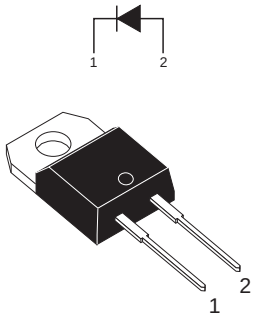
STTH806DTI

Tandem 600V HYPERFAST BOOST DIODE

MAJOR PRODUCTS CHARACTERISTICS

$I_{F(AV)}$	8 A
V_{RRM}	600 V
Tj (max)	150 °C
V_F (max)	2.4 V
I_{RM} (typ.)	4 A
t_{rr} (typ.)	13 ns



Insulated TO-220AB

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 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 AND FLEXIBLE HEATSINKING ON COMMON OR SEPARATE HEATSINK
- STATIC AND DYNAMIC EQUILIBRIUM OF INTERNAL DIODES ARE WARRANTED BY DESIGN
- PACKAGE CAPACITANCE: C=7pF

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.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
V_{RRM}	Repetitive peak reverse voltage		600	V
$I_{F(RMS)}$	RMS forward current		14	A
I_{FSM}	Surge non repetitive forward current	tp = 10 ms sinusoidal	80	A
Ipeak	Peak current waveform	δ = 0.15 Tc = 130°C	17	A
T_{stg}	Storage temperature range		-65 +150	°C
Tj	Maximum operating junction temperature		+ 150	°C

THERMAL AND POWER DATA

Symbol	Parameter	Test conditions	Value	Unit
$R_{th\ (j-c)}$	Junction to case thermal resistance		2.6	°C/W

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Tests Conditions		Min.	Typ.	Max.	Unit
I_R *	Reverse leakage current	$V_R = V_{RRM}$	Tj = 25°C			10	µA
			Tj = 125°C		15	100	
V_F **	Forward voltage drop	I_F = 8 A	Tj = 25°C			3.6	V
			Tj = 150°C		1.95	2.4	

Pulse test : * tp = 100 ms, δ < 2 %
** tp = 380 µs, δ < 2%

To evaluate the maximum conduction losses use the following equation :
$P = 1.7 \times I_{F(AV)} + 0.087\ I_F{}^2{}_{(RMS)}$

RECOVERY CHARACTERISTICS

Symbol	Parameter	Tests Conditions		Min.	Typ.	Max.	Unit
t_{rr}	Reverse recovery time	I_F = 0.5 A Irr = 0.25A I_R = 1 A	Tj = 25°C		13		ns
		I_F = 1 A dI_F/dt = - 50A/µs V_R = 30 V				30	
I_{RM}	Reverse recovery current	V_R = 400 V I_F = 8 A dI_F/dt = -200 A/µs	Tj = 125°C		4	5.5	A
S	Reverse recovery softness factor				0.4		-
Q_{rr}	Reverse recovery charges				50		nC

TURN-ON SWITCHING CHARACTERISTICS

Symbol	Parameter	Tests Conditions		Min.	Typ.	Max.	Unit
t_{fr}	Forward recovery time	I_F = 8 A dI_F/dt = 100A/µs, $V_{FR} = 1.1 \times V_F$max	Tj = 25°C			200	ns
V_{FP}	Forward recovery voltage	I_F = 8 A dI_F/dt = 100 A/µs	Tj = 25°C			7	V

Fig. 1: Conduction losses versus average current.

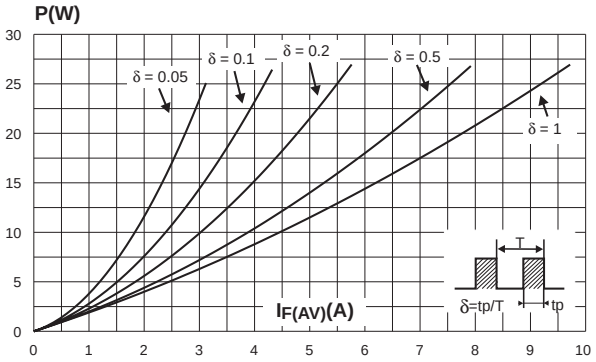


Fig. 2: Forward voltage drop versus forward current.

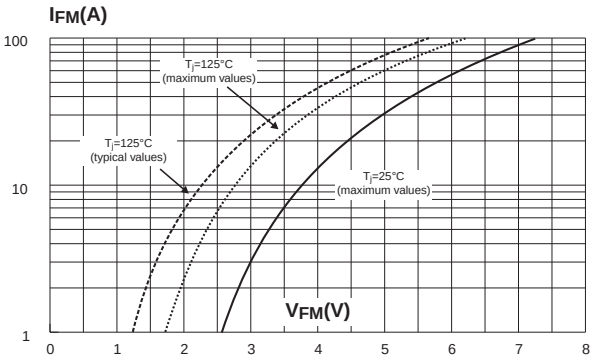


Fig. 3: Relative variation of thermal impedance junction to case versus pulse duration.

