



# STTH3003CW

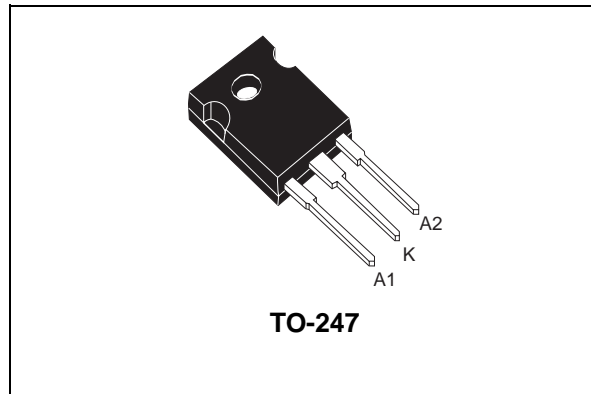
## HIGH FREQUENCY SECONDARY RECTIFIER

### MAJOR PRODUCT CHARACTERISTICS

$I_{F(AV)}$	2 x 15 A
$V_{RRM}$	300 V
$T_j$ (max)	175 °C
$V_F$ (max)	1 V
$t_{rr}$ (max)	40 ns

### FEATURES AND BENEFITS

- COMBINES HIGHEST RECOVERY AND REVERSE VOLTAGE PERFORMANCE
- ULTRA-FAST, SOFT AND NOISE-FREE RECOVERY



### DESCRIPTION

Dual center tap Fast Recovery Epitaxial Diodes suited for Switch Mode Power Supply and high frequency DC to DC converters.

Packaged in TO-247 this device is intended for secondary rectification.

### ABSOLUTE RATINGS (limiting values, per diode)

Symbol	Parameter		Value	Unit	
$V_{RRM}$	Repetitive peak reverse voltage		300	V	
$I_{F(RMS)}$	RMS forward current		30	A	
$I_{F(AV)}$	Average forward current	$T_c = 135^\circ\text{C}$ $\delta = 0.5$	Per diode Per device	15 30	A
$I_{FSM}$	Surge non repetitive forward current	$t_p = 10$ ms sinusoidal	140	A	
$I_{RSM}$	Non repetitive peak reverse current	$t_p = 20$ $\mu\text{s}$ square	7	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	Per diode	2.0	$^{\circ}\text{C/W}$
		Total	1.05	
$R_{th(c)}$		Coupling	0.1	

### STATIC ELECTRICAL CHARACTERISTICS (per diode)

Symbol	Parameter	Tests conditions		Min.	Typ.	Max.	Unit
$I_R^*$	Reverse leakage current	$V_R = 300\text{ V}$	$T_j = 25^{\circ}\text{C}$			40	$\mu\text{A}$
			$T_j = 125^{\circ}\text{C}$		40	400	
$V_F^{**}$	Forward voltage drop	$I_F = 15\text{ A}$	$T_j = 25^{\circ}\text{C}$			1.25	V
			$T_j = 125^{\circ}\text{C}$		0.85	1	

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

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

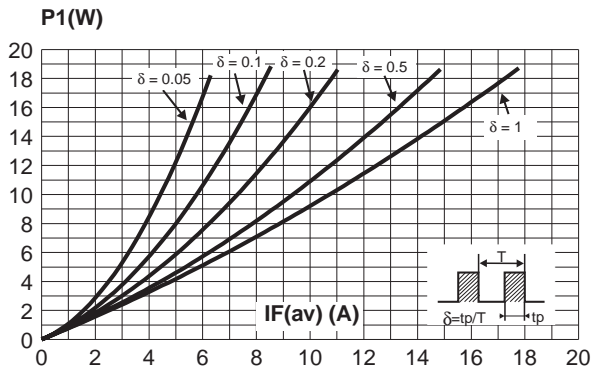
To evaluate the maximum conduction losses use the following equation :

