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| | **TET ESTEL AS**<br>ESTONIA | **June 2013** |

**Series**
**T553-500**

# Phase Control Press-Pack Thyristor Type T553-500

Distributed amplifying gate
Designed for traction and industrial applications

| | | | | | | |
|---|---|---|---|---|---|---|
| Maximum mean on-state current | | | | $I_{TAV}$ | **500 A** | |
| Maximum repetitive peak off-state and reverse voltage | | | | $U_{DRM}$ $U_{RRM}$ | **3400 ÷4400 V** | |
| Turn-off time | | | | **tq** | **320; 400; 500 µs** | |
| $U_{DRM}$, $U_{RRM}$, V | 3400 | 3600 | 3800 | 4000 | 4200 | 4400 |
| Voltage code | 34 | 36 | 38 | 40 | 42 | 44 |
| Tvj, °C | - 60 ÷ 125 | | | | | |

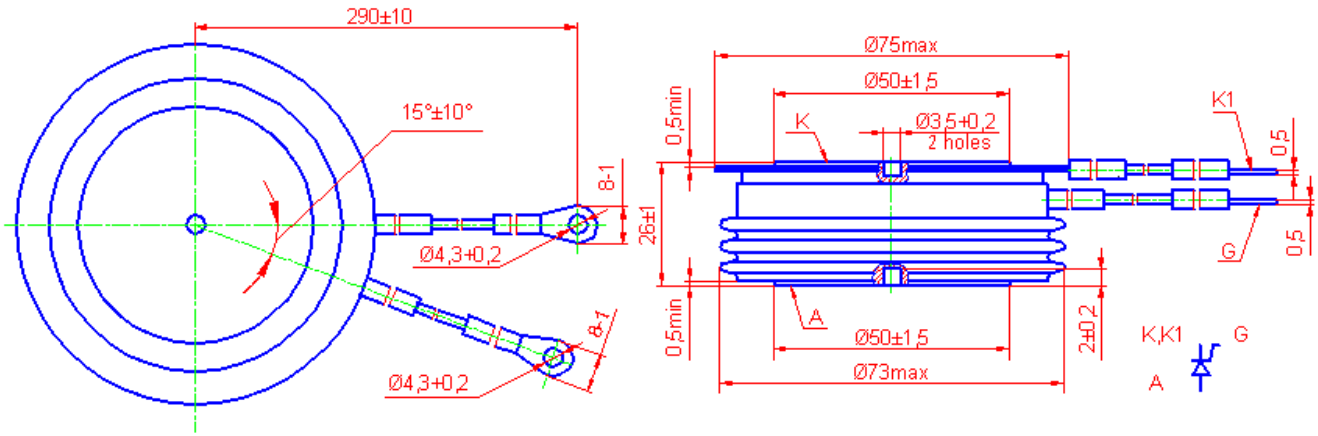
## MAXIMUM ALLOWABLE RATINGS

| Symbols and parameters | | Units | T553-500 | Conditions | |
|---|---|---|---|---|---|
| $I_{TAV}$ | Mean on-state current | A | 500<br>1035 | Tc=100 °C,<br>Tc=55 °C,<br>180° half-sine wave, 50 Hz | |
| $I_{TRMS}$ | RMS on-state current | A | 785 | Tc=100 °C | |
| $I_{TSM}$ | Surge on-state current | kA | 13,5<br>15,0 | Tvj=125°C<br>Tvj=25°C | tp=10 ms<br>$U_R$=0 |
| $I^2t$ | Limiting load integral | $kA^2s$ | 911<br>1125 | Tvj=125°C<br>Tvj=25°C | |
| $U_{DRM}$,$U_{RRM}$ | Repetitive peak off-state and reverse voltage | V | 3400÷4400 | Tj min≤Tvj≤Tjм<br>180° half-sine wave, 50 Hz<br>Gate open | |
| $U_{DSM}$,$U_{RSM}$ | Non-repetitive peak off-state and reverse voltage | V | 3500÷4500 | Tj min≤Tvj≤Tjм<br>180° half-sine wave<br>tp=10 ms, Single pulse<br>Gate open | |
| $(di_T/dt)$ crit | Critical rate of rise of on-state current :<br>non - repetitive<br>repetitive | A/µs | <br><br>630<br>320 | Tvj=125°C ; $U_D$=0,67 $U_{DRM}$,<br>Gate pulse : 10V,5 Ω,<br>1µs rise time, 10 µs | |
| $U_{RGM}$ | Peak reverse gate voltage | V | 5 | Tj min≤Tvj≤Tjм | |
| Tstg | Storage temperature | °C | -60÷80 | | |
| Tvj | Junction temperature | °C | -60÷125 | | |
| **CHARACTERISTICS** | | | | | |
| $U_{TM}$ | Peak on-state voltage | V | 2,4 | Tvj=25°C, $I_{TM}$=3,14 $I_{TAV}$ | |
| $U_{T(TO)}$ | Threshold voltage | V | 1,55 | Tvj=125°C<br>1,57 $I_{TAV}$< $I_T$ <4,71 $I_{TAV}$ | |
| $R_T$ | On-state slope resistance | mΩ | 0,65 | | |
| $I_{DRM}$<br>$I_{RRM}$ | Repetitive peak off-state and reverse current | mA | <br>100<br>100 | Tvj=125°C,<br>$U_D$ = $U_{DRM}$<br>$U_R$= $U_{RRM}$ | |

