



TURBO 2 ULTRA-FAST HIGH VOLTAGE RECTIFIER

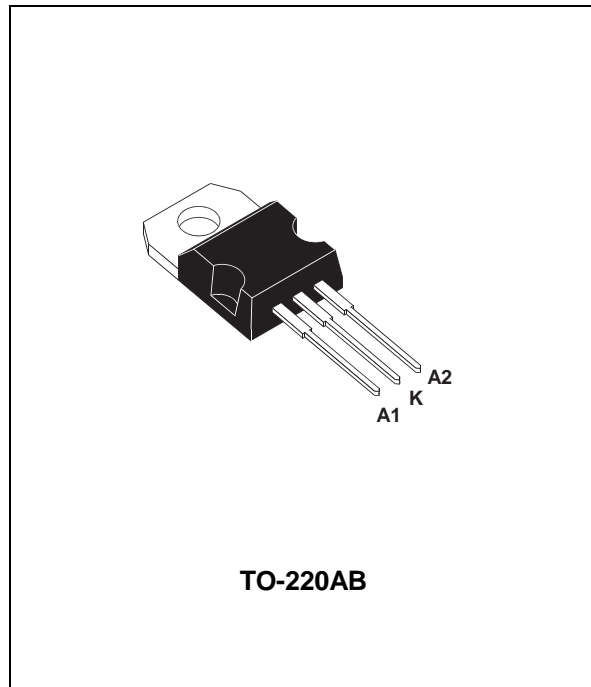
PRELIMINARY DATASHEET

MAJOR PRODUCTS CHARACTERISTICS

$I_{F(AV)}$	2x4 A
V_{RRM}	600 V
$T_j(\text{max})$	175 °C
$V_F(\text{max})$	1.8 V
$t_{rr}(\text{max})$	45 ns

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	$T_c = 138^\circ\text{C}$ $\delta = 0.5$	Per diode Per device	4 8	A
I_{FSM}	Surge non repetitive forward current		$t_p = 10\text{ ms}$ sinusoidal	35	A
T_{stg}	Storage temperature range			-65 +175	°C
T_j	Maximum operating junction temperature			+ 175	°C

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THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	Junction to case thermal resistance	Per diode Total	3.9 2.45	$^{\circ}\text{C/W}$

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Tests Conditions		Min.	Typ.	Max.	Unit
I_R^*	Reverse leakage current	$V_R = 600\text{ V}$	$T_j = 25^{\circ}\text{C}$			30	μA
			$T_j = 125^{\circ}\text{C}$		3	120	
V_F^{**}	Forward voltage drop	$I_F = 4\text{ A}$	$T_j = 25^{\circ}\text{C}$			2.3	V
			$T_j = 125^{\circ}\text{C}$		1.4	1.8	

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

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

To evaluate the maximum conduction losses use the following equation :

$$P = 1.25 \times I_{F(AV)} + 0.135 I_{F(RMS)}^2$$

DYNAMIC ELECTRICAL CHARACTERISTICS

Symbol	Tests Conditions			Min.	Typ.	Max.	Unit
trr	$I_F = 0.5\text{ A}$	$I_{rr} = 0.25\text{ A}$	$I_R = 1\text{ A}$	$T_j = 25^{\circ}\text{C}$		30	ns
	$I_F = 1\text{ A}$	$di_F/dt = -50\text{ A}/\mu\text{s}$	$V_R = 30\text{ V}$			45	
I_{RM}	$V_R = 400\text{ V}$	$I_F = 4\text{ A}$	$di_F/dt = -200\text{ A}/\mu\text{s}$	$T_j = 125^{\circ}\text{C}$		6.5	A
Sfactor						1.5	-
tfr	$I_F = 4\text{ A}$	$di_F/dt = 40\text{ A}/\mu\text{s}$		$T_j = 25^{\circ}\text{C}$		200	ns
V_{FP}		$V_{FR} = 1.1 \times V_F \text{ max}$					6
Qrr	$V_R = 400\text{ V}$	$I_F = 4\text{ A}$	$di_F/dt = -200\text{ A}/\mu\text{s}$	$T_j = 125^{\circ}\text{C}$		175	nC

Fig. 1: Conduction losses versus average current (per diode).

