



TURBO 2 ULTRA-FAST HIGH VOLTAGE RECTIFIER

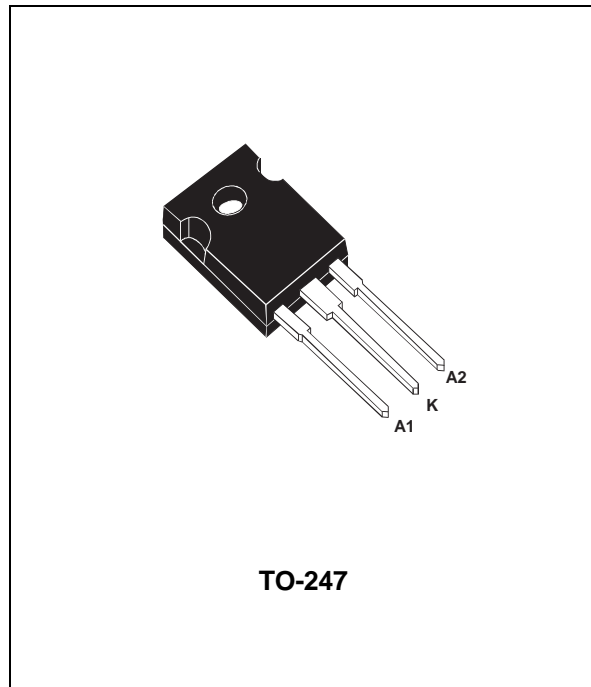
PRELIMINARY DATASHEET

MAJOR PRODUCTS CHARACTERISTICS

$I_{F(AV)}$	2x15 A
V_{RRM}	600 V
$T_j(\text{max})$	175 °C
$V_F(\text{max})$	1.9 V
$t_{rr}(\text{max})$	50 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			30	A
$I_{F(AV)}$	Average forward current	$T_c = 92^\circ\text{C}$ $\delta = 0.5$	Per diode Per device	15 30	A
I_{FSM}	Surge non repetitive forward current		$t_p = 10\text{ ms}$ sinusoidal	85	A
T_{stg}	Storage temperature range			-65 +175	°C
T_j	Maximum operating junction temperature			+ 175	°C

STTH3006CW

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	Junction to case thermal resistance	Per diode Total	2.2 1.35	$^{\circ}\text{C/W}$

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Tests Conditions		Min.	Typ.	Max.	Unit
I_R^*	Reverse leakage current	$V_R = 600\text{ V}$	$T_j = 25^{\circ}\text{C}$			100	μA
			$T_j = 125^{\circ}\text{C}$		10	400	
V_F^{**}	Forward voltage drop	$I_F = 15\text{ A}$ per leg	$T_j = 25^{\circ}\text{C}$			2.4	V
			$T_j = 125^{\circ}\text{C}$		1.5	1.9	
		$I_F = 30\text{ A}$ total	$T_j = 25^{\circ}\text{C}$			2.4	V
			$T_j = 125^{\circ}\text{C}$		1.5	1.9	

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 :

$$P = 1.3 \times I_{F(AV)} + 0.04 I_{F(RMS)}^2$$

DYNAMIC ELECTRICAL CHARACTERISTICS

Symbol	Tests Conditions			Min.	Typ.	Max.	Unit
t_{rr}	$I_F = 0.5\text{ A}$	$I_{rr} = 0.25\text{ A}$	$I_R = 1\text{ A}$	$T_j = 25^{\circ}\text{C}$		35	ns
	$I_F = 1\text{ A}$	$di_F/dt = -50\text{ A}/\mu\text{s}$	$V_R = 30\text{ V}$			50	
I_{RM}	$V_R = 400\text{ V}$	$I_F = 15\text{ A}$	$di_F/dt = -200\text{ A}/\mu\text{s}$	$T_j = 125^{\circ}\text{C}$		9.5	A
S_{factor}					1		-
t_{fr}	$I_F = 15\text{ A}$	$di_F/dt = 120\text{ A}/\mu\text{s}$		$T_j = 25^{\circ}\text{C}$		200	ns
V_{FP}	$V_{FR} = 1.1 \times V_F \text{ max}$						6
Q_{rr}	$V_R = 400\text{ V}$	$I_F = 15\text{ A}$	$di_F/dt = -200\text{ A}/\mu\text{s}$	$T_j = 125^{\circ}\text{C}$		380	nC