$$P = 0.75 \times I_{F(AV)} + 0.017 I_{F(RMS)}^2$$

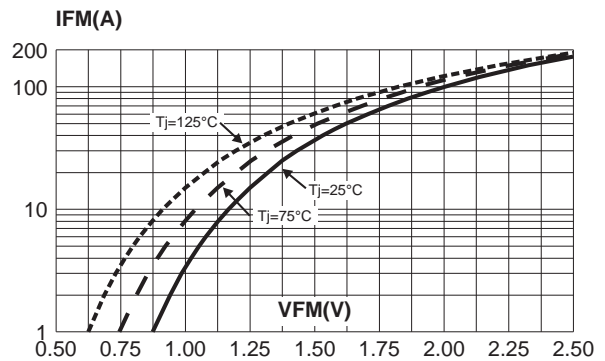
### RECOVERY CHARACTERISTICS

Symbol	Tests conditions		Min.	Typ.	Max.	Unit
$t_{rr}$	$I_F = 0.5\text{ A}$ $I_{rr} = 0.25\text{ A}$ $I_R = 1\text{ A}$	$T_j = 25^{\circ}\text{C}$			30	ns
	$I_F = 1\text{ A}$ $di_F/dt = -50\text{ A}/\mu\text{s}$ $V_R = 30\text{V}$				40	
$t_{fr}$	$I_F = 15\text{ A}$ $di_F/dt = 100\text{ A}/\mu\text{s}$	$T_j = 25^{\circ}\text{C}$			300	ns
$V_{FP}$	$V_{FR} = 1.1 \times V_F \text{ max.}$				3.5	V
$S_{factor}$	$V_{CC} = 200\text{ V}$ $I_F = 15\text{ A}$	$T_j = 125^{\circ}\text{C}$		0.3		-
$I_{RM}$	$di_F/dt = 200\text{ A}/\mu\text{s}$				8.5	A

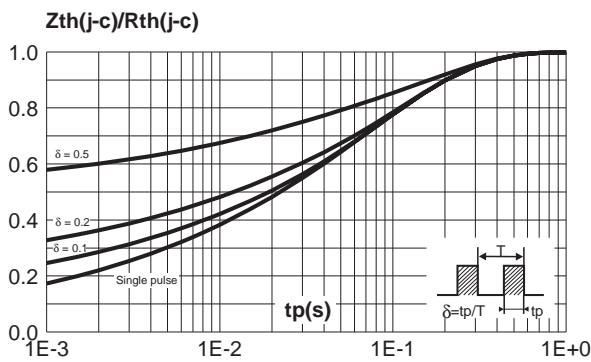
**Fig. 1:** Conduction losses versus average current (per diode).



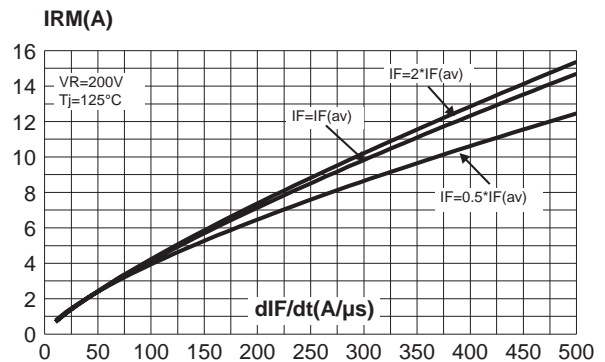
**Fig. 2:** Forward voltage drop versus forward current (maximum values, per diode).



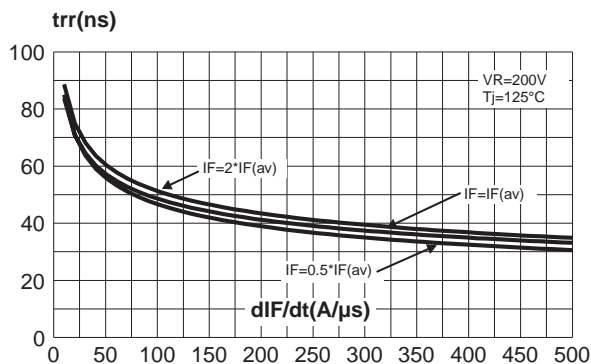
**Fig. 3:** Relative variation of thermal impedance junction to case versus pulse duration.



