



TET ESTEL AS
ESTONIA

January
2017

Series
TF261-160

Fast Stud Mounted Thyristor Type TF261-160

Low on-state and switching losses
Low reverse recovery charge
Center amplifying gate

| | | | | | | | | | | |
|---|------------|-----|-----|-----|------|-----------|-------------------------------------|------|------|--|
| Maximum mean on-state current | | | | | | I_{TAV} | 160 A | | | |
| Maximum repetitive peak off-state and reverse voltage | | | | | | U_{DRM} | 600 ÷ 1400 V | | | |
| Turn-off time | | | | | | U_{RRM} | | | | |
| | | | | | | t_q | 20; 25; 32 μs | | | |
| U_{DRM}, U_{RRM}, V | 600 | 700 | 800 | 900 | 1000 | 1100 | 1200 | 1300 | 1400 | |
| Voltage code | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | |
| $T_{vj}, ^\circ C$ | - 60 ÷ 125 | | | | | | | | | |

MAXIMUM ALLOWABLE RATINGS

| Symbols and parameters | | Units | TF261-160 | Conditions |
|------------------------|---|------------|------------|--|
| I_{TAV} | Mean on-state current | A | 160 | $T_c=88^\circ C$, 180° half-sine wave, 50 Hz |
| I_{TRMS} | RMS on-state current | A | 251 | $T_c=88^\circ C$ |
| I_{TSM} | Surge on-state current | kA | 4,0 4,3 | $T_{vj}=125^\circ C$ $T_{vj}=25^\circ C$ tp=10 ms $U_R=0$ |
| I^2t | Limiting load integral | kA^2s | 80 92 | $T_{vj}=125^\circ C$ $T_{vj}=25^\circ C$ |
| U_{DRM}, U_{RRM} | Repetitive peak off-state and reverse voltage | V | 600÷1400 | $T_j \min \leq T_{vj} \leq T_{jM}$ 180° half-sine wave, 50 Hz Gate open |
| U_{DSM}, U_{RSM} | Non-repetitive peak off-state and reverse voltage | V | 660÷1500 | $T_j \min \leq T_{vj} \leq T_{jM}$ 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 | $A/\mu s$ | 800 400 | $T_{vj}=125^\circ C$; $U_D=0,67 U_{DRM}$, Gate pulse : 10V, 5 Ω , 1 μs rise time, 10 μs |
| 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÷125 | |

CHARACTERISTICS

| | | | | |
|------------------------|---|-----------|----------|--|
| U_{TM} | Peak on-state voltage | V | 1,8 | $T_{vj}=25^\circ C$, $I_{TM}=3,14 I_{TAV}$ |
| $U_{T(To)}$ | Threshold voltage | V | 1,2 | $T_{vj}=125^\circ C$ |
| R_T | On-state slope resistance | $m\Omega$ | 1,8 | 1,57 $I_{TAV} < I_T < 4,71 I_{TAV}$ |
| I_{DRM} I_{RRM} | Repetitive peak off-state and reverse current | mA | 25 25 | $T_{vj}=125^\circ C$, $U_D = U_{DRM}$ $U_R = U_{RRM}$ |