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

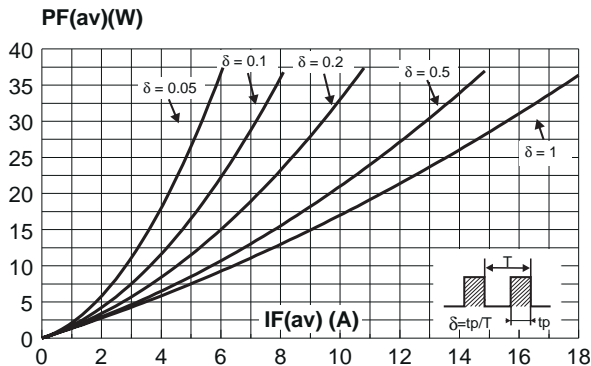


Fig. 2: Forward voltage drop versus current (per diode).

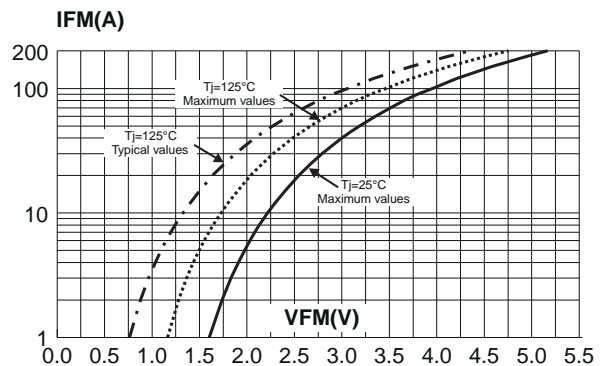


Fig. 3: Relative variation of thermal impedance junction to case versus pulse duration.

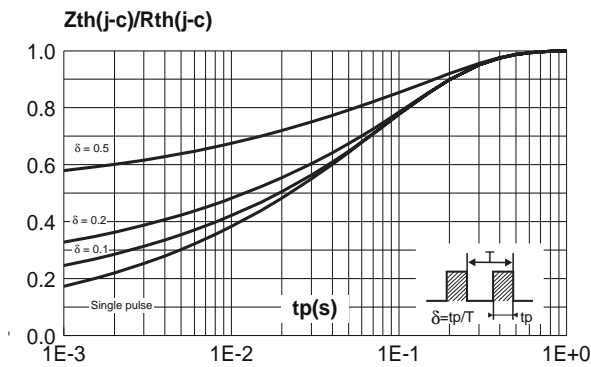


Fig. 4: Peak reverse recovery current versus di_F/dt (90% confidence, per diode).

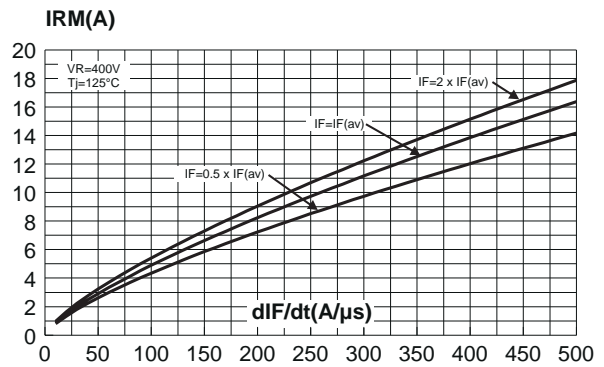


Fig. 5: Reverse recovery time versus di_F/dt (90% confidence, per diode).

