



**THE DATASHEET OF  
TFI153-1250-15\_26MM**





**TET ESTEL AS**  
ESTONIA

**May**  
**2016**

**Series**  
**TFI153-1250**

## High Frequency Inverter grade Capsule Thyristor Type TFI153-1250

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

Maximum mean on-state current					$I_{TAV}$	<b>1250 A</b>		
Maximum repetitive peak off-state and reverse voltage					$U_{DRM}$	<b>800 ÷ 1500 V</b>		
Turn-off time					$U_{RRM}$			
					$t_q$	<b>16; 20; 25 ; 32 <math>\mu</math>s</b>		
$U_{DRM}, U_{RRM}, V$	800	900	1000	1100	1200	1300	1400	1500
Voltage code	8	9	10	11	12	13	14	15
$T_{vj}, ^\circ C$	- 60 ÷ 125							

### MAXIMUM ALLOWABLE RATINGS

Symbols and parameters		Units	TFI153-1250	Conditions
$I_{TAV}$	Mean on-state current	A	1250 1600	$T_c=75^\circ C$ , $T_c=55^\circ C$ , 180° half-sine wave, 50 Hz
$I_{TRMS}$	RMS on-state current	A	1960	$T_c=75^\circ C$
$I_{TSM}$	Surge on-state current	kA	22,0 25,0	$T_{vj}=125^\circ C$ $T_{vj}=25^\circ C$
$I^2t$	Limiting load integral	$kA^2s$	2420 3125	$T_{vj}=125^\circ C$ $T_{vj}=25^\circ C$ tp=10 ms $U_R=0$
$U_{DRM}, U_{RRM}$	Repetitive peak off-state and reverse voltage	V	800÷1500	$T_j \min \leq T_{vj} \leq T_{jM}$ 180° half-sine wave, 50 Hz Gate open
$U_{DSM}, U_{RSM}$	Non-repetitive peak off-state and reverse voltage	V	880÷1600	$T_j \min \leq T_{vj} \leq T_{jM}$ 180° half-sine wave tp=10 ms, Single pulse Gate open
(di/dt) crit	Critical rate of rise of on-state current : non - repetitive repetitive	$A/\mu s$	2000 1250	$T_{vj}=125^\circ C$ ; $U_D=0,67 U_{DRM}$ , 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	2,1	$T_{vj}=25^\circ C$ , $I_{TM}=3,14 I_{TAV}$
$U_{T(To)}$	Threshold voltage	V	1,16	$T_{vj}=125^\circ C$
$R_T$	On-state slope resistance	$m\Omega$	0,23	1,57 $I_{TAV} < I_T < 4,71 I_{TAV}$
$I_{DRM}$ $I_{RRM}$	Repetitive peak off-state and reverse current	mA	80 80	$T_{vj}=125^\circ C$ , $U_D = U_{DRM}$ $U_R = U_{RRM}$

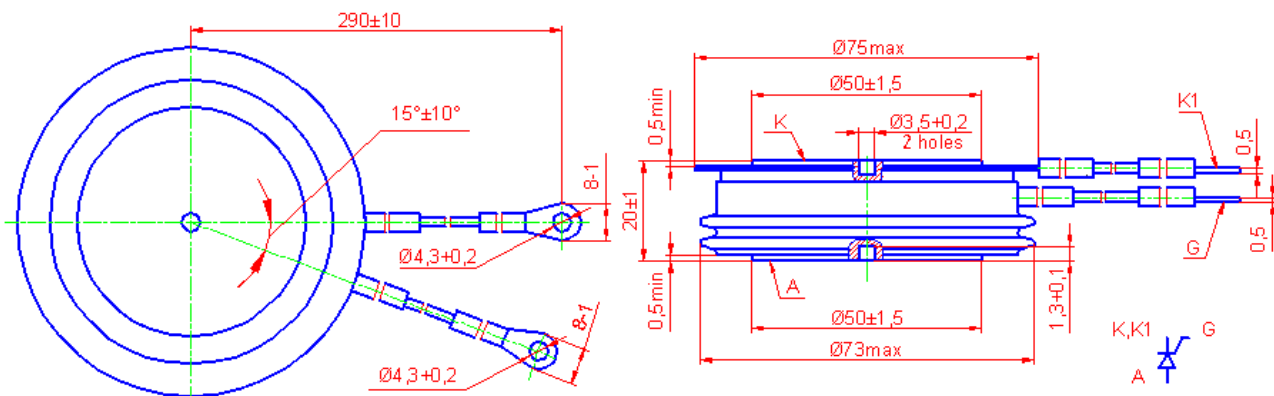
## CHARACTERISTICS

Symbols and parameters		Units	TFI153-1250	Conditions
$I_L$	Latching current	A	10	$T_{vj}=25^{\circ}\text{C}, U_D=12\text{V}$ Gate pulse : 10V, 5 $\Omega$ , 1 $\mu\text{s}$ rise time, 10 $\mu\text{s}$
$I_H$	Holding current	A	0,5	$T_{vj}=25^{\circ}\text{C}, U_D=12\text{V}, \text{Gate open}$
$U_{GT}$	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	0,3 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
tgd	Delay time	$\mu\text{s}$	2,0	$T_{vj}=25^{\circ}\text{C}, U_D=500\text{V}$ $I_{TM} = 1250 \text{ A}$
tgt	Turn-on time	$\mu\text{s}$	3,2	Gate pulse : 10V, 5 $\Omega$ , 1 $\mu\text{s}$ rise time, 10 $\mu\text{s}$
tq	Turn-off time	$\mu\text{s}$	16÷32 20÷40	$T_{vj}=125^{\circ}\text{C}, I_{TM}=1250 \text{ A}$ $di_R/dt = 10 \text{ A}/\mu\text{s}, U_R=100\text{V}$ $U_D = 0,67 U_{DRM}$ $du_D/dt=50 \text{ V}/\mu\text{s}$ $du_D/dt=200 \text{ V}/\mu\text{s}$
Qrr	Recovered charge	$\mu\text{C}$	300	$T_{vj}=125^{\circ}\text{C}, I_{TM}=1250 \text{ A}$ $di_R/dt = 50 \text{ A}/\mu\text{s}, U_R=100\text{V}$
trr	Reverse recovery time	$\mu\text{s}$	4,5	
Irrm	Peak reverse recovery current	A	135	
( $du_D/dt$ )crit	Critical rate of rise of off-state voltage	V/ $\mu\text{s}$	500 1000	$T_{vj}=125^{\circ}\text{C}, U_D = 0,67 U_{DRM}$ Gate open
Rthjc	Thermal resistance junction to case	$^{\circ}\text{C}/\text{W}$	0,021	Direct current, double side cooled

## ORDERING

	TFI	153	1250	14	7	6	2	
	1	2	3	4	5	6	7	



- Fast thyristor with interdigitated gate structure.
- Design version.
- Mean on-state current, A.
- Voltage code (14=1400 V).
- Critical rate of rise of off-state voltage ( $6 \geq 500 \text{ V}/\mu\text{s}$ ,  $7 \geq 1000 \text{ V}/\mu\text{s}$ ).
- Group of turn-off time ( $du_D/dt=50 \text{ V}/\mu\text{s}$ ,  $4 \leq 32 \mu\text{s}$ ,  $5 \leq 25 \mu\text{s}$ ,  $6 \leq 20 \mu\text{s}$ ,  $7 \leq 16 \mu\text{s}$ ).
- Group of turn-on time ( $2 \leq 3,2 \mu\text{s}$ ).



Mounting force : 19 ÷ 28 kN  
Weight : 480 grams

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