



Pressure contact  
 Low switching losses  
 Low reverse recovery charge  
 High power cycling capability  
 Distributed amplified gate for high  $di_T/dt$

## Fast Stud Thyristor Type TFI371-250-14

Mean on-state current	$I_{TAV}$	250 A	
Repetitive peak off-state voltage	$V_{DRM}$	1000 ÷ 1400 V	
Repetitive peak reverse voltage	$V_{RRM}$		
Turn-off time	$t_q$	25.0; 32.0 $\mu$ s	
$V_{DRM}, V_{RRM}, V$	1000	1200	1400
Voltage code	10	12	14
$T_j, ^\circ C$	- 60 ÷ 125		

### MAXIMUM ALLOWABLE RATINGS

Symbols and parameters		Units	Values	Test conditions
<b>ON-STATE</b>				
$I_{TAV}$	Mean on-state current	A	250 440	$T_c=93^\circ C$ ; $T_c=55^\circ C$ ; 180° half-sine wave; 50 Hz
$I_{TRMS}$	RMS on-state current	A	393	$T_c=93^\circ C$ ; 180° half-sine wave; 50 Hz
$I_{TSM}$	Surge on-state current	kA	7.0 8.1	180° half-sine wave; 50 Hz ( $t_p=10$ ms); single pulse; $V_D=V_R=0$ V; Gate pulse: $I_G=I_{FGM}$ ; $V_G=20$ V; $t_{GP}=50$ $\mu$ s; $di_G/dt=1$ A/ $\mu$ s
			8.0 9.2	180° half-sine wave; 60 Hz ( $t_p=8.3$ ms); single pulse; $V_D=V_R=0$ V; Gate pulse: $I_G=I_{FGM}$ ; $V_G=20$ V; $t_{GP}=50$ $\mu$ s; $di_G/dt=1$ A/ $\mu$ s
$I^2t$	Safety factor	$A^2s \cdot 10^3$	245 325	180° half-sine wave; 50 Hz ( $t_p=10$ ms); single pulse; $V_D=V_R=0$ V; Gate pulse: $I_G=I_{FGM}$ ; $V_G=20$ V; $t_{GP}=50$ $\mu$ s; $di_G/dt=1$ A/ $\mu$ s
			265 350	180° half-sine wave; 60 Hz ( $t_p=8.3$ ms); single pulse; $V_D=V_R=0$ V; Gate pulse: $I_G=I_{FGM}$ ; $V_G=20$ V; $t_{GP}=50$ $\mu$ s; $di_G/dt=1$ A/ $\mu$ s
<b>BLOCKING</b>				
$V_{DRM}, V_{RRM}$	Repetitive peak off-state and Repetitive peak reverse voltages	V	1000÷1400	$T_{j\ min} < T_j < T_{j\ max}$ ; 180° half-sine wave; 50 Hz; Gate open
$V_{DSM}, V_{RSM}$	Non-repetitive peak off-state and Non-repetitive peak reverse voltages	V	1100÷1500	$T_{j\ min} < T_j < T_{j\ max}$ ; 180° half-sine wave; 50 Hz; single pulse; Gate open
$V_D, V_R$	Direct off-state and Direct reverse voltages	V	0.75· $V_{DRM}$ 0.75· $V_{RRM}$	$T_j=T_{j\ max}$ ; Gate open

<b>TRIGGERING</b>				
$I_{FGM}$	Peak forward gate current	A	6	$T_j = T_{j\ max}$
$V_{RGM}$	Peak reverse gate voltage	V	5	
$P_G$	Gate power dissipation	W	3	$T_j = T_{j\ max}$ for DC gate current
<b>SWITCHING</b>				
$(di_T/dt)_{crit}$	Critical rate of rise of on-state current non-repetitive (f=1 Hz)	A/ $\mu$ s	1600	$T_j = T_{j\ max}; V_D = 0.67 \cdot V_{DRM}; I_{TM} = 2 I_{TAV};$ Gate pulse: $I_G = I_{FGM}; V_G = 20\ V;$ $t_{GP} = 50\ \mu s; di_G/dt = 1\ A/\mu s$
<b>THERMAL</b>				
$T_{stg}$	Storage temperature	$^{\circ}C$	-60 ÷ 125	
$T_j$	Operating junction temperature	$^{\circ}C$	-60 ÷ 125	
<b>MECHANICAL</b>				
M	Tightening torque	Nm	25 ÷ 35	
a	Acceleration	m/s <sup>2</sup>	100	

