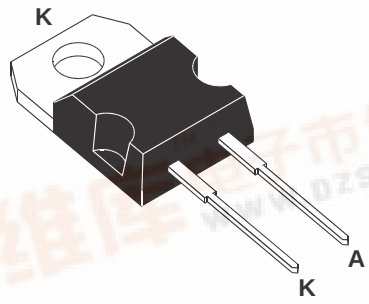
STTH506D

TURBO 2 ULTRA-FAST HIGH VOLTAGE RECTIFIER

PRELIMINARY DATASHEET

MAJOR PRODUCTS CHARACTERISTICS

$I_{F(AV)}$	5 A
V_{RRM}	600 V
Tj (max)	175 °C
V_F (max)	1.9 V
trr (max)	45 ns



TO-220AC

FEATURES AND BENEFITS

- COMBINES HIGHEST RECOVERY AND VOLTAGE PERFORMANCE.
- ULTRA-FAST, SOFT AND NOISE-FREE RECOVERY FOR LOW SIDE EFFECTS.
- LOW INDUCTANCE, ALLOWS SIMPLIFIED LAYOUT.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
V_{RRM}	Repetitive peak reverse voltage		600	V
$I_{F(RMS)}$	RMS forward current		20	A
$I_{F(AV)}$	Average forward current	Tc = 120°C δ = 0.5	5	A
I_{FSM}	Surge non repetitive forward current	tp = 10 ms sinusoidal	35	A
T_{stg}	Storage temperature range		-65 +175	°C
Tj	Maximum operating junction temperature		+ 175	°C

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
$R_{th\ (j-c)}$	Junction to case thermal resistance	4.2	°C/W

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Tests Conditions		Min.	Typ.	Max.	Unit
I_R *	Reverse leakage current	V_R = 600 V	Tj = 25°C			30	µA
			Tj = 125°C		3	120	
V_F **	Forward voltage drop	I_F = 5 A	Tj = 25°C			2.4	V
			Tj = 125°C		1.5	1.9	

Pulse test : * tp = 5 ms, δ < 2 %

** tp = 380 µs, δ < 2%

To evaluate the maximum conduction losses use the following equation :

$P = 1.3 \times I_{F(AV)} + 0.12\ I_{F(RMS)}^2$

DYNAMIC ELECTRICAL CHARACTERISTICS

Symbol	Tests Conditions		Min.	Typ.	Max.	Unit
trr	I_F = 0.5 A Irr = 0.25 A I_R = 1 A	Tj = 25°C			30	ns
	I_F = 1 A dI_F/dt = - 50 A/µs V_R = 30 V				45	
I_{RM}	V_R = 400 V I_F = 5 A dI_F/dt = 200 A/µs	Tj = 125°C			6.5	A
S_{factor}				1.8		-
tfr	I_F = 5 A dI_F/dt = 40 A/µs	Tj = 25°C			200	ns
V_{FP}	V_{FR} = 1.1 x V_F max				6	V
Qrr	V_R = 400V I_F = 5 A dI_F/dt = 200 A/µs	Tj = 125°C		180		nC

Fig. 1: Conduction losses versus average current.

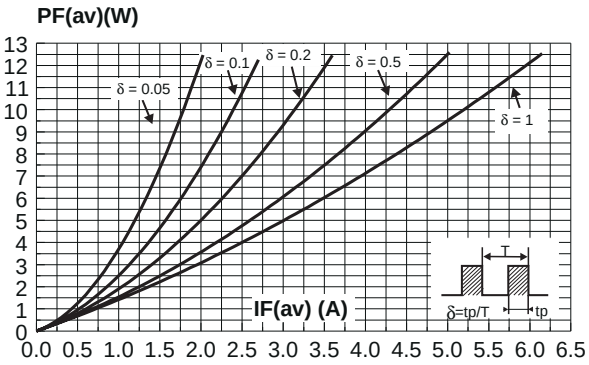


Fig. 2: Forward voltage drop versus forward current.

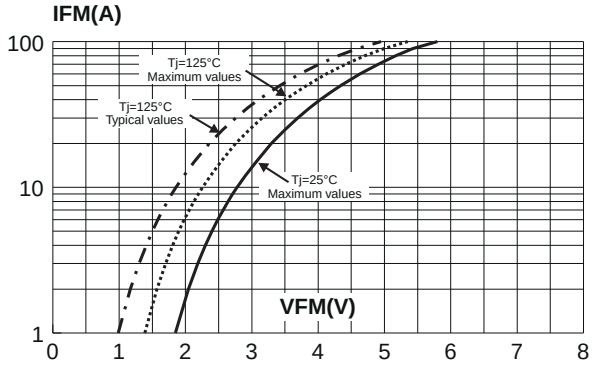


Fig. 3: Relative variation of thermal impedance junction to case versus pulse duration.