| CHARACTERISTICS | | | | | |
|---|---|---|---|---|---|
| Symbols and parameters | | Units | T553-500 | Conditions | |
| $I_L$ | Latching current | A | 6 | Tvj=25°C,$U_D$=12V<br>Gate pulse : 10V, 5Ω,<br>1 µs rise time, 10µs | |
| $I_H$ | Holding current | A | 1,0 | Tvj=25°C,$U_D$=12V, Gate open | |
| $U_{GT}$ | Gate trigger direct voltage | V | 2,5<br>5,0 | Tvj=25°C,<br>Tvj=-60°C | $U_D$=12V |
| $I_{GT}$ | Gate trigger direct current | A | 0,3<br>0,85 | Tvj=25°C,<br>Tvj=-60°C | |
| $U_{GD}$ | Gate non-trigger direct voltage | V | 0,25 | Tvj=125°C, $U_D$ = 0,67 $U_{DRM}$ | |
| $I_{GD}$ | Gate non-trigger direct current | мA | 10 | Direct gate current | |
| tgd | Delay time | µs | 4,0 | Tvj=25°C,$U_D$=500V<br>$I_{TM}$ = 500 A | |
| tgt | Turn-on time | µs | 12 | Gate pulse : 10V, 5Ω,<br>1 µs rise time, 10µs | |
| tq | Turn-off time | µs | 320÷500 | Tvj=125°C, $I_{TM}$=500 A<br>$di_R/dt$ =10 A/µs, $U_R$=100V<br>$U_D$ = 0,67 $U_{DRM}$<br>$du_D/dt$=50 V/µs | |
| Qrr | Recovered charge | µC | 2300 | Tvj=125°C, $I_{TM}$=500 A<br>$di_R/dt$=10 A/µs, $U_R$=100V | |
| trr | Reverse recovery time | µs | 34 | | |
| $I_{RRM}$ | Peak reverse recovery current | A | 135 | | |
| $(du_D/dt)_{crit}$ | Critical rate of rise of off-state voltage | V/µs | 500<br>1000 | Tvj=125°C, $U_D$ = 0,67 $U_{DRM}$<br>Gate open | |
| Rthjc | Thermal resistance junction to case | °C/W | 0,021 | Direct current,<br>double side cooled | |

| ORDERING | | | | | | | |
|---|---|---|---|---|---|---|---|
| | **T** | **553** | **500** | **40** | **7** | **K2** | |
| | **1** | **2** | **3** | **4** | **5** | **6** | |

1. Phase control thyristor.
2. Design version.
3. Mean on-state current, A.
4. Voltage code (40=4000 V).
5. Critical rate of rise of off-state voltage (6 ≥ 500 V/µs, 7 ≥ 1000 V/µs).
6. Group of turn-off time ($du_D/dt$=50 V/µs, 1 ≤ 500 µs, H2 ≤ 400 µs, K2 ≤ 320 µs).




Mounting force : 19 ÷ 28 kN
Weight : 580 grams