



**TET ESTEL AS**  
ESTONIA

**January**  
**2017**

**Series**  
**TF251-80**

**Fast Stud Mounted Thyristor**  
**Type TF251-80**

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

Maximum mean on-state current	$I_{TAV}$	<b>80 A</b>
Maximum repetitive peak off-state and reverse voltage	$U_{DRM}$ $U_{RRM}$	<b>600 ÷ 1400 V</b>
Turn-off time	$t_q$	<b>16, 20; 25 <math>\mu</math>s</b>
$U_{DRM}, U_{RRM}, V$	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	TF251-80	Conditions
$I_{TAV}$	Mean on-state current	A	80	$T_c=90^\circ C$ , 180° half-sine wave, 50 Hz
$I_{TRMS}$	RMS on-state current	A	126	$T_c=90^\circ C$
$I_{TSM}$	Surge on-state current	kA	1,6 1,8	$T_{vj}=125^\circ C$ $T_{vj}=25^\circ C$ tp=10 ms $U_R=0$
$I^2t$	Limiting load integral	$kA^2s$	12,8 16,2	$T_{vj}=125^\circ C$ $T_{vj}=25^\circ C$
$U_{DRM}, U_{RRM}$	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 $\Omega$ , 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÷125	

**CHARACTERISTICS**

$U_{TM}$	Peak on-state voltage	V	2,2	$T_{vj}=25^\circ C$ , $I_{TM}=3,14 I_{TAV}$
$U_{T(TO)}$	Threshold voltage	V	1,45	$T_{vj}=125^\circ C$
$R_T$	On-state slope resistance	m $\Omega$	3,0	1,57 $I_{TAV} < I_T < 4,71 I_{TAV}$
$I_{DRM}$ $I_{RRM}$	Repetitive peak off-state and reverse current	mA	20 20	$T_{vj}=125^\circ C$ , $U_D = U_{DRM}$ $U_R = U_{RRM}$

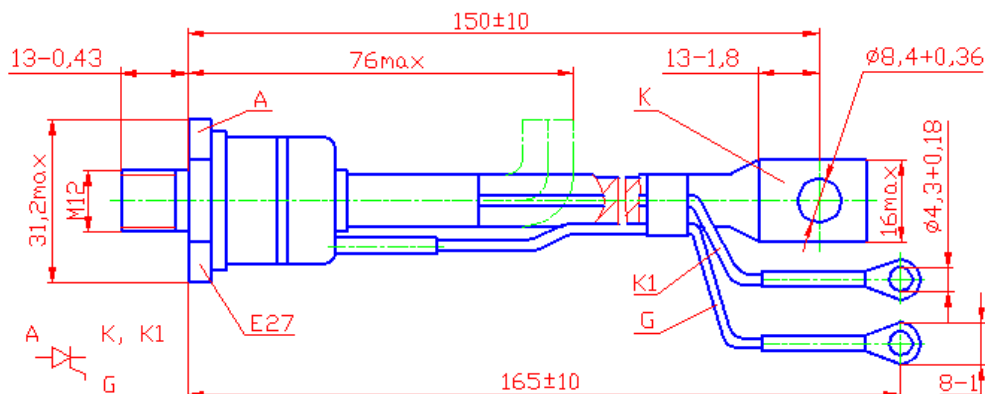
## CHARACTERISTICS

Symbols and parameters		Units	TF251-80	Conditions
$I_L$	Latching current	A	0,7	$T_{vj}=25^{\circ}\text{C}, U_D=12\text{V}$ 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	$T_{vj}=25^{\circ}\text{C}$ , $T_{vj}=-60^{\circ}\text{C}$
$I_{GT}$	Gate trigger direct current	A	0,2 0,5	$T_{vj}=25^{\circ}\text{C}$ , $T_{vj}=-60^{\circ}\text{C}$
$U_{GD}$	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	$\mu\text{s}$	1,6	$T_{vj}=25^{\circ}\text{C}, U_D=500\text{V}$ $I_{TM} = 80 \text{ A}$
$t_{gt}$	Turn-on time	$\mu\text{s}$	3,2	Gate pulse : 10V, 5 $\Omega$ , 1 $\mu\text{s}$ rise time, 10 $\mu\text{s}$
$t_q$	Turn-off time	$\mu\text{s}$	16; 20; 25 20; 25; 32	$T_{vj}=125^{\circ}\text{C}$ , $I_{TM} = 80 \text{ A}$ $di_R/dt = 10 \text{ A}/\mu\text{s}$ , $U_R=100\text{V}$ $U_D = 0,67 U_{DRM}$ $du_D/dt=50 \text{ V}/\mu\text{s}$ $du_D/dt=200 \text{ V}/\mu\text{s}$
$Q_{rr}$	Recovered charge	$\mu\text{C}$	100	
$t_{rr}$	Reverse recovery time	$\mu\text{s}$	2,5	$T_{vj}=125^{\circ}\text{C}$ , $I_{TM} = 80 \text{ A}$
$I_{rrM}$	Peak reverse recovery current	A	80	$di_R/dt = 50 \text{ A}/\mu\text{s}$ , $U_R=100\text{V}$
$(du_D/dt)_{crit}$	Critical rate of rise of off-state voltage	$\text{V}/\mu\text{s}$	500 1000	$T_{vj}=125^{\circ}\text{C}$ , $U_D = 0,67 U_{DRM}$ Gate open
$R_{thjc}$	Thermal resistance junction to case	$^{\circ}\text{C}/\text{W}$	0,21	Direct current

## ORDERING

	TF	251	80	14	6	5	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 V/ $\mu\text{s}$ , 7  $\geq$  1000 V/ $\mu\text{s}$ ).
6. Group of turn-off time ( $du_D/dt=50 \text{ V}/\mu\text{s}$ , 5  $\leq$  25  $\mu\text{s}$ , 6  $\leq$  20  $\mu\text{s}$ , 7  $\leq$  16  $\mu\text{s}$ ).
7. Group of turn-on time ( 2  $\leq$  3,2  $\mu\text{s}$ ).



Tightening torque : 12 ÷ 18 Nm  
Weight : 150 grams