



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of "Quality Parts,Customers Priority,Honest Operation,and Considerate Service",our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



## Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



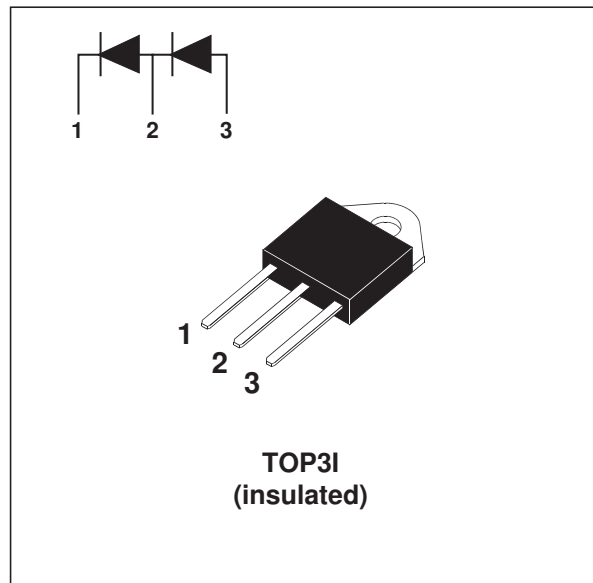
## Tandem 600V Hyperfast Rectifier

### MAJOR PRODUCTS CHARACTERISTICS

$I_{F(AV)}$	15 A
$V_{RRM}$	600 V (in series)
$T_j$ (max)	150 °C
$V_F$ (max)	2.6 V
$I_{RM}$ (typ.)	4.8 A

### FEATURES AND BENEFITS

- Especially suited as boost diode in continuous mode power factor correctors and hard switching conditions.
- Designed for high di/dt operation. Hyperfast recovery current to compete with GaAs devices. Allows downsizing of mosfet and heatsinks.
- Internal ceramic insulated devices with equal thermal conditions for both 300V diodes.
- Insulation (2500V RMS) allows placement on same heatsink as mosfet and flexible heatsinking on common or separate heatsink.
- Matched diodes for typical PFC application without need for voltage balance network.
- $C = 7\text{pF}$



### DESCRIPTION

The TURBOSWITCH "H" is an ultra high performance diode composed of two 300V dice in series. TURBOSWITCH "H" family drastically cuts losses in the associated MOSFET when run at high  $di/dt$ .

### ABSOLUTE RATINGS (limiting values for both diodes in series)

Symbol	Parameter		Value	Unit
$V_{RRM}$	Repetitive peak reverse voltage		600	V
$I_{F(RMS)}$	RMS forward current		26	A
$I_{FSM}$	Surge non repetitive forward current	tp = 10 ms sinusoidal	130	A
$T_{stg}$	Storage temperature range		-65 +150	°C
$T_j$	Maximum operating junction temperature		+ 150	°C

## STTH1506TPI

### THERMAL AND POWER DATA

Symbol	Parameter	Test conditions	Value	Unit
$R_{th(j-c)}$	Junction to case	Per diode	2.9	°C/W
$R_{th(c)}$		Coupling	0.3	
$R_{th(j-c)}$	Junction to case	Total	1.6	
$P_1$	Conduction power dissipation for both diodes	$I_{F(AV)} = 15\text{ A}$ $\delta = 0.5$ $T_c = 70^\circ\text{C}$	50	W

### STATIC ELECTRICAL CHARACTERISTICS (for both diodes)

Symbol	Parameter	Tests Conditions	Min.	Typ.	Max.	Unit
$I_R^*$	Reverse leakage current	$V_R = V_{RRM}$	$T_j = 25^\circ\text{C}$		20	$\mu\text{A}$
			$T_j = 125^\circ\text{C}$		30	
$V_F^{**}$	Forward voltage drop	$I_F = 15\text{ A}$	$T_j = 25^\circ\text{C}$		3.6	V
			$T_j = 125^\circ\text{C}$		2.1	