## CHARACTERISTICS

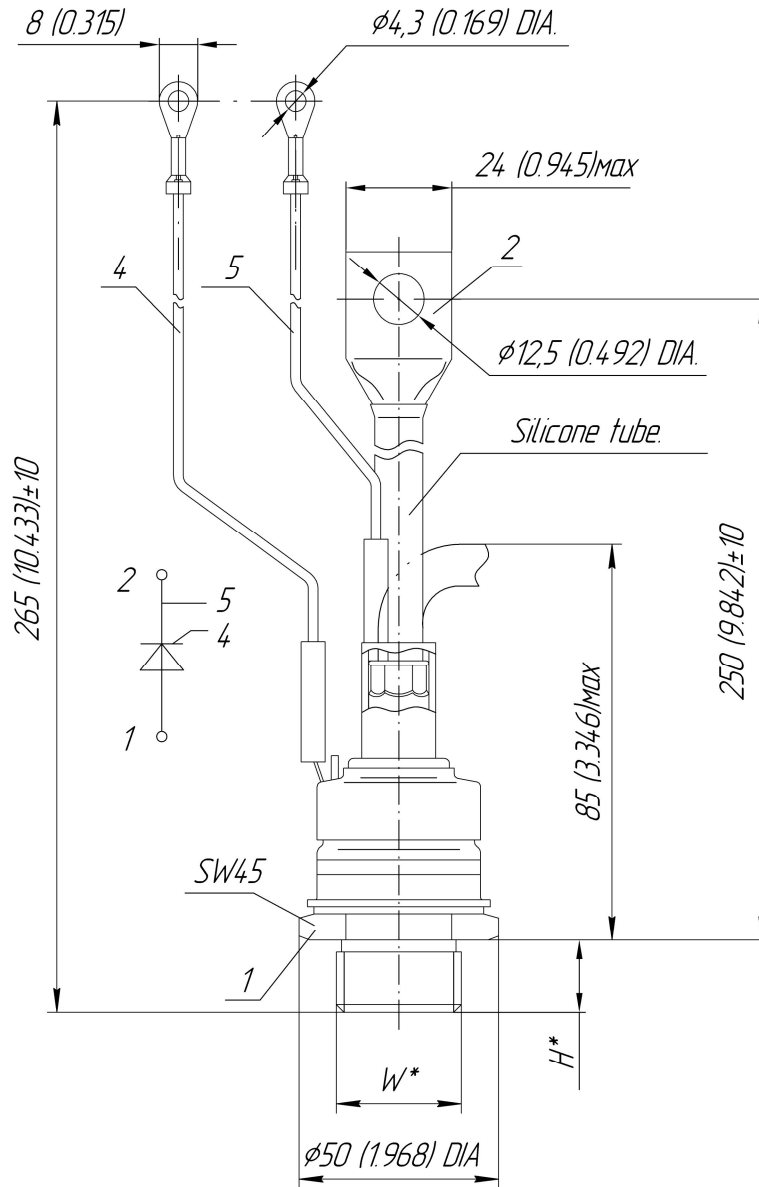
Symbols and parameters		Units	Values	Conditions	
<b>ON-STATE</b>					
$V_{TM}$	Peak on-state voltage, max	V	1.70	$T_j = 25\ ^{\circ}C; I_{TM} = 785\ A$	
$V_{T(TO)}$	On-state threshold voltage, max	V	1.05	$T_j = T_{j\ max};$	
$r_T$	On-state slope resistance, max	m $\Omega$	0.850	$0.5\ \pi\ I_{TAV} < I_T < 1.5\ \pi\ I_{TAV}$	
$I_H$	Holding current, max	mA	500	$T_j = 25\ ^{\circ}C;$ $V_D = 12\ V;$ Gate open	
<b>BLOCKING</b>					
$I_{DRM}, I_{RRM}$	Repetitive peak off-state and Repetitive peak reverse currents, max	mA	70	$T_j = T_{j\ max};$ $V_D = V_{DRM}; V_R = V_{RRM}$	
$(dv_D/dt)_{crit}$	Critical rate of rise of off-state voltage <sup>1)</sup> , min	V/ $\mu$ s	1000	$T_j = T_{j\ max};$ $V_D = 0.67 \cdot V_{DRM};$ Gate open	
<b>TRIGGERING</b>					
$V_{GT}$	Gate trigger direct voltage, max	V	4.00 2.50 2.00	$T_j = T_{j\ min}$ $T_j = 25\ ^{\circ}C$ $T_j = T_{j\ max}$	$V_D = 12\ V; I_D = 3\ A;$ Direct gate current
$I_{GT}$	Gate trigger direct current, max	mA	400 250 200	$T_j = T_{j\ min}$ $T_j = 25\ ^{\circ}C$ $T_j = T_{j\ max}$	
$V_{GD}$	Gate non-trigger direct voltage, min	V	0.25	$T_j = T_{j\ max};$	
$I_{GD}$	Gate non-trigger direct current, min	mA	10.00	$V_D = 0.67 \cdot V_{DRM};$ Direct gate current	
<b>SWITCHING</b>					
$t_{gd}$	Delay time	$\mu$ s	2.00	$T_j = 25\ ^{\circ}C; V_D = 0.4 \cdot V_{DRM}; I_{TM} = I_{TAV};$ Gate pulse: $I_G = I_{FGM}; V_G = 20\ V;$ $t_{GP} = 50\ \mu s; di_G/dt = 1\ A/\mu s$	
$t_q$	Turn-off time <sup>2)</sup> , max	$\mu$ s	25.0; 32.0	$dv_D/dt = 50\ V/\mu s; T_j = T_{j\ max}; I_{TM} = I_{TAV};$ $di_R/dt = -10\ A/\mu s; V_R = 100V;$ $V_D = 0.67\ V_{DRM}$	
$Q_{rr}$	Total recovered charge, max	$\mu$ C	200	$T_j = T_{j\ max}; I_{TM} = I_{TAV};$	
$t_{rr}$	Reverse recovery time, typ	$\mu$ s	4.0	$di_R/dt = -50\ A/\mu s;$	
$I_{rrM}$	Peak reverse recovery current, max	A	100	$V_R = 100\ V$	

