THE DATASHEET OF

STTH3006TPI

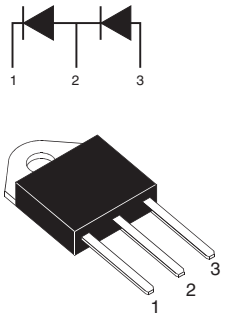
www.win-source.net 0086-755-83957316

STTH3006TPI

Tandem 600V HYPERFAST RECTIFIER

MAJOR PRODUCTS CHARACTERISTICS

$I_{F(AV)}$	30 A
V_{RRM}	600 V (in series)
Tj (max)	150 °C
V_F (max)	2.6 V
I_{RM} (typ.)	6.7 A



TOP-3
(Insulated)

FEATURES AND BENEFITS

- ESPECIALLY SUITED AS BOOST DIODE IN CONTINUOUS MODE POWER FACTOR CORRECTORS AND HARD SWITCHING CONDITIONS
- DESIGNED FOR HIGH dI_F/dt OPERATION. HYPERFAST RECOVERY CURRENT TO COMPETE WITH SiC 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 FLEXIBLE HEATSINKING ON COMMON OR SEPARATE HEATSINK.
- MATCHED DIODES FOR TYPICAL PFC APPLICATION WITHOUT NEED FOR VOLTAGE BALANCE NETWORK
- Package Capacitance: C=16pF

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_F/dt.

Obsolete Product(s) - Obsolete Product(s)

ABSOLUTE RATINGS (limiting values, for both diodes)

Symbol	Parameter		Value	Unit
V_{RRM}	Repetitive peak reverse voltage		600	V
$I_{F(RMS)}$	RMS forward current		32	A
I_{FSM}	Surge non repetitive forward current	tp = 10 ms sinusoidal	180	A
T_{stg}	Storage temperature range		-65 +150	°C
Tj	Maximum operating junction temperature		+ 150	°C

TM: TURBOSWITCH is a trademark of STMicroelectronics

THERMAL AND POWER DATA

Symbol	Parameter	Test conditions	Value	Unit
$R_{th\ (j-c)}$	Junction to case thermal resistance	Total	1.3	°C/W
P	Conduction power dissipation for both diodes	$I_{F(AV)}$ = 30 A δ = 0.5 Tc = 20°C	100	W

STATIC ELECTRICAL CHARACTERISTICS (for both diodes)

Symbol	Parameter	Tests Conditions		Min.	Typ.	Max.	Unit
I_R *	Reverse leakage current	$V_R = V_{RRM}$	Tj = 25°C			40	µA
			Tj = 125°C		60	400	
V_F **	Forward voltage drop	I_F = 30 A	Tj = 25°C			3.6	V
			Tj = 125°C		2.1	2.6	

Pulse test : * tp = 100 ms, δ < 2 %

** tp = 380 µs, δ < 2%

To evaluate the maximum conduction losses use the following equation :
$P = 1.8 \times I_{F(AV)} + 0.026\ I_{F^2(RMS)}$

DYNAMIC CHARACTERISTICS (for both diodes)

Symbol	Parameter	Tests Conditions		Min.	Typ.	Max.	Unit
t_{rr}	Reverse recovery time	I_F = 0.5 A Irr = 0.25 A I_R = 1 A	Tj = 25°C		25		ns
		I_F = 1 A dI_F/dt = - 50 A/µs V_R = 30 V				45	
I_{RM}	Reverse recovery current	V_R = 400 V I_F = 30 A dI_F/dt = -200 A/µs	Tj = 125°C		6.7	8.5	A
S	Reverse recovery softness factor				0.3		-

TURN-ON SWITCHING CHARACTERISTICS (for both diodes)

Symbol	Parameter	Tests Conditions		Min.	Typ.	Max.	Unit
t_{fr}	Forward recovery time	I_F = 30 A dI_F/dt = 100 A/µs $V_{FR} = 1.1 \times V_F$ max	Tj = 25°C			400	ns
V_{FP}	Transient peak forward recovery voltage	I_F = 30 A dI_F/dt = 100 A/µs	Tj = 25°C			6	V

Obsolete Product(s) - Obsolete Product(s)

Fig. 1: Conduction losses versus average current.