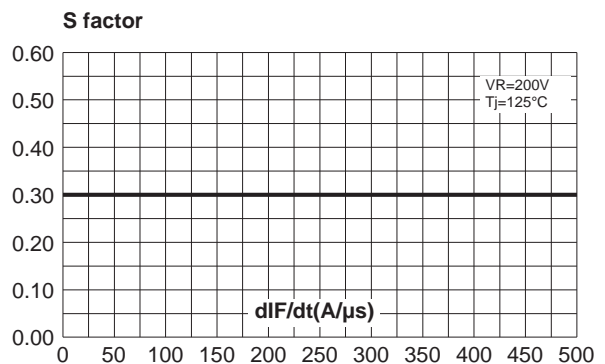
**Fig. 4:** Peak reverse recovery current versus  $dI_F/dt$  (90% confidence, per diode).



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

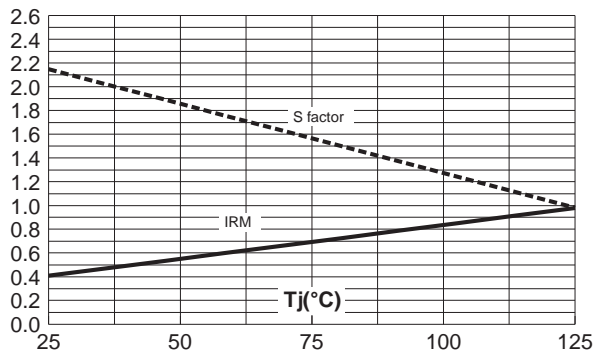


**Fig. 6:** Softness factor versus  $dI_F/dt$  (typical values, per diode).

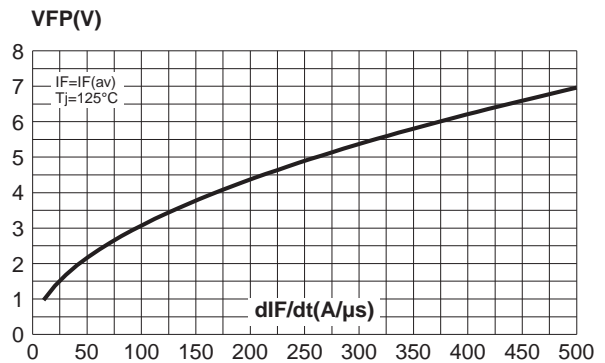


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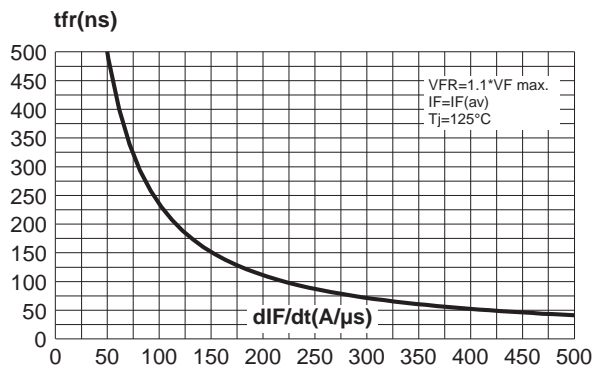
**Fig. 7:** Relative variation of dynamic parameters versus junction temperature (reference:  $T_j = 125^\circ\text{C}$ ).