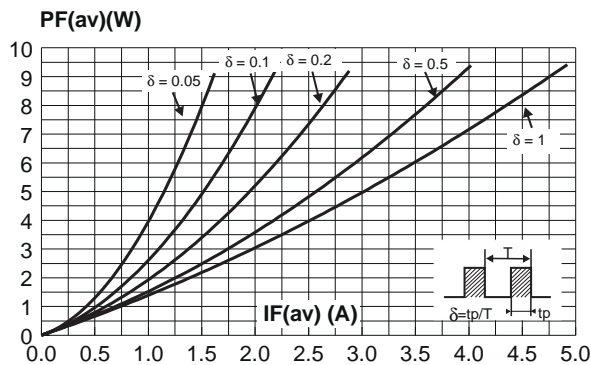


Fig. 2: Forward voltage drop versus forward current (per diode).

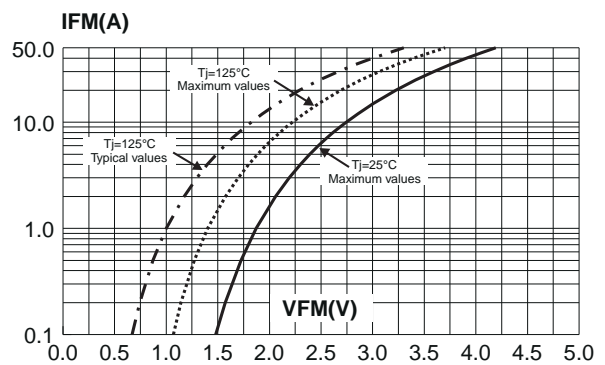


Fig. 3: Relative variation of thermal impedance junction to case versus pulse duration.

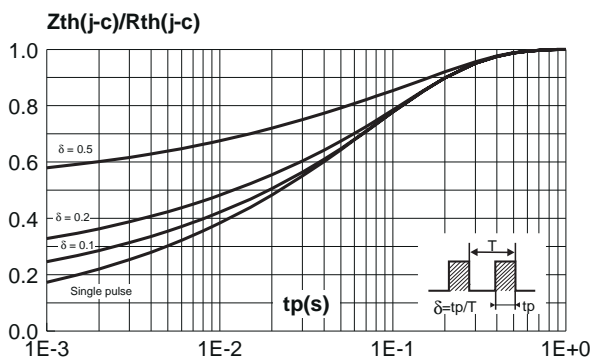


Fig. 4: Peak reverse recovery current versus dI_F/dt (90% confidence, per diode).

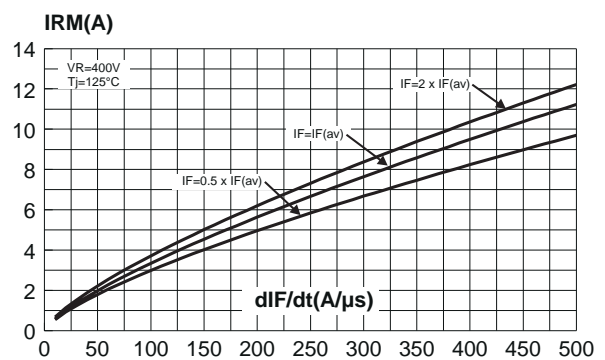


Fig. 5: Reverse recovery time versus dI_F/dt (90% confidence, per diode).