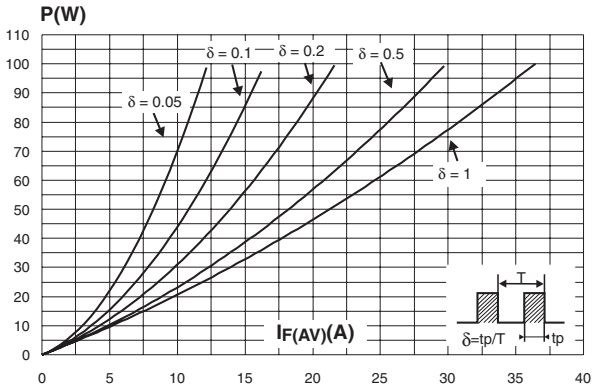


Fig. 2: Forward voltage drop versus forward current.

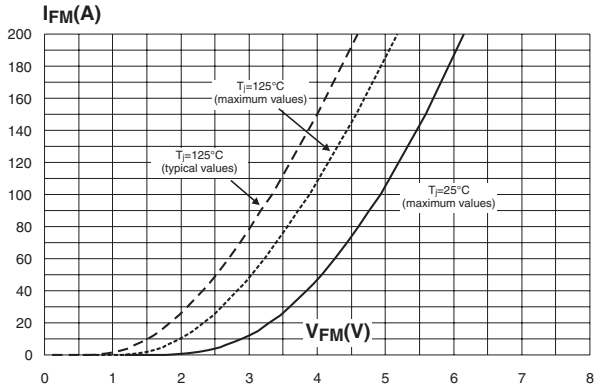


Fig. 3: Relative variation of thermal impedance junction to case versus pulse duration.

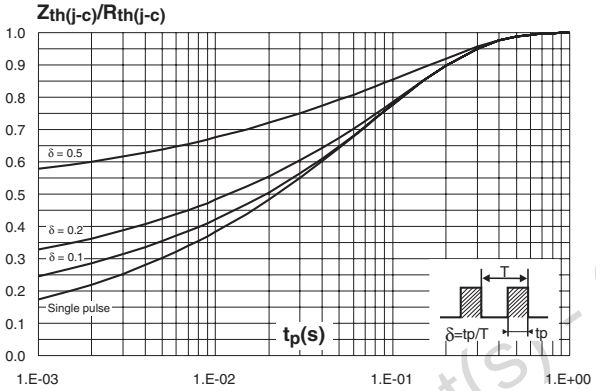


Fig. 4: Peak reverse recovery current versus dI_F/dt (90% confidence).

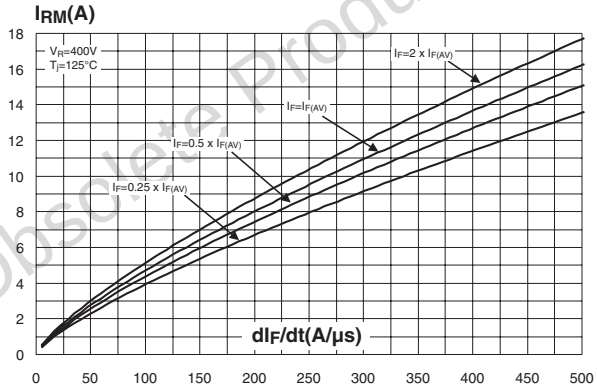


Fig. 5: Reverse recovery time versus dI_F/dt (90% confidence).