<b>THERMAL</b>				
$R_{thjc}$	Thermal resistance, junction to case, max	$^{\circ}\text{C}/\text{W}$	0.0800	Direct current
<b>MECHANICAL</b>				
w	Weight, typ	g	440	
$D_s$	Surface creepage distance	mm (inch)	12.4 (4.882)	
$D_a$	Air strike distance	mm (inch)	12.4 (4.882)	

<b>NOTES</b>		<b>PART NUMBERING GUIDE</b>																												
<sup>1)</sup> Critical rate of rise of off-state voltage <table border="1"> <tr> <td>Symbol of group</td> <td colspan="2">A2</td> </tr> <tr> <td><math>(dv_D/dt)_{crit,r}</math> V/<math>\mu\text{s}</math></td> <td colspan="2">1000</td> </tr> </table>		Symbol of group	A2		$(dv_D/dt)_{crit,r}$ V/ $\mu\text{s}$	1000		<table border="1"> <tr> <td>TFI</td> <td>371</td> <td>250</td> <td>14</td> <td>A2</td> <td>M3</td> <td colspan="2">N</td> </tr> <tr> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>6</td> <td colspan="2">7</td> </tr> </table>							TFI	371	250	14	A2	M3	N		1	2	3	4	5	6	7	
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<sup>2)</sup> Turn-off time ( $dv_D/dt=50$ V/ $\mu\text{s}$ ) <table border="1"> <tr> <td>Symbol of group</td> <td>M3</td> <td>K3</td> </tr> <tr> <td><math>t_{qr}</math> <math>\mu\text{s}</math></td> <td>25.0</td> <td>32.0</td> </tr> </table>		Symbol of group	M3	K3	$t_{qr}$ $\mu\text{s}$	25.0	32.0	<ol style="list-style-type: none"> <li>High Frequency Inverter Grade Thyristor</li> <li>Design version</li> <li>Mean on-state current, A</li> <li>Voltage code</li> <li>Critical rate of rise of off-state voltage</li> <li>Group of turn-off time (<math>dv_D/dt=50</math> V/<math>\mu\text{s}</math>)</li> <li>Ambient conditions: N – normal; T – tropical</li> </ol>																						
Symbol of group	M3	K3																												
$t_{qr}$ $\mu\text{s}$	25.0	32.0																												

**OVERALL DIMENSIONS**

**Package type: T.SB2**



Type of screw	W	H
Metric Screw Type C	M24x1,5	18
Metric Screw Type B (upon request)	M20x1,5	18

Polarity	Example of code designation	Reference designation	Colors		
			Anode	Cathode	Gate
Anode to stud	TFI371-250-14		-	Red tube	White

All dimensions in millimeters (inches)

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