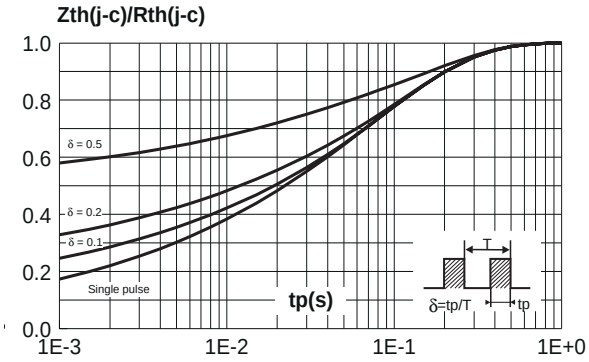


Fig. 4: Peak reverse recovery current versus dI_F/dt (90% confidence).

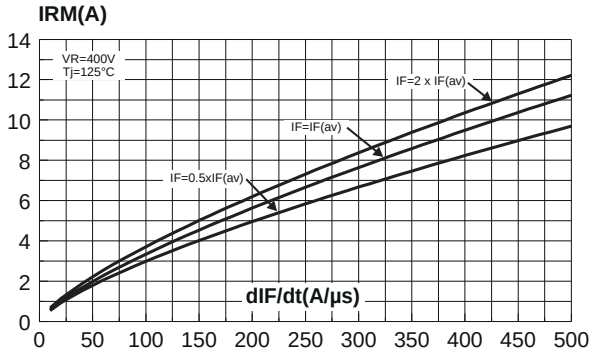


Fig. 5: Reverse recovery time versus dI_F/dt (90% confidence).

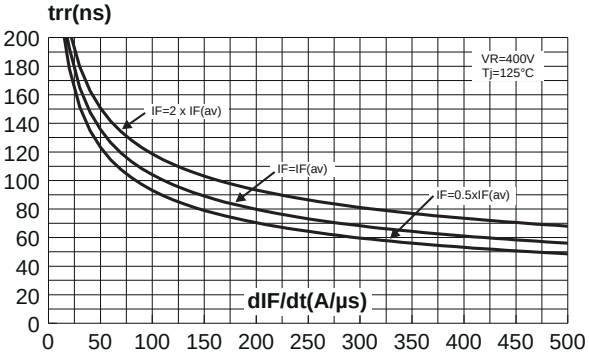


Fig. 6: Reverse charges versus dI_F/dt (90% confidence).

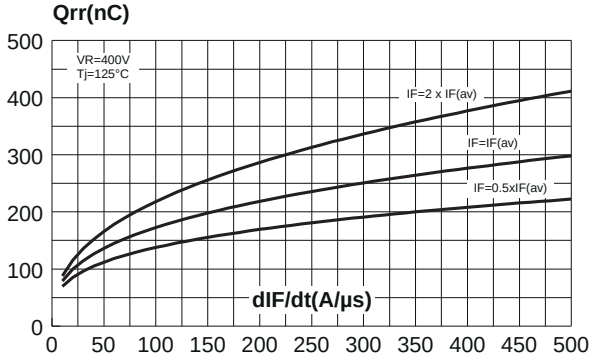


Fig. 7: Softness factor (tb/ta) versus dI_F/dt (typical values).

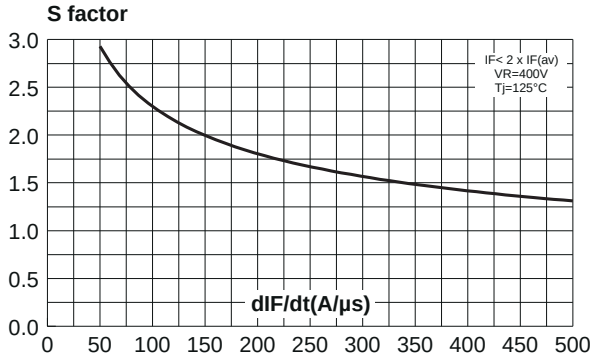


Fig. 8: Relative variation of dynamic parameters versus junction temperature (Reference: Tj=125°C).