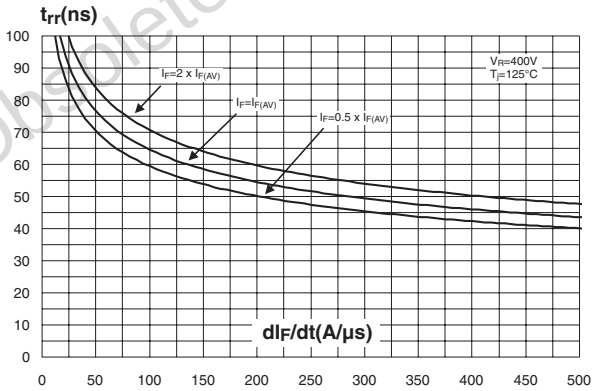
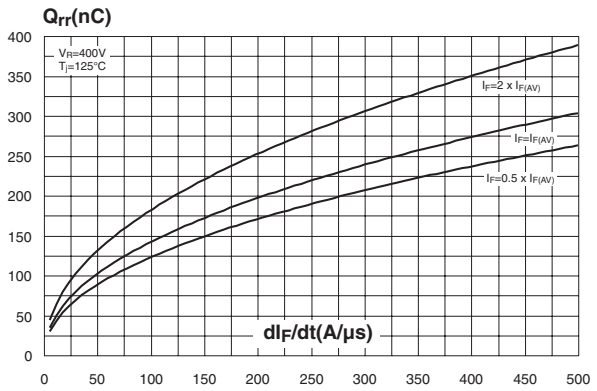


Fig. 6: Reverse recovery charges versus dI_F/dt (90% confidence).



Obsolete Product(s) - Obsolete Product(s)

Fig. 7: Reverse recovery softness factor versus dI_F/dt (typical values).

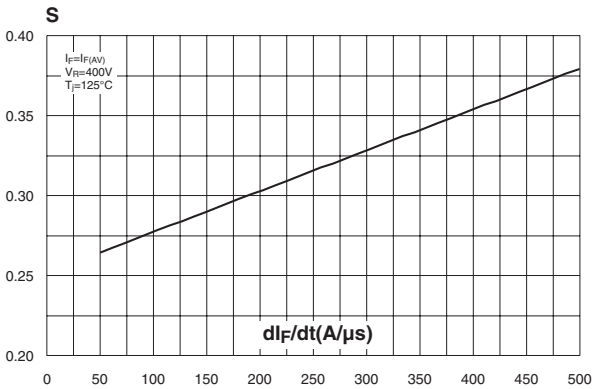


Fig. 8: Relative variation of dynamic parameters versus junction temperature (reference: Tj = 125°C).

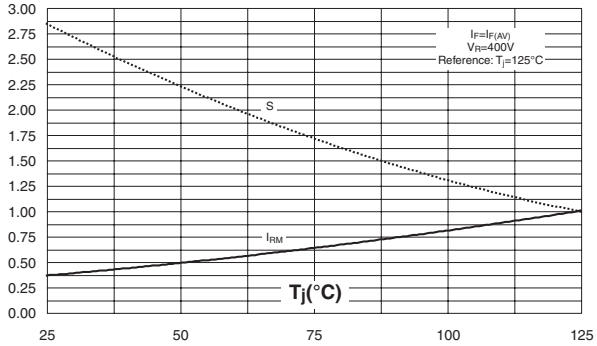


Fig. 9: Transient peak forward voltage versus dI_F/dt (90% confidence).

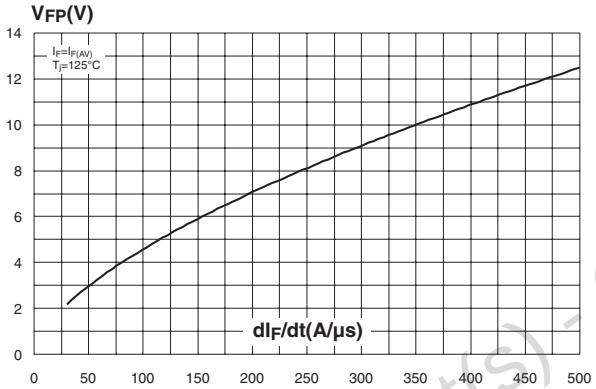


Fig. 10: Forward recovery time versus dI_F/dt (90% confidence).