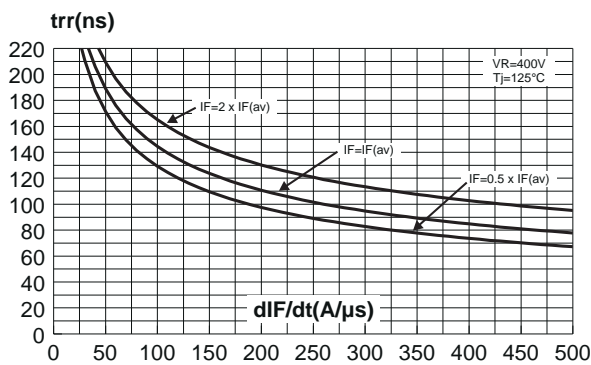
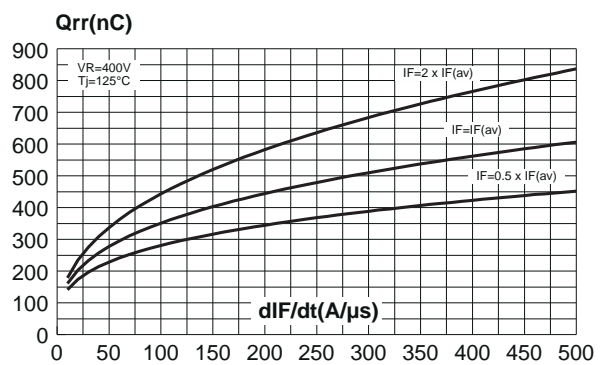


Fig. 6: Reverse charges versus di_F/dt (90% confidence, per diode).



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

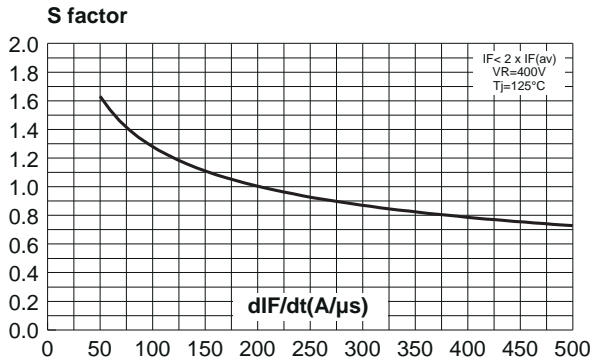


Fig. 8: Relative variation of dynamic parameters versus junction temperature (Reference: $T_J = 125^\circ C$).

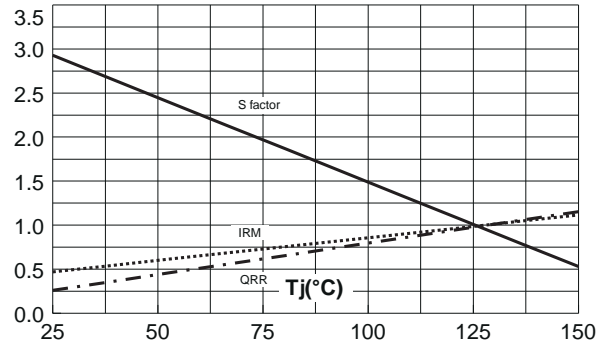


Fig. 9: Transient peak forward voltage versus dI_F/dt (90% confidence, per diode).