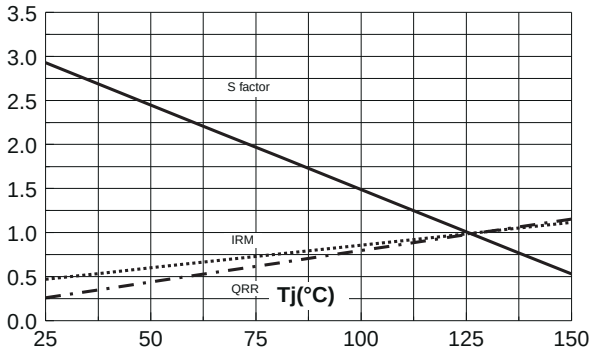


Fig. 9: Transient peak forward voltage versus dI_F/dt (90% confidence).

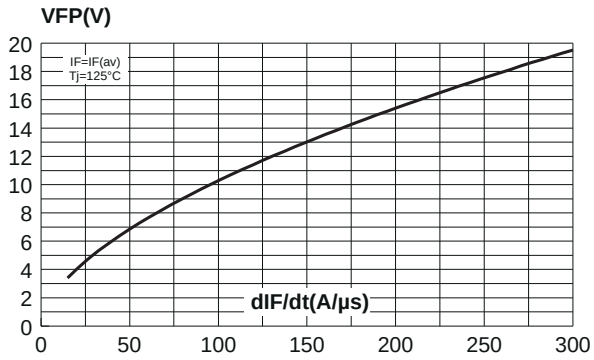
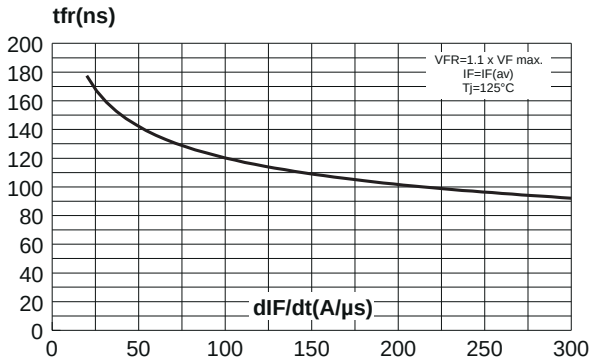
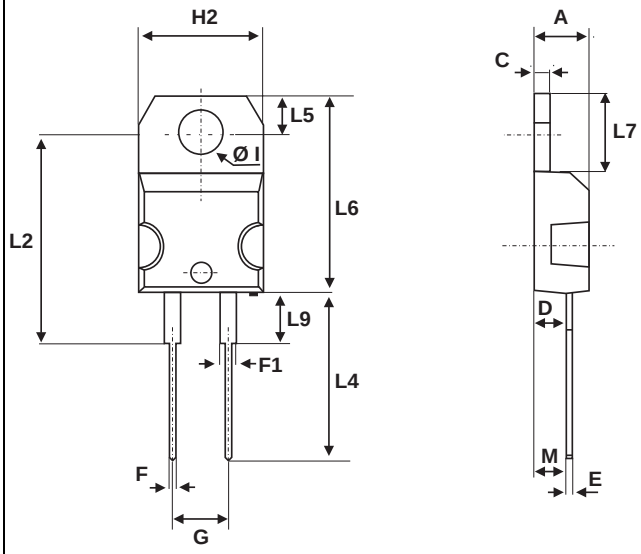


Fig. 10: Forward recovery time versus dI_F/dt (90% confidence).



PACKAGE MECHANICAL DATA
TO-220AC



REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.40	4.60	0.173	0.181
C	1.23	1.32	0.048	0.051
D	2.40	2.72	0.094	0.107
E	0.49	0.70	0.019	0.027
F	0.61	0.88	0.024	0.034
F1	1.14	1.70	0.044	0.066
G	4.95	5.15	0.194	0.202
H2	10.00	10.40	0.393	0.409
L2	16.40 typ.		0.645 typ.	
L4	13.00	14.00	0.511	0.551
L5	2.65	2.95	0.104	0.116
L6	15.25	15.75	0.600	0.620
L7	6.20	6.60	0.244	0.259
L9	3.50	3.93	0.137	0.154
M	2.6 typ.		0.102 typ.	
Diam. I	3.75	3.85	0.147	0.151

Ordering code	Marking	Package	Weight	Base qty	Delivery mode
STTH506D	STTH506D	TO-220AC	1.86 g.	50	Tube

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