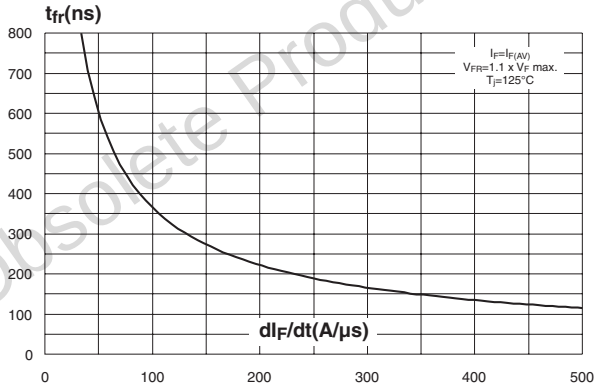
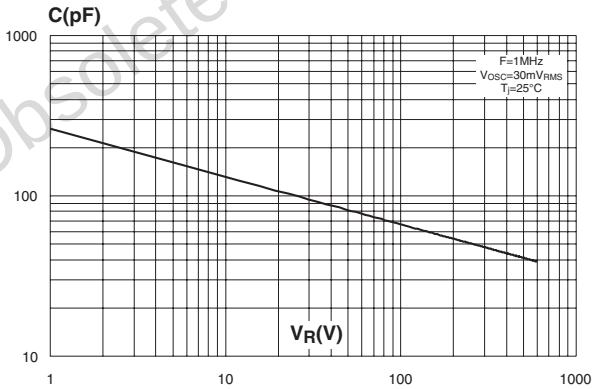
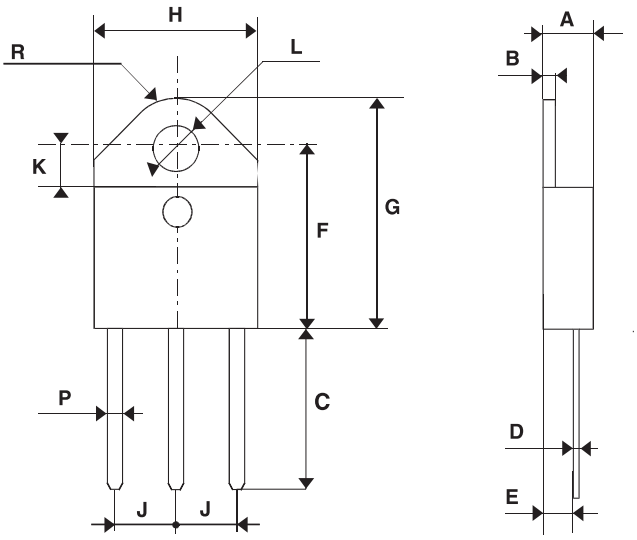


Fig. 11: Junction capacitance versus reverse voltage applied (typical values).



Obsolete Product(s) - Obsolete Product(s)

PACKAGE MECHANICAL DATA
TOP-3 Insulated



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

Ordering code	Marking	Package	Weight	Base qty	Delivery mode
STTH3006TPI	STTH3006TPI	TOP-3 Ins.	4.5 g.	30	Tube

- Cooling method: C
- Recommended torque value: 0.8 N.m.
- Maximum torque value: 1 N.m.
- 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

© 2003 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

Looking for pricing, stock, or lifecycle information?

Click below to explore more details on WIN SOURCE:

- View STTH3006TPI on WIN SOURCE
- STMicroelectronics Information

Optimize Your Supply Chain with WIN SOURCE Solutions

- Global Sourcing Solution
- Obsolete Management
- Cost Control Management
- Shortage Management
- Alternative Solution
- Excess Inventory Management