

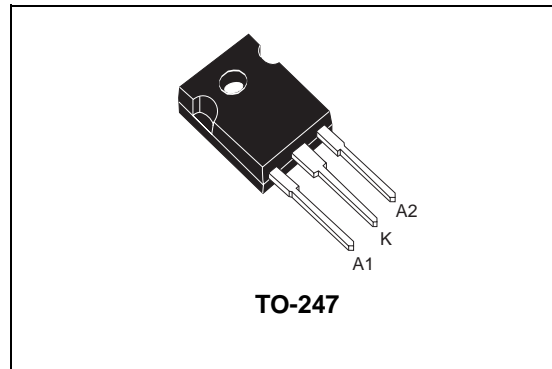


# STTH3003CW

## 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 15 Per device 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 <sub>th(j-c)</sub>	Junction to case	Per diode	2.0	°C/W
		Total	1.05	
R <sub>th(c)</sub>		Coupling	0.1	

### STATIC ELECTRICAL CHARACTERISTICS (per diode)

Symbol	Parameter	Tests conditions		Min.	Typ.	Max.	Unit
I <sub>R</sub> *	Reverse leakage current	V <sub>R</sub> = 300 V	T <sub>j</sub> = 25°C			40	μA
			T <sub>j</sub> = 125°C		40	400	
V <sub>F</sub> **	Forward voltage drop	I <sub>F</sub> = 15 A	T <sub>j</sub> = 25°C			1.25	V
			T <sub>j</sub> = 125°C		0.85	1	

Pulse test : \* t<sub>p</sub> = 5 ms, δ < 2 %

\*\* t<sub>p</sub> = 380 μs, δ < 2%

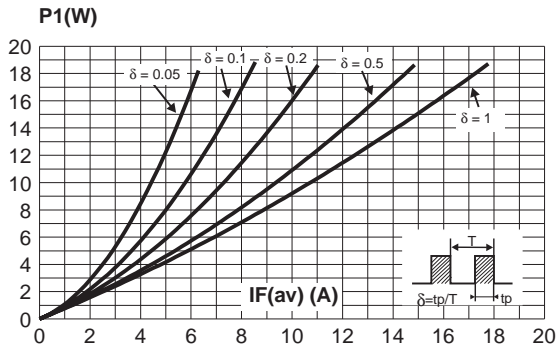
To evaluate the maximum conduction losses use the following equation :

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

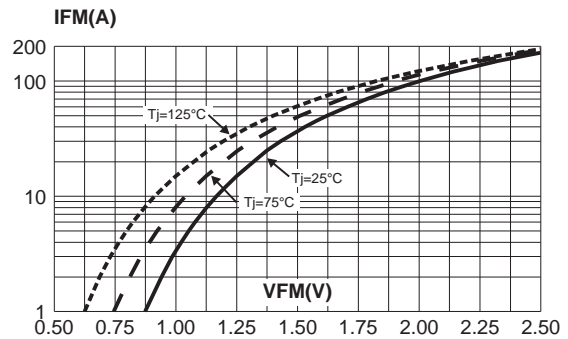
### RECOVERY CHARACTERISTICS

Symbol	Tests conditions			Min.	Typ.	Max.	Unit
t <sub>rr</sub>	I <sub>F</sub> = 0.5 A	I <sub>rr</sub> = 0.25 A	I <sub>R</sub> = 1A	T <sub>j</sub> = 25°C		30	ns
	I <sub>F</sub> = 1 A	dI <sub>F</sub> /dt = - 50 A/μs	V <sub>R</sub> = 30V			40	
t <sub>fr</sub>	I <sub>F</sub> = 15 A	dI <sub>F</sub> /dt = 100 A/μs		T <sub>j</sub> = 25°C		300	ns
V <sub>FP</sub>	V <sub>FR</sub> = 1.1 x V <sub>F</sub> max.					3.5	
S <sub>factor</sub>	V <sub>CC</sub> = 200 V	I <sub>F</sub> = 15 A		T <sub>j</sub> = 125°C		0.3	-
I <sub>RM</sub>	dI <sub>F</sub> /dt = 200A/μs					8.5	

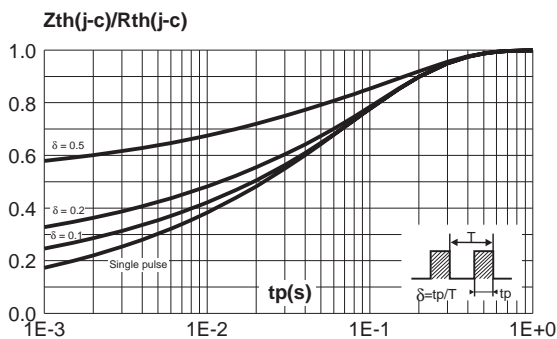
**Fig. 1:** Conduction losses versus average current (per diode).