Pulse test: \*  $t_p = 5\text{ms}$ ,  $\delta < 2\%$

\*\*  $t_p = 380\mu\text{s}$ ,  $\delta < 2\%$

To evaluate the maximum conduction losses use the following equation:

$$P = 1.8 \times I_{F(AV)} + 0.053 \times I_{F(RMS)}^2$$

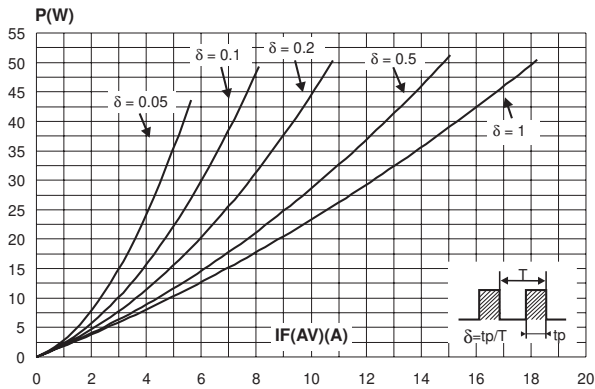
### RECOVERY CHARACTERISTICS

Symbol	Parameter	Tests Conditions	Min.	Typ.	Max.	Unit	
$t_{rr}$	Reverse recovery time	$I_F = 0.5\text{ A}$ $I_{rr} = 0.25\text{ A}$ $I_R = 1\text{ A}$	$T_j = 25^\circ\text{C}$		16	ns	
		$I_F = 1\text{ A}$ $dI_F/dt = -50\text{ A}/\mu\text{s}$ $V_R = 30\text{ V}$					35
$I_{RM}$	Reverse recovery current	$V_R = 400\text{ V}$ $I_F = 15\text{ A}$ $dI_F/dt = -200\text{ A}/\mu\text{s}$	$T_j = 125^\circ\text{C}$		4.8	6.0	A
$S_{factor}$					0.4		-

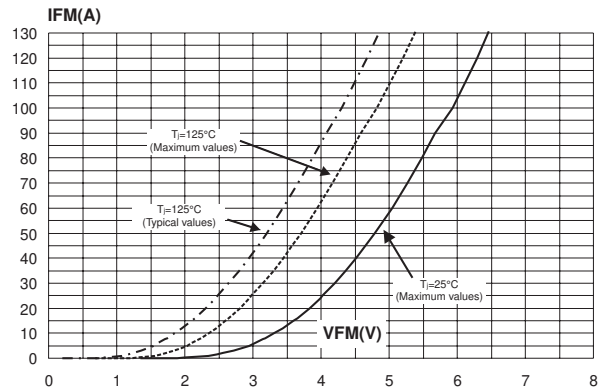
### TURN-ON SWITCHING CHARACTERISTICS

Symbol	Parameter	Tests Conditions	Min.	Typ.	Max.	Unit
$t_{fr}$	Forward recovery time	$I_F = 15\text{ A}$ $dI_F/dt = 100\text{ A}/\mu\text{s}$ , $V_{FR} = 1.1 \times V_{Fmax}$			200	ns
$V_{FP}$	Forward recovery voltage	$I_F = 15\text{ A}$ $dI_F/dt = 100\text{ A}/\mu\text{s}$			6	V

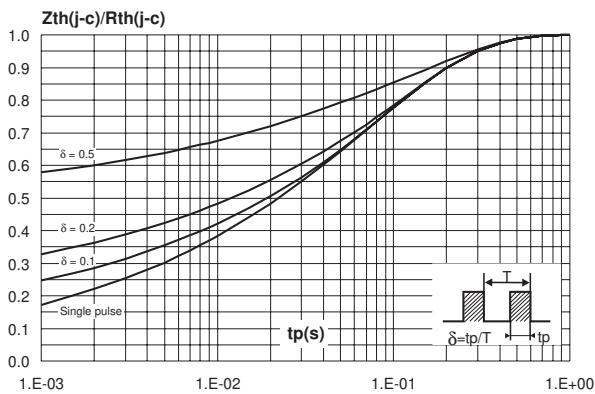
**Fig. 1:** Conduction losses versus average current.