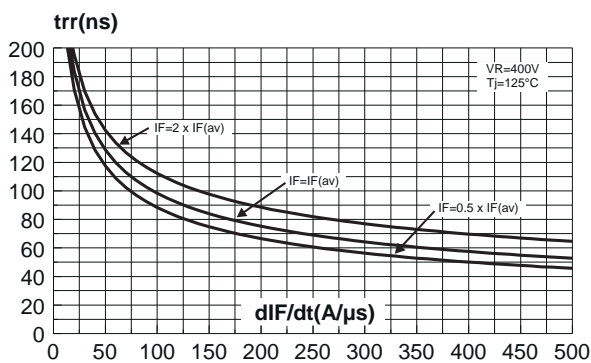
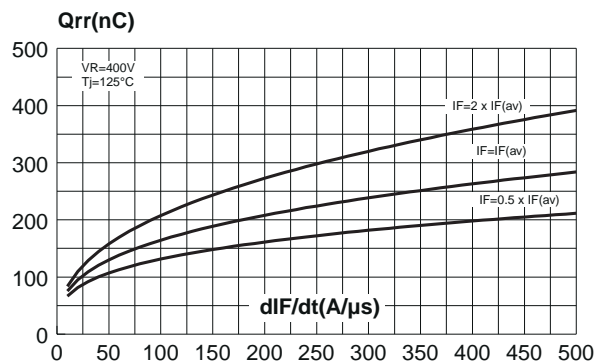


Fig. 6: Reverse charges versus dI_F/dt (90% confidence, per diode).



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Fig. 7: Softness factor (t_b/t_a) versus dI_F/dt (typical values, per diode).

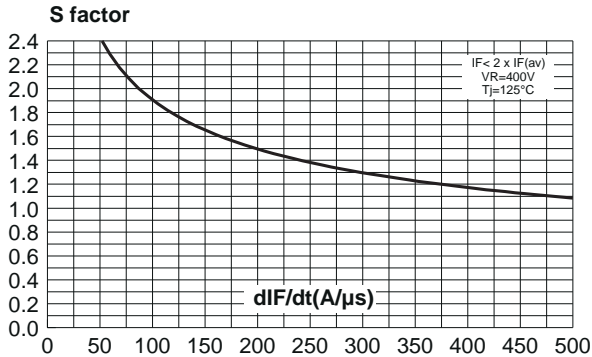


Fig. 8: Relative variation of dynamic parameters versus junction temperature (Reference: $T_j = 125^\circ C$).

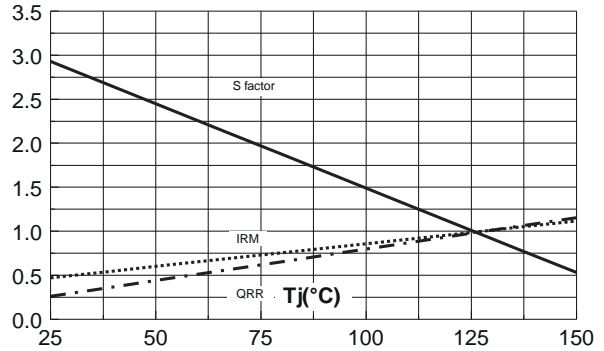


Fig. 9: Transient peak forward voltage versus dI_F/dt (90% confidence, per diode).