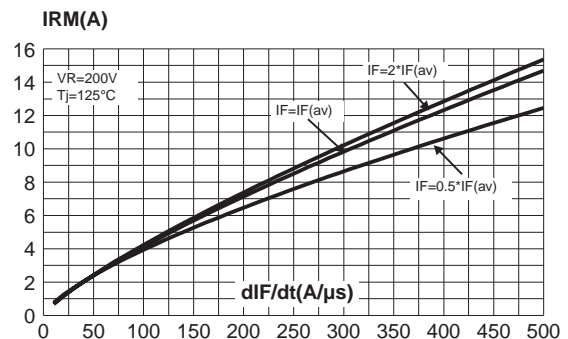
**Fig. 2:** Forward voltage drop versus forward current (maximum values, per diode).



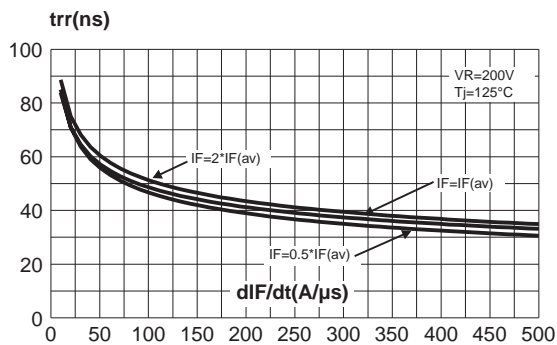
**Fig. 3:** Relative variation of thermal impedance junction to case versus pulse duration.



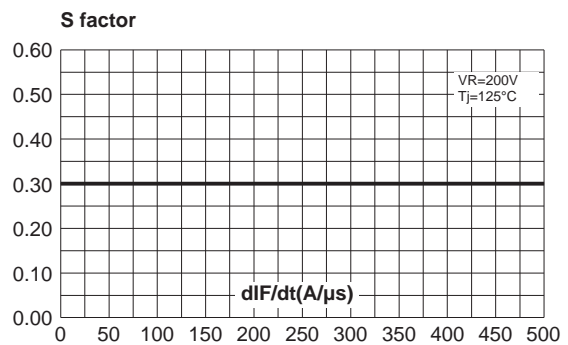
**Fig. 4:** Peak reverse recovery current versus  $di_F/dt$  (90% confidence, per diode).



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

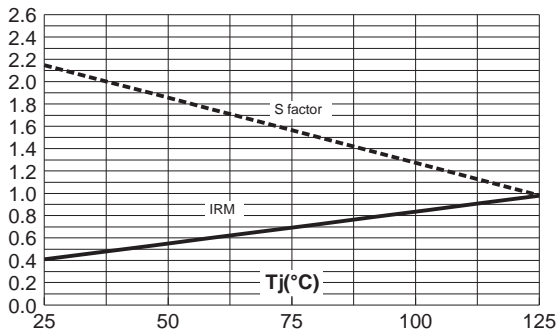


**Fig. 6:** Softness factor versus  $di_F/dt$  (typical values, per diode).

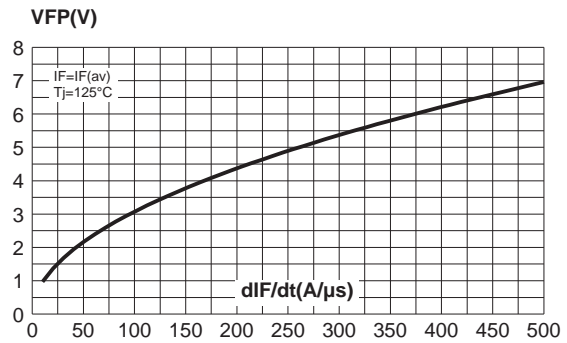


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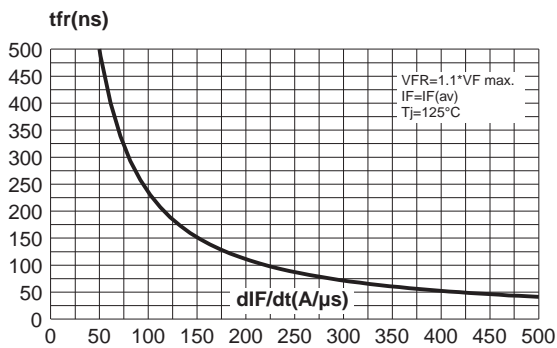
**Fig. 7:** Relative variation of dynamic parameters versus junction temperature (reference:  $T_j = 125^\circ\text{C}$ ).