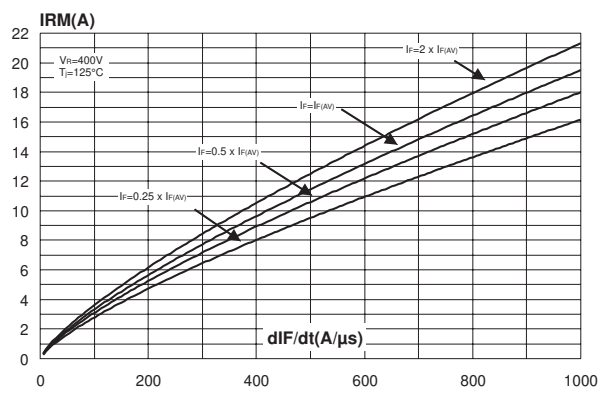
**Fig. 2:** Forward voltage drop versus forward current.



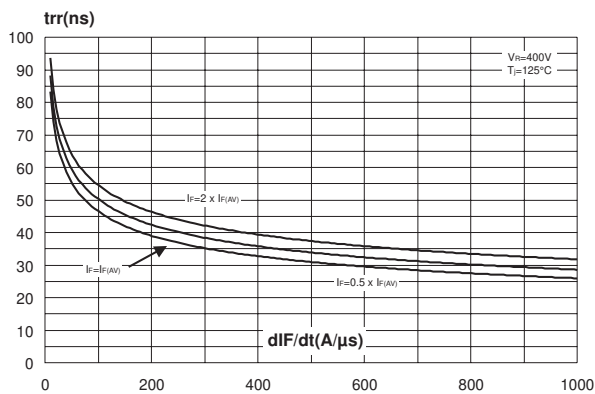
**Fig. 3:** Relative variation of thermal impedance junction to case versus pulse duration.



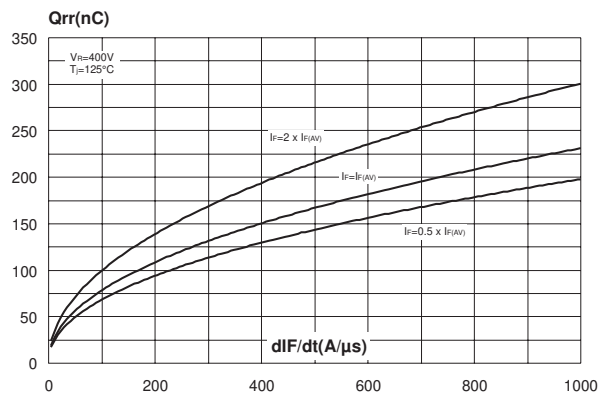
**Fig. 4:** Peak reverse recovery current versus dIF/dt (90% confidence).



