

**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	$I_{TAV}$	<b>1000 A</b>					
Maximum repetitive peak off-state and reverse voltage	$U_{DRM}$ $U_{RRM}$	<b>1200 +2000 V</b>					
Turn-off time	$t_q$	<b>40; 50; 63 <math>\mu</math>s</b>					
$U_{DRM}, U_{RRM}, V$	1200	1300	1400	1500	1600	1800	2000
Voltage code	12	13	14	15	16	18	20
$T_{vj}, ^\circ C$	- 60 ÷ 125						

**MAXIMUM ALLOWABLE RATINGS**

Symbols and parameters		Units	TF353-1000	Conditions
$I_{TAV}$	Mean on-state current	A	1000 1395	$T_c=82^\circ C$ , $T_c=55^\circ C$ , 180° half-sine wave, 50 Hz
$I_{TRMS}$	RMS on-state current	A	1570	$T_c=82^\circ C$
$I_{TSM}$	Surge on-state current	kA	18 19	$T_{vj}=125^\circ C$ $T_{vj}=25^\circ C$ $t_p=10$ ms $U_R=0$
$I^2t$	Limiting load integral	$kA^2s$	1620 1805	$T_{vj}=125^\circ C$ $T_{vj}=25^\circ C$
$U_{DRM}, U_{RRM}$	Repetitive peak off-state and reverse voltage	V	1200÷2000	$T_j \min \leq T_{vj} \leq T_{jM}$ 180° half-sine wave, 50 Hz Gate open
$U_{DSM}, U_{RSM}$	Non-repetitive peak off-state and reverse voltage	V	1300÷2100	$T_j \min \leq T_{vj} \leq T_{jM}$ 180° half-sine wave $t_p=10$ 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	

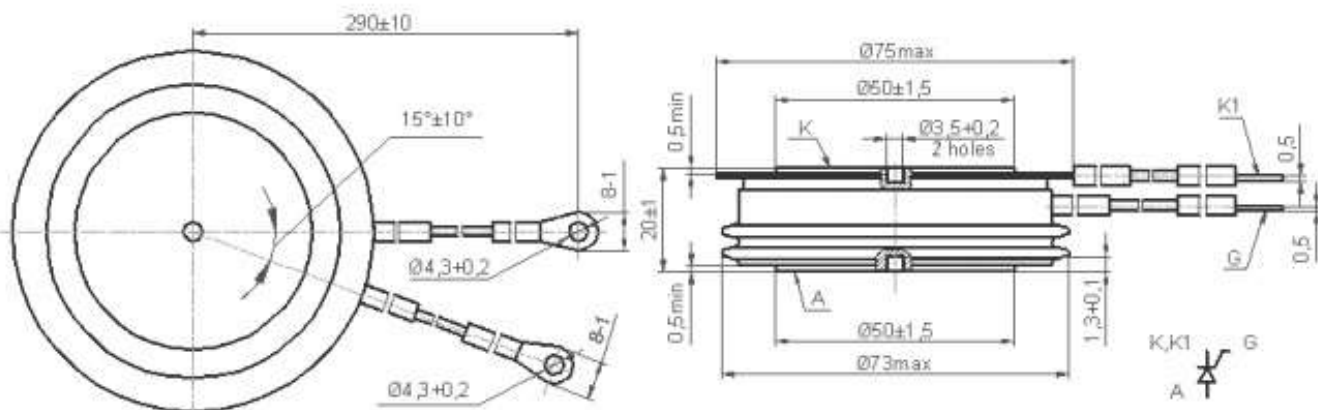
**CHARACTERISTICS**

$U_{TM}$	Peak on-state voltage	V	2,35	$T_{vj}=25^\circ C$ , $I_{TM}=3,14 I_{TAV}$
$U_{T(To)}$	Threshold voltage	V	1,18	$T_{vj}=125^\circ C$
$R_T$	On-state slope resistance	m $\Omega$	0,35	1,57 $I_{TAV} < I_T < 4,71 I_{TAV}$
$I_{DRM}$ $I_{RRM}$	Repetitive peak off-state and reverse current	mA	150 150	$T_{vj}=125^\circ C$ , $U_D = U_{DRM}$ $U_R = U_{RRM}$

CHARACTERISTICS				
Symbols and parameters		Units	TF353-1000	Conditions
$I_L$	Latching current	A	15	$T_{vj}=25^{\circ}\text{C}, U_D=12\text{V}$ Gate pulse : 10V, 5 $\mu\text{s}$ , 1 $\mu\text{s}$ rise time, 10 $\mu\text{s}$
$I_H$	Holding current	A	1,5	$T_{vj}=25^{\circ}\text{C}, U_D=12\text{V}$ , 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
tgd	Delay time	$\mu\text{s}$	2,5	$T_{vj}=25^{\circ}\text{C}, U_D=500\text{V}$ $I_{TM} = 1000\text{ A}$
tgt	Turn-on time	$\mu\text{s}$	4,0	Gate pulse : 10V, 5 $\mu\text{s}$ , 1 $\mu\text{s}$ rise time, 10 $\mu\text{s}$
tq	Turn-off time	$\mu\text{s}$	40÷63 50÷70	$T_{vj}=125^{\circ}\text{C}, I_{TM}=1000\text{ A}$ $di_R/dt=10\text{ A}/\mu\text{s}, U_R=100\text{V}$ $U_D = 0,67 U_{DRM}$ $du_D/dt=50\text{ V}/\mu\text{s}$ $du_D/dt=200\text{ V}/\mu\text{s}$
Qrr	Recovered charge	$\mu\text{C}$	1800	$T_{vj}=125^{\circ}\text{C}, I_{TM}=1000\text{ A}$ $di_R/dt=50\text{ A}/\mu\text{s}, U_R=100\text{V}$
trr	Reverse recovery time	$\mu\text{s}$	9	
Irrm	Peak reverse recovery current	A	400	
( $du_D/dt$ )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							
	<b>TF</b>	<b>353</b>	<b>1000</b>	<b>16</b>	<b>7</b>	<b>2</b>	<b>1</b>
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>

- Fast thyristor with interdigitated gate structure.
- Design version.
- Mean on-state current, A.
- Voltage code (16=1600V).
- Critical rate of rise of off-state voltage (6  $\geq$  500 V/ $\mu\text{s}$ , 7  $\geq$  1000 V/ $\mu\text{s}$ ).
- Group of turn-off time ( $du_D/dt=50\text{ V}/\mu\text{s}$ , 1  $\leq$  63  $\mu\text{s}$ , 2  $\leq$  50  $\mu\text{s}$ , 3  $\leq$  40  $\mu\text{s}$ ).
- Group of turn-on time (1  $\leq$  4,0 $\mu\text{s}$ ).



Mounting force : 19 + 28 kN  
Weight : 480 grams