estel	ESTEL ELEKTROONIKA ESTONIA	January 2010

Series
TF353-1000

High Frequency Inverter grade Capsule Thyristor Type TF353-1000

Low switching losses
Low reverse recovery charge
Distributed amplified gate for high di/dt

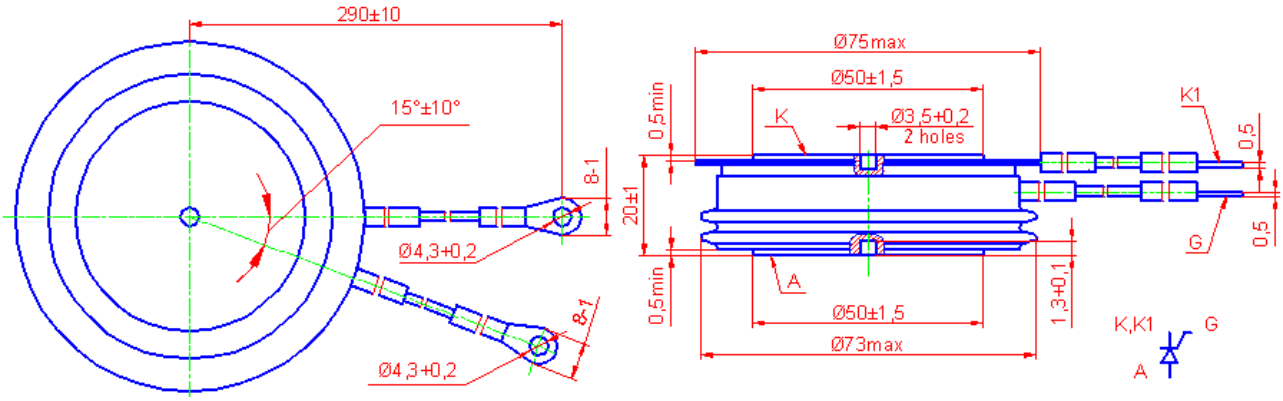
Maximum mean on-state current				I_{TAV}	**1000 A**		
Maximum repetitive peak off-state and reverse voltage				U_{DRM} U_{RRM}	**1200 ÷2000 V**		
Turn-off time				**tq**	**40; 50; 63 µs**		
U_{DRM}, U_{RRM}, V	1200	1300	1400	1500	1600	1800	2000
Voltage code	12	13	14	15	16	18	20
Tvj, °C	- 60 ÷ 125						

MAXIMUM ALLOWABLE RATINGS					
Symbols and parameters		Units	TF353-1000	Conditions	
I_{TAV}	Mean on-state current	A	1000 1395	Tc=82 °C, Tc=55 °C, 180° half-sine wave, 50 Hz	
I_{TRMS}	RMS on-state current	A	1570	Tc=82 °C	
I_{TSM}	Surge on-state current	kA	18 19	Tvj=125°C Tvj=25°C	tp=10 ms U_R=0
I^2t	Limiting load integral	kA^2s	1620 1805	Tvj=125°C Tvj=25°C	
U_{DRM},U_{RRM}	Repetitive peak off-state and reverse voltage	V	1200÷2000	Tj min≤Tvj≤Tjм 180° half-sine wave, 50 Hz Gate open	
U_{DSM},U_{RSM}	Non-repetitive peak off-state and reverse voltage	V	1300÷2100	Tj min≤Tvj≤Tjм 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/µs	2000 1250	Tvj=125°C ; U_D=0,67 U_{DRM}, Gate pulse : 10V,5 Ω, 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	2,35	Tvj=25°C, I_{TM}=3,14 I_{TAV}	
$U_{T(TO)}$	Threshold voltage	V	1,18	Tvj=125°C 1,57 I_{TAV}< I_T <4,71 I_{TAV}	
R_T	On-state slope resistance	mΩ	0,35		
I_{DRM} I_{RRM}	Repetitive peak off-state and reverse current	mA	150 150	Tvj=125°C, U_D = U_{DRM} U_R= U_{RRM}	

CHARACTERISTICS					
Symbols and parameters		Units	TF353-1000	Conditions	
I_L	Latching current	A	15	Tvj=25°C,U_D=12V Gate pulse : 10V, 5Ω, 1 µs rise time, 10µs	
I_H	Holding current	A	1,5	Tvj=25°C,U_D=12V, Gate open	
U_{GT}	Gate trigger direct voltage	V	2,5 5,0	Tvj=25°C, Tvj=-60°C	U_D=12V
I_{GT}	Gate trigger direct current	A	0,3 0,85	Tvj=25°C, 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	
t_{gd}	Delay time	µs	2,5	Tvj=25°C,U_D=500V I_{TM} = 1000 A Gate pulse : 10V, 5Ω, 1 µs rise time, 10µs	
t_{gt}	Turn-on time	µs	4,0		
tq	Turn-off time	µs	40÷63 50÷70	Tvj=125°C, I_{TM}=1000 A di_R/dt =10 A/µs, U_R=100V U_D = 0,67 U_{DRM} du_D/dt=50 V/µs du_D/dt=200 V/µs	
Qrr	Recovered charge	µC	1800	Tvj=125°C, I_{TM}=1000 A di_R/dt=50 A/µs, U_R=100V	
trr	Reverse recovery time	µs	9		
I_{RRM}	Peak reverse recovery current	A	400		
$(du_D/dt)_{crit}$	Critical rate of rise of off-state voltage	V/µs	500 1000	Tvj=125°C, U_D = 0,67 U_{DRM} Gate open	
Rthjc	Thermal resistance junction to case	°C/W	0,021	Direct current, double side cooled	

ORDERING								
	TF	**353**	**1000**	**16**	**7**	**2**	**1**	
	1	**2**	**3**	**4**	**5**	**6**	**7**	

1. Fast thyristor with interdigitated gate structure.
2. Design version.
3. Mean on-state current, A.
4. Voltage code (16=1600V).
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 ≤ 63 µs, 2 ≤ 50 µs, 3 ≤ 40 µs).
7. Group of turn-on time (1 ≤ 4,0µs).



Mounting force : 19 ÷ 28 kN
Weight : 480 grams