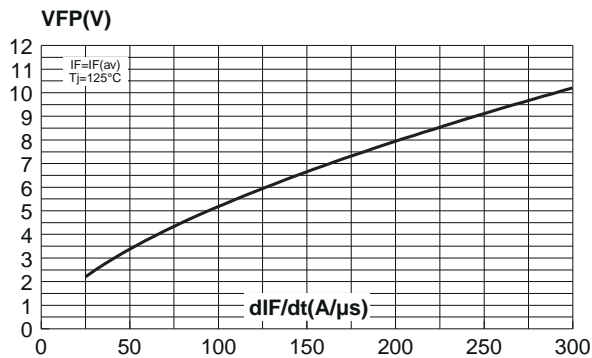
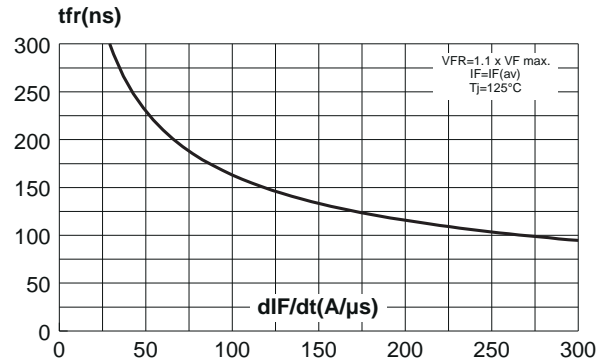
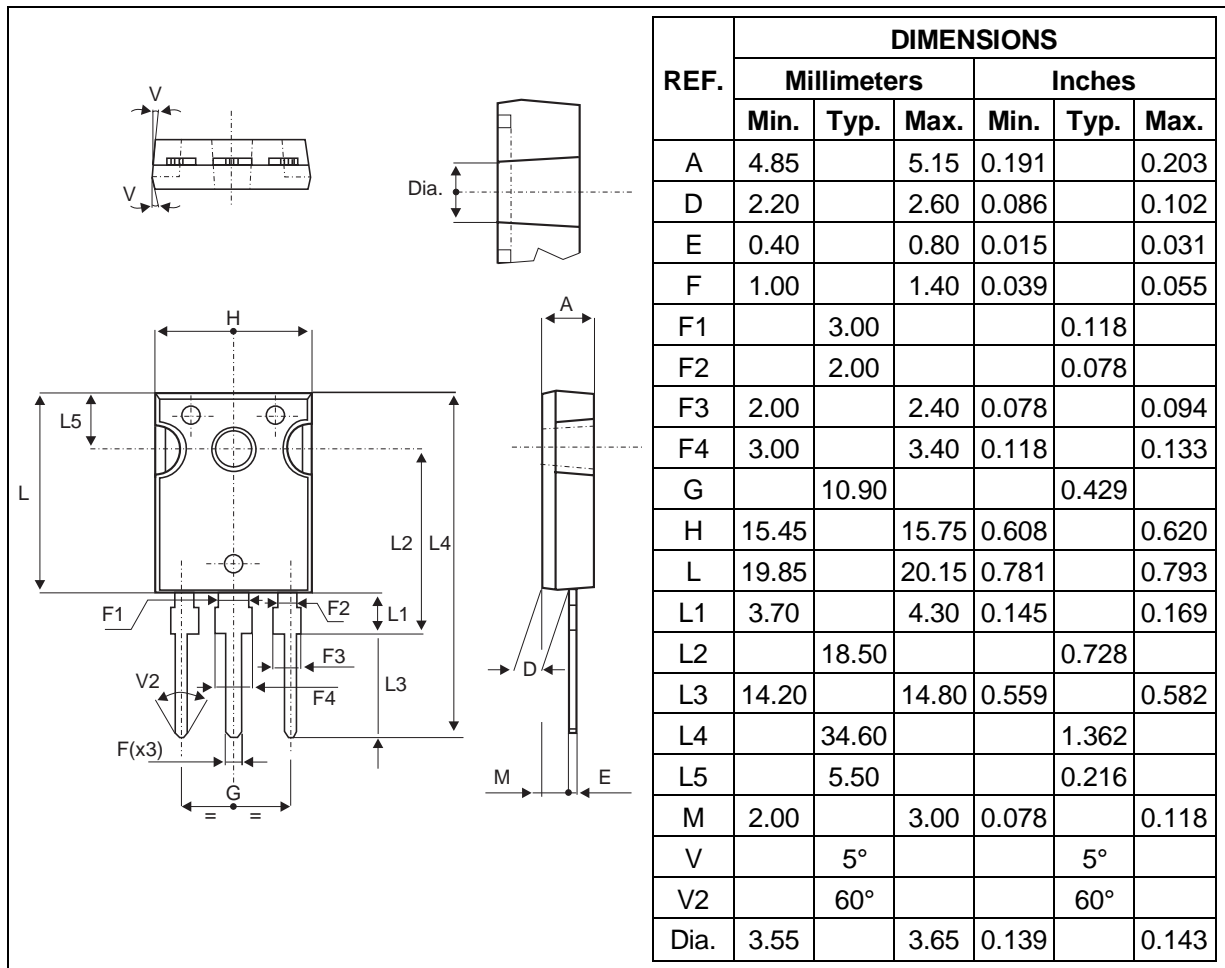


Fig. 10: Forward recovery time versus dI_F/dt (90% confidence, per diode).



PACKAGE MECHANICAL DATA
 TO247


Ordering code	Marking	Package	Weight	Base qty	Delivery mode
STTH3006CW	STTH3006CW	TO-247	4.36 g.	30	Tube

- Cooling method: C
- Epoxy meets UL94,V0

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