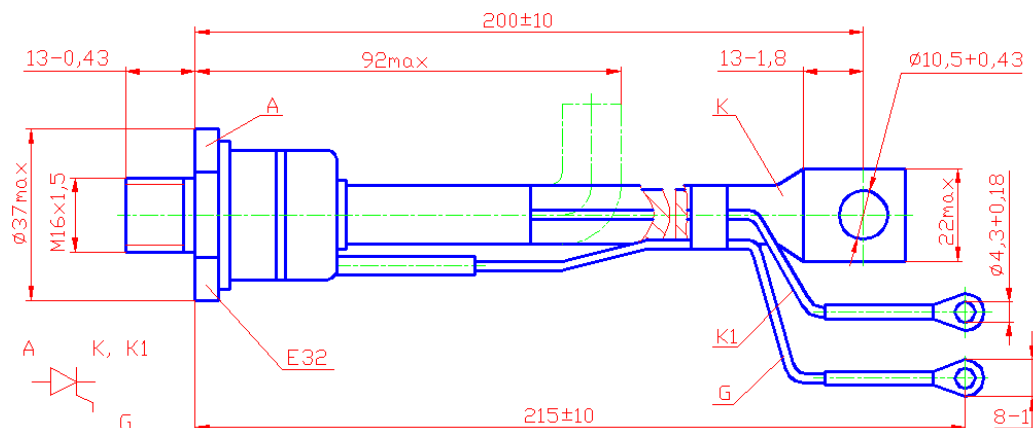
CHARACTERISTICS

| Symbols and parameters | | Units | TF261-160 | Conditions |
|------------------------|--|-----------------------------|----------------|--|
| I_L | Latching current | A | 0,7 | $T_{vj}=25^{\circ}\text{C}, U_D=12\text{V}$ Gate pulse : 10V, 5 Ω , 1 μs rise time, 10 μs |
| 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 | $T_{vj}=25^{\circ}\text{C}$, $T_{vj}=-60^{\circ}\text{C}$ |
| I_{GT} | Gate trigger direct current | A | 0,25 0,6 | $T_{vj}=25^{\circ}\text{C}$, $T_{vj}=-60^{\circ}\text{C}$ |
| U_{GD} | Gate non-trigger direct voltage | V | 0,25 | $T_{vj}=125^{\circ}\text{C}$, $U_D = 0,67 U_{DRM}$ |
| I_{GD} | Gate non-trigger direct current | mA | 10 | Direct gate current |
| t_{gd} | Delay time | μs | 1,4 | $T_{vj}=25^{\circ}\text{C}, U_D=500\text{V}$ $I_{TM} = 160 \text{ A}$ |
| t_{gt} | Turn-on time | μs | 3,2 | Gate pulse : 10V, 5 Ω , 1 μs rise time, 10 μs |
| t_q | Turn-off time | μs | 20÷32 25÷40 | $T_{vj}=125^{\circ}\text{C}$, $I_{TM} = 160 \text{ A}$ $di_R/dt = 10 \text{ A}/\mu\text{s}$, $U_R=100\text{V}$ $U_D = 0,67 U_{DRM}$ $du_D/dt=50 \text{ V}/\mu\text{s}$ $du_D/dt=200 \text{ V}/\mu\text{s}$ |
| Q_{rr} | Recovered charge | μC | 200 | $T_{vj}=125^{\circ}\text{C}$, $I_{TM} = 160 \text{ A}$ |
| t_{rr} | Reverse recovery time | μs | 3,3 | |
| I_{rrm} | Peak reverse recovery current | A | 120 | $di_R/dt = 50 \text{ A}/\mu\text{s}$, $U_R=100\text{V}$ |
| $(du_D/dt)_{crit}$ | Critical rate of rise of off-state voltage | V/ μs | 500 1000 | $T_{vj}=125^{\circ}\text{C}$, $U_D = 0,67 U_{DRM}$ Gate open |
| R_{thjc} | Thermal resistance junction to case | $^{\circ}\text{C}/\text{W}$ | 0,12 | Direct current |

ORDERING

| | TF | 261 | 160 | 14 | 6 | 6 | 2 | |
|--|----|-----|-----|----|---|---|---|--|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | |

1. Fast thyristor.
2. Design version.
3. Mean on-state current, A.
4. Voltage code (14=1400 V).
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 ($du_D/dt=50 \text{ V}/\mu\text{s}$, $4 \leq 32 \mu\text{s}$, $5 \leq 25 \mu\text{s}$, $6 \leq 20 \mu\text{s}$).
7. Group of turn-on time ($2 \leq 3,2 \mu\text{s}$).



Tightening torque : 24 ÷ 36 Nm

Weight : 260 grams