**Fig. 5:** Reverse recovery time versus dIF/dt (90% confidence).

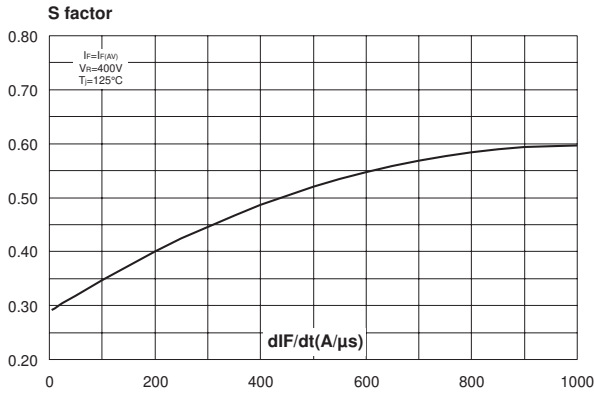


**Fig. 6:** Reverse recovery charges versus dIF/dt (90% confidence).

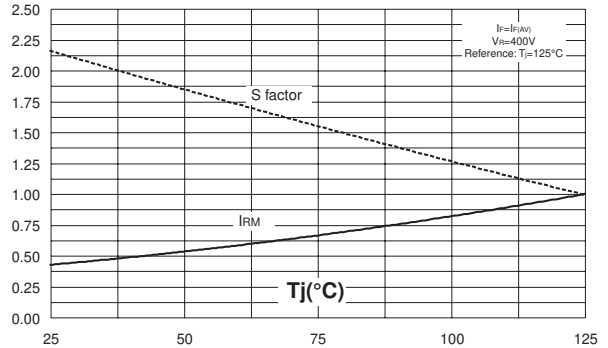




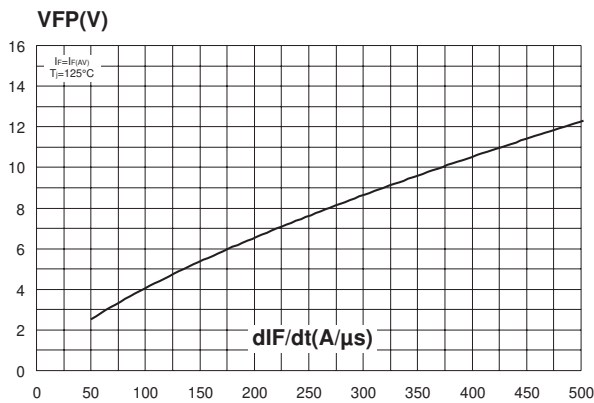
**Fig. 7:** Softness factor versus  $dI_F/dt$  (typical values).



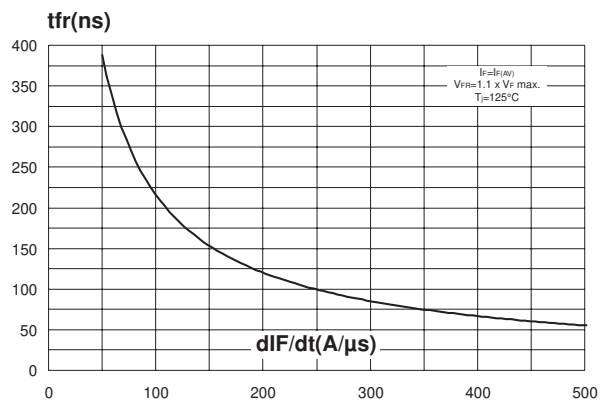
**Fig. 8:** Relative variations of dynamic parameters versus junction temperature.



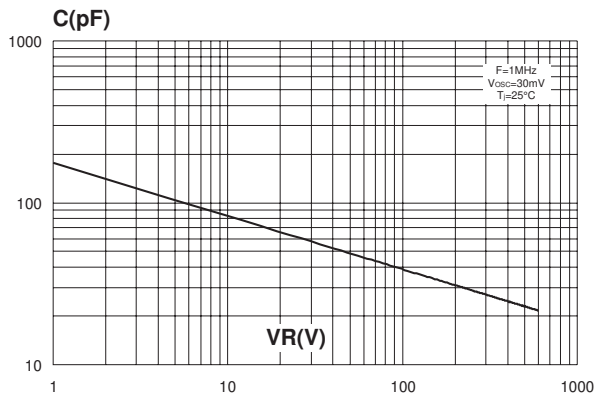
**Fig. 9:** Transient peak forward voltage versus  $dI_F/dt$  (90% confidence).



**Fig. 10:** Forward recovery time versus  $dI_F/dt$  (90% confidence).



**Fig. 11:** Junction capacitance versus reverse voltage applied (typical values).



**PACKAGE MECHANICAL DATA**  
 TOP3I

REF.	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.4		4.6	0.173		0.181
B	1.45		1.55	0.057		0.061
C	14.35		15.60	0.565		0.614
D	0.5		0.7	0.020		0.028
E	2.7		2.9	0.106		0.114
F	15.8		16.5	0.622		0.650
G	20.4		21.1	0.815		0.831
H	15.1		15.5	0.594		0.610
J	5.4		5.65	0.213		0.222
K	3.4		3.65	0.134		0.144
L	4.08		4.17	0.161		0.164
P	1.20		1.40	0.047		0.055
R		4.60			0.181	

Ordering code	Marking	Package	Weight	Base qty	Delivery mode
STTH1506TPI	STTH1506TPI	TOP3I	4.46 g.	30	Tube

- Epoxy meets UL94,V0

Information furnished is believed to be accurate and reliable. However, STMicroelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of STMicroelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. STMicroelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of STMicroelectronics.

The ST logo is a registered trademark of STMicroelectronics  
 © 2002 STMicroelectronics - Printed in Italy - All rights reserved.  
 STMicroelectronics GROUP OF COMPANIES  
 Australia - Brazil - Canada - China - Finland - France - Germany  
 Hong Kong - India - Israel - Italy - Japan - Malaysia - Malta - Morocco - Singapore  
 Spain - Sweden - Switzerland - United Kingdom - United States.

<http://www.st.com>