



TET ESTEL AS
ESTONIA

January
2015

Series
TFI353-1000

High Frequency Inverter grade
Capsule Thyristor
Type TFI353-1000

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}	2200 ÷ 2800 V		
Turn-off time	t_q	40; 50; 63 μs		
U_{DRM}, U_{RRM}, V	2200	2400	2600	2800
Voltage code	22	24	26	28
$T_{vj}, ^\circ C$	- 60 ÷ 125			

MAXIMUM ALLOWABLE RATINGS

Symbols and parameters		Units	TFI353-1000	Conditions
I_{TAV}	Mean on-state current	A	1000 1190	$T_c=70^\circ C$, $T_c=55^\circ C$, 180° half-sine wave, 50 Hz
I_{TRMS}	RMS on-state current	A	1570	$T_c=70^\circ C$
I_{TSM}	Surge on-state current	kA	19,0 21,0	$T_{vj}=125^\circ C$ $T_{vj}=25^\circ C$ tp=10 ms $U_R=0$
I^2t	Limiting load integral	kA^2s	1805 2205	$T_{vj}=125^\circ C$ $T_{vj}=25^\circ C$
U_{DRM}, U_{RRM}	Repetitive peak off-state and reverse voltage	V	2200÷2800	$T_j \min \leq T_{vj} \leq T_{jM}$ 180° half-sine wave, 50 Hz Gate open
U_{DSM}, U_{RSM}	Non-repetitive peak off-state and reverse voltage	V	2300÷2900	$T_j \min \leq T_{vj} \leq T_{jM}$ 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/ μ s	2000 1250	$T_{vj}=125^\circ C$; $U_D=0,67 U_{DRM}$, Gate pulse : 10V,5 Ω , 1 μ s rise time, 10 μ 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	2,8	$T_{vj}=25^\circ C$, $I_{TM}=3,14 I_{TAV}$
$U_{T(To)}$	Threshold voltage	V	1,65	$T_{vj}=125^\circ C$
R_T	On-state slope resistance	m Ω	0,44	1,57 $I_{TAV} < I_T < 4,71 I_{TAV}$
I_{DRM} I_{RRM}	Repetitive peak off-state and reverse current	mA	100 100	$T_{vj}=125^\circ C$, $U_D = U_{DRM}$ $U_R = U_{RRM}$

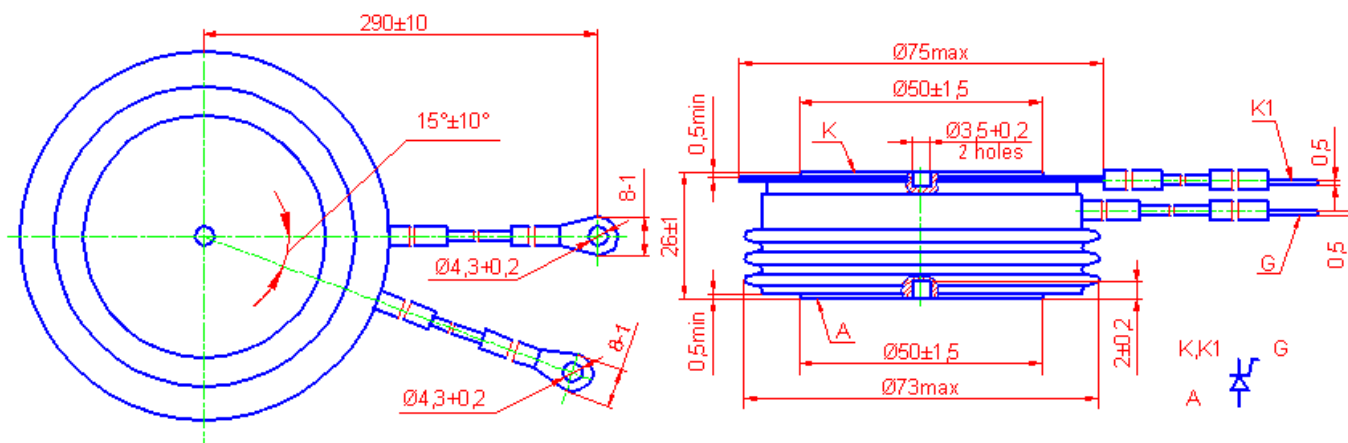
CHARACTERISTICS

Symbols and parameters		Units	TFI353-1000	Conditions
I_L	Latching current	A	15	$T_{vj}=25^{\circ}\text{C}, U_D=12\text{V}$ Gate pulse : 10V, 5 Ω , 1 μs rise time, 10 μs
I_H	Holding current	A	0,5	$T_{vj}=25^{\circ}\text{C}, U_D=12\text{V}$, Gate open
U_{GT}	Gate trigger direct voltage	V	2,5 5,0	$T_{vj}=25^{\circ}\text{C}$, $T_{vj}=-60^{\circ}\text{C}$ $U_D=12\text{V}$
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	0,25	$T_{vj}=125^{\circ}\text{C}$, $U_D = 0,67 U_{DRM}$
I_{GD}	Gate non-trigger direct current	mA	10	Direct gate current
t_{gd}	Delay time	μs	2,5	$T_{vj}=25^{\circ}\text{C}, U_D=500\text{V}$ $I_{TM}=1000\text{ A}$
t_{gt}	Turn-on time	μs	4,0	Gate pulse : 10V, 5 Ω , 1 μs rise time, 10 μs
t_q	Turn-off time	μs	40; 50; 63 50; 63; 80	$T_{vj}=125^{\circ}\text{C}$, $I_{TM}=1000\text{ A}$ $di_R/dt = 10\text{ A}/\mu\text{s}$, $U_R=100\text{V}$ $U_D = 0,67 U_{DRM}$ $du_D/dt=50\text{ V}/\mu\text{s}$ $du_D/dt=200\text{ V}/\mu\text{s}$
Q_{rr}	Recovered charge	μC	900	$T_{vj}=125^{\circ}\text{C}$, $I_{TM}=1000\text{ A}$ $di_R/dt = 50\text{ A}/\mu\text{s}$, $U_R=100\text{V}$
t_{rr}	Reverse recovery time	μs	7,0	
I_{rrM}	Peak reverse recovery current	A	255	
$(du_D/dt)_{crit}$	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	$^{\circ}\text{C}/\text{W}$	0,02	Direct current, double side cooled

ORDERING

	TFI	353	1000	28	7	3	1	
	1	2	3	4	5	6	7	

- Fast thyristor with interdigitated gate structure.
- Design version.
- Mean on-state current, A.
- Voltage code (28=2800 V).
- Critical rate of rise of off-state voltage (6 \geq 500 V/ μs , 7 \geq 1000 V/ μs).
- Group of turn-off time ($du_D/dt=50\text{ V}/\mu\text{s}$, 1 \leq 63 μs , 2 \leq 50 μs , 3 \leq 40 μs).
- Group of turn-on time (1 \leq 4 μs).



Mounting force : 19 ÷ 28 kN

Weight : 580 grams