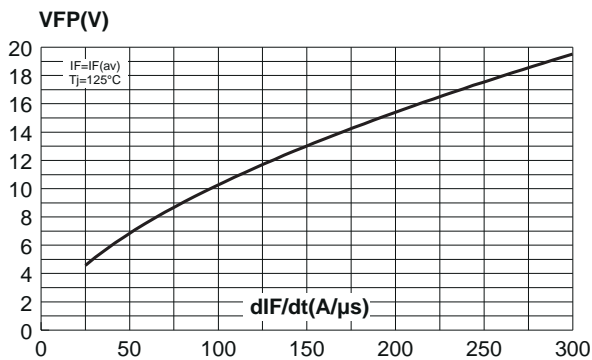
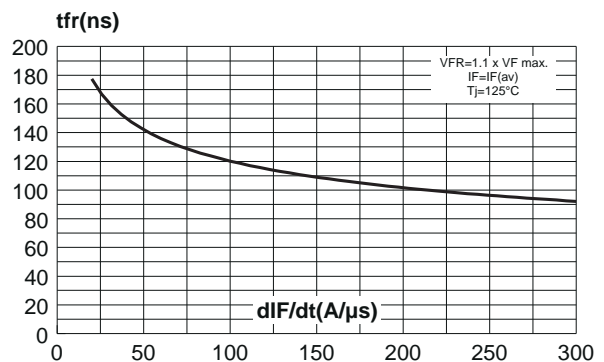
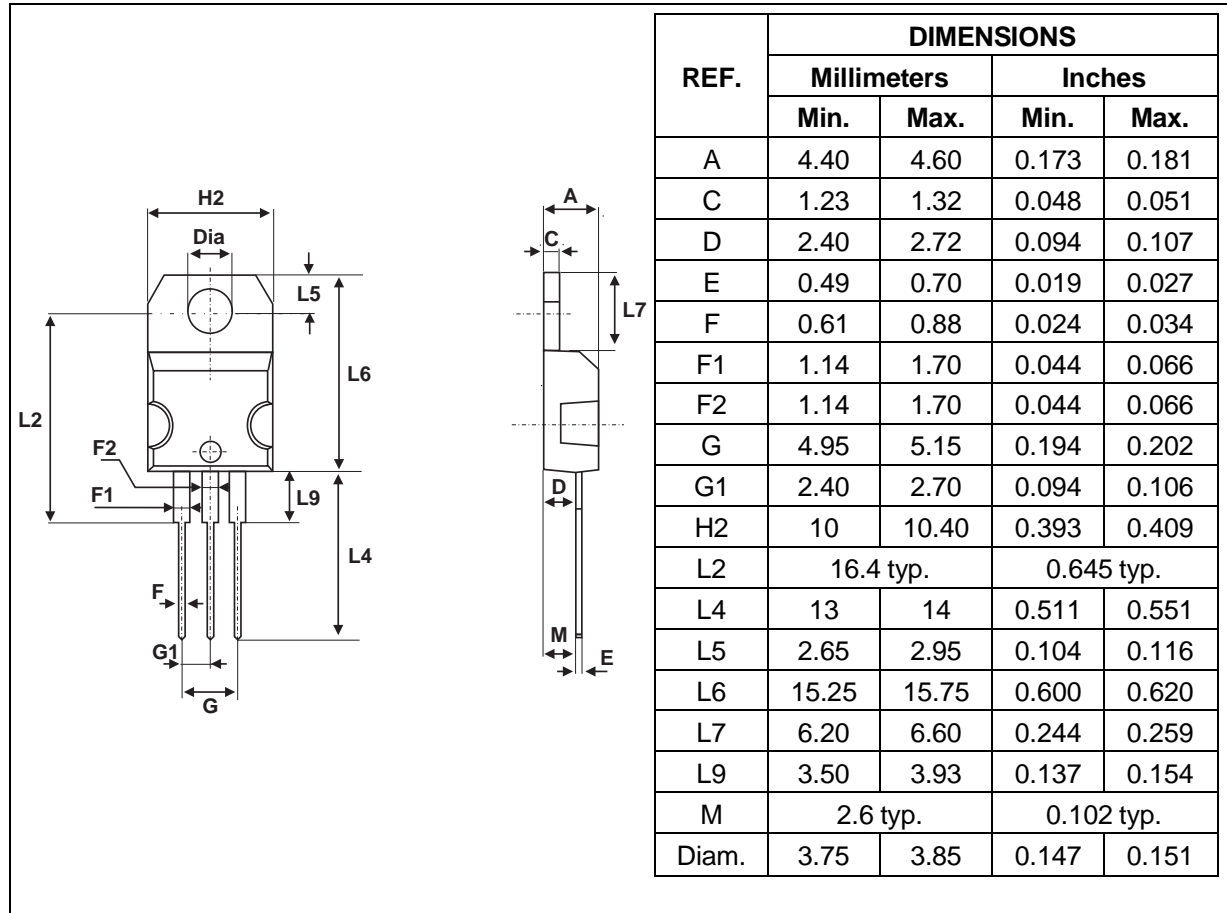


Fig. 10: Forward recovery time versus dI_F/dt (90% confidence, per diode).



PACKAGE MECHANICAL DATA
 TO-220AB


Ordering code	Marking	Package	Weight	Base qty	Delivery mode
STTH806CT	STTH806CT	TO-220AB	2.2 g.	50	Tube

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

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