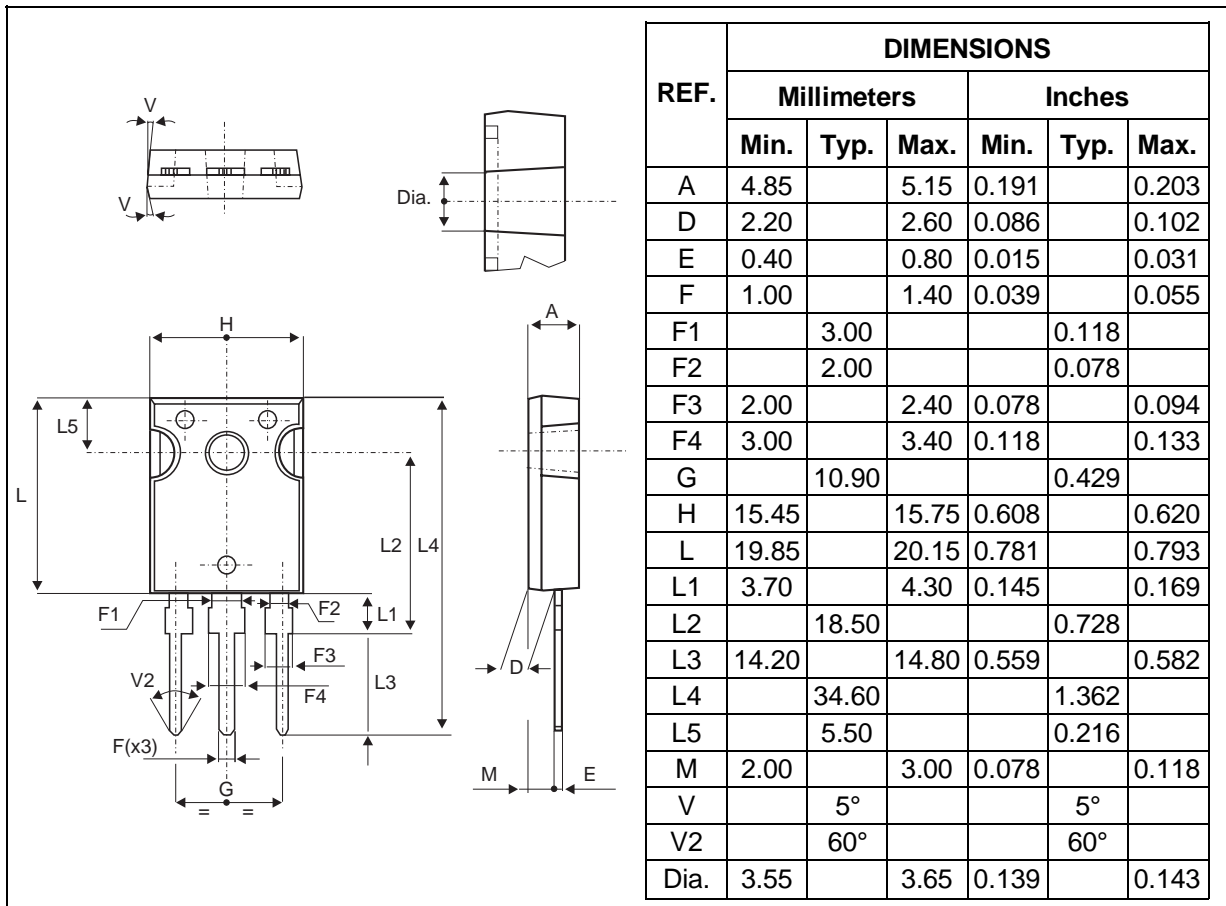


**Fig. 8:** Transient peak forward voltage versus  $dI_F/dt$  (90% confidence, per diode).



**Fig. 9:** Forward recovery time versus  $dI_F/dt$  (90% confidence, per diode).



**PACKAGE MECHANICAL DATA**  
 TO-247


Ordering code	Marking	Package	Weight	Base qty	Delivery mode
STTH3003CW	STTH3003CW	TO-247	4.36g	30	Tube

- Cooling method: by conduction (C)
- Recommended torque value: 0.8 N.m.
- Maximum torque value: 1.0 N.m.
- Epoxy meets UL 94,V0

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