^\circ C$	-60÷140	

**CHARACTERISTICS**

$U_{TM}$	Peak on-state voltage	V	1,5	$T_{vj}=25^\circ C, I_{TM}=3,14 I_{TAV}$
$U_{T(To)}$	Threshold voltage	V	0,85	$T_{vj}=140^\circ C$
$R_T$	On-state slope resistance	m $\Omega$	0,07	1,57 $I_{TAV} < I_T < 4,71 I_{TAV}$
$I_{DRM}$ $I_{RRM}$	Repetitive peak off-state and reverse current	mA	200 200	$T_{vj}=140^\circ C,$ $U_D = U_{DRM}$ $U_R = U_{RRM}$

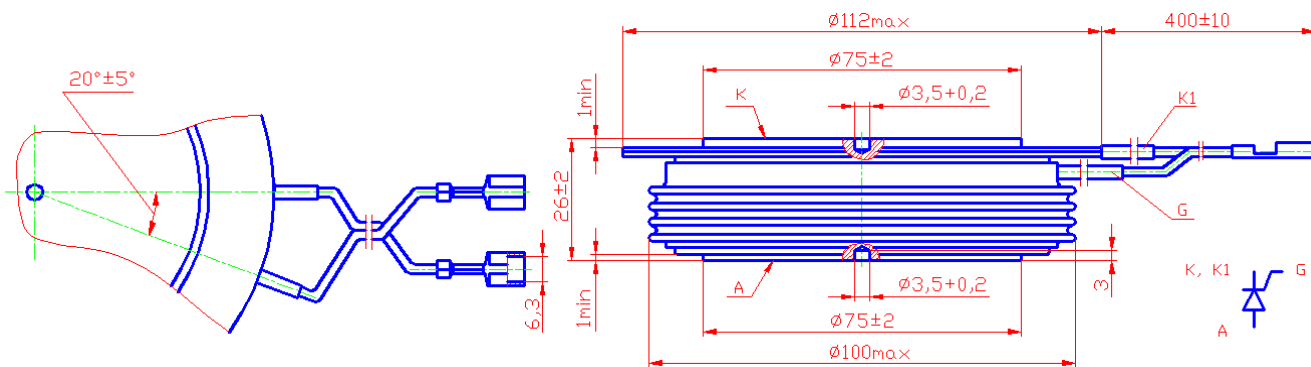
## CHARACTERISTICS

Symbols and parameters		Units	T173-3200	Conditions
$I_L$	Latching current	A	3,0	$T_{vj}=25^{\circ}\text{C}, U_D=12\text{V}$ Gate pulse : 10V, 5 $\Omega$ , 1 $\mu\text{s}$ rise time, 10 $\mu\text{s}$
$I_H$	Holding current	A	0,3	$T_{vj}=25^{\circ}\text{C}, U_D=12\text{V}$ , Gate open
$U_{GT}$	Gate trigger direct voltage	V	2,5 5,0	$T_{vj}=25^{\circ}\text{C}$ , $T_{vj}=-60^{\circ}\text{C}$ <span style="float: right;"><math>U_D=12\text{V}</math></span>
$I_{GT}$	Gate trigger direct current	A	0,3 0,85	$T_{vj}=25^{\circ}\text{C}$ , $T_{vj}=-60^{\circ}\text{C}$
$U_{GD}$	Gate non-trigger direct voltage	V	0,35	$T_{vj}=140^{\circ}\text{C}$ , $U_D = 0,67 U_{DRM}$
$I_{GD}$	Gate non-trigger direct current	mA	20	Direct gate current
$t_{gd}$	Delay time	$\mu\text{s}$	3,2	$T_{vj}=25^{\circ}\text{C}, U_D=500\text{V}$ $I_{TM} = 3200 \text{ A}$
$t_{gt}$	Turn-on time	$\mu\text{s}$	16	Gate pulse : 10V, 5 $\Omega$ , 1 $\mu\text{s}$ rise time, 10 $\mu\text{s}$
$t_q$	Turn-off time	$\mu\text{s}$	125 $\div$ 250	$T_{vj}=140^{\circ}\text{C}$ , $I_{TM}=3200 \text{ A}$ $di_R/dt = 10 \text{ A}/\mu\text{s}$ , $U_R=100\text{V}$ $U_D = 0,67 U_{DRM}$ $du_D/dt=50 \text{ V}/\mu\text{s}$
$Q_{rr}$	Recovered charge	$\mu\text{C}$	5000	$T_{vj}=140^{\circ}\text{C}$ , $I_{TM}=3200 \text{ A}$ $di_R/dt = 10 \text{ A}/\mu\text{s}$ , $U_R=100\text{V}$
$t_{rr}$	Reverse recovery time	$\mu\text{s}$	27	
$I_{rrm}$	Peak reverse recovery current	A	370	
$(du_D/dt)_{crit}$	Critical rate of rise of off-state voltage	V/ $\mu\text{s}$	500 1000	$T_{vj}=140^{\circ}\text{C}$ , $U_D = 0,67 U_{DRM}$ Gate open
$R_{thjc}$	Thermal resistance junction to case	$^{\circ}\text{C}/\text{W}$	0,01	Direct current, double side cooled

## ORDERING

	<b>T</b>	<b>173</b>	<b>3200</b>	<b>8</b>	<b>7</b>	<b>3</b>	
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	

1. Phase control thyristor.
2. Design version.
3. Mean on-state current, A.
4. Voltage code (8=800V).
5. Critical rate of rise of off-state voltage ( $6 \geq 500 \text{ V}/\mu\text{s}$ ,  $7 \geq 1000 \text{ V}/\mu\text{s}$ ).
6. Group of turn-off time ( $du_D/dt=50 \text{ V}/\mu\text{s}$ ,  $2 \leq 250 \mu\text{s}$ ;  $3 \leq 160 \mu\text{s}$ ;  $X2 \leq 125 \mu\text{s}$ ).



Mounting force : 36  $\div$  46 kN

Weight : 1200 grams