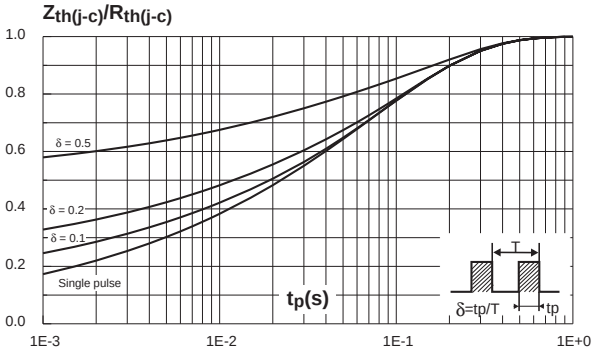


Fig. 4: Peak reverse recovery current versus dI_F/dt (typical values).

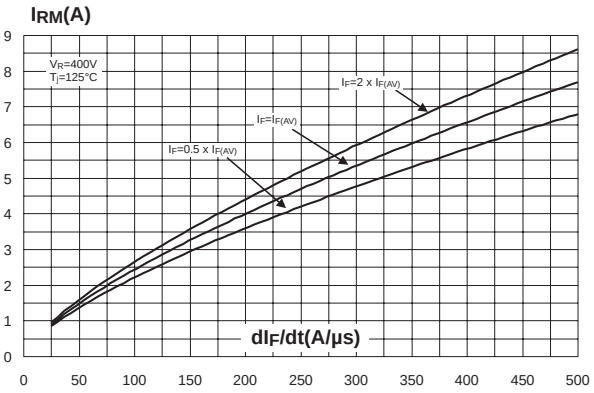


Fig. 5: Reverse recovery time versus dI_F/dt (typical values).

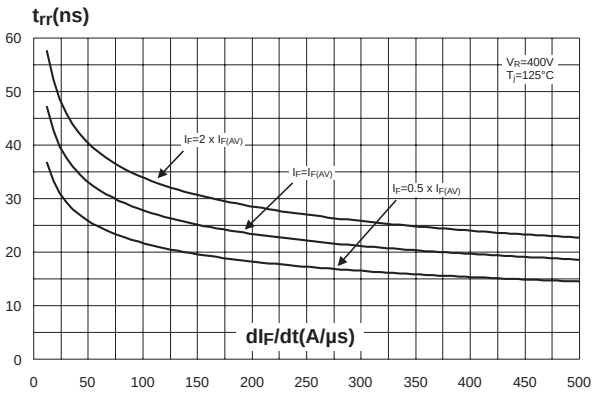


Fig. 6: Reverse charges versus dI_F/dt (typical values).

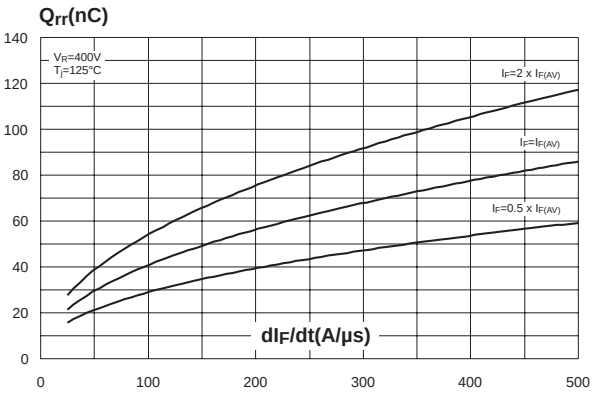


Fig. 7: Softness factor versus dI_F/dt (typical values).

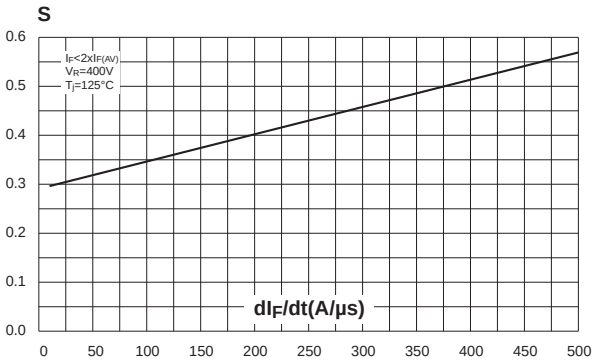


Fig. 8: Relative variation of dynamic parameters versus junction temperature (reference: Tj = 125°C).

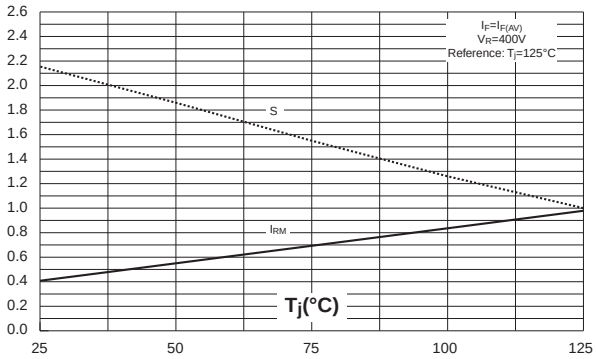


Fig. 9: Transient peak forward voltage versus dI_F/dt (typical values).

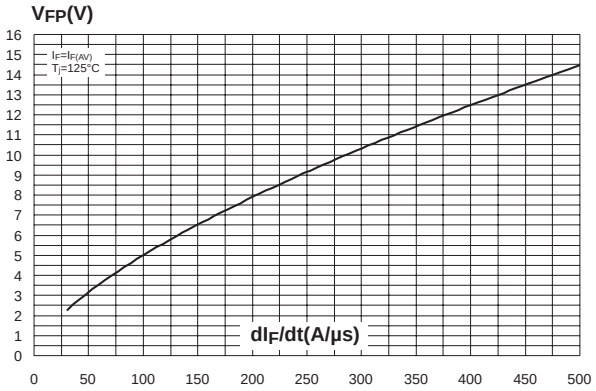
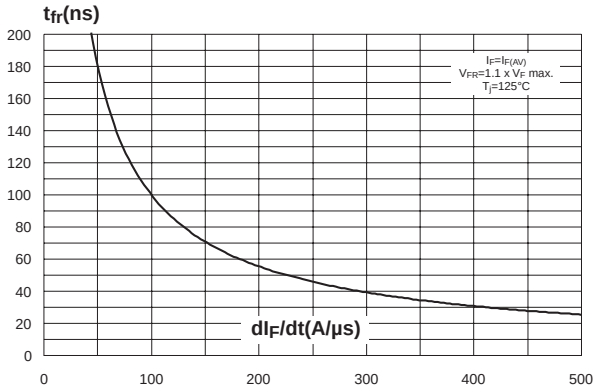
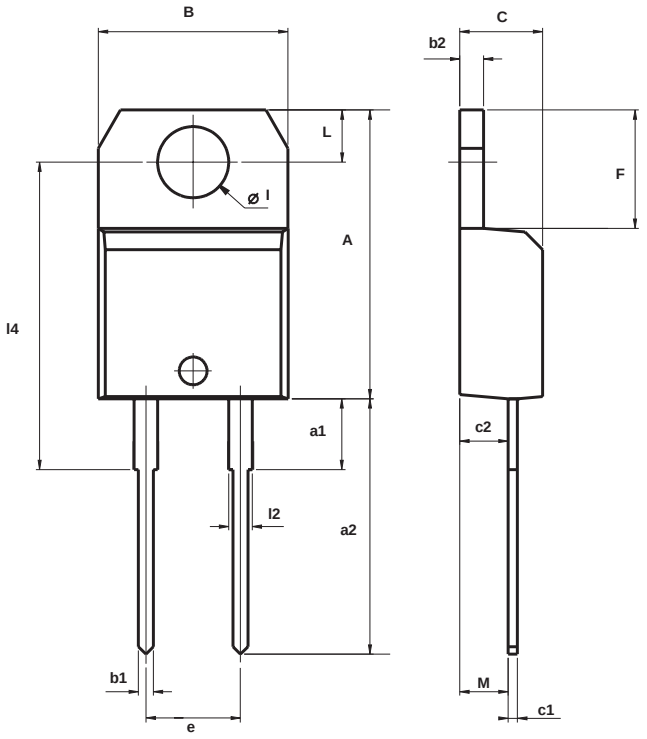


Fig. 10: Forward recovery time versus dI_F/dt (typical values).



PACKAGE MECHANICAL DATA

TO-220AC



REF.	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	15.20		15.90	0.598		0.625
a1		3.75			0.147	
a2	13.00		14.00	0.511		0.551
B	10.00		10.40	0.393		0.409
b1	0.61		0.88	0.024		0.034
b2	1.23		1.32	0.048		0.051
C	4.40		4.60	0.173		0.181
c1	0.49		0.70	0.019		0.027
c2	2.40		2.72	0.094		0.107
e	4.80		5.40	0.189		0.212
F	6.20		6.60	0.244		0.259
I	3.75		3.85	0.147		0.151
I4	15.80	16.40	16.80	0.622	0.646	0.661
L	2.65		2.95	0.104		0.116
I2	1.14		1.70	0.044		0.066
M		2.60			0.102	

Ordering code	Marking	Package	Weight	Base qty	Delivery mode
STTH806DTI	STTH806DTI	TO-220AC	2.3 g.	50	Tube

- Cooling method: C
- Recommended torque value: 0.8 N.m.
- Maximum torque value: 1 N.m.
- Epoxy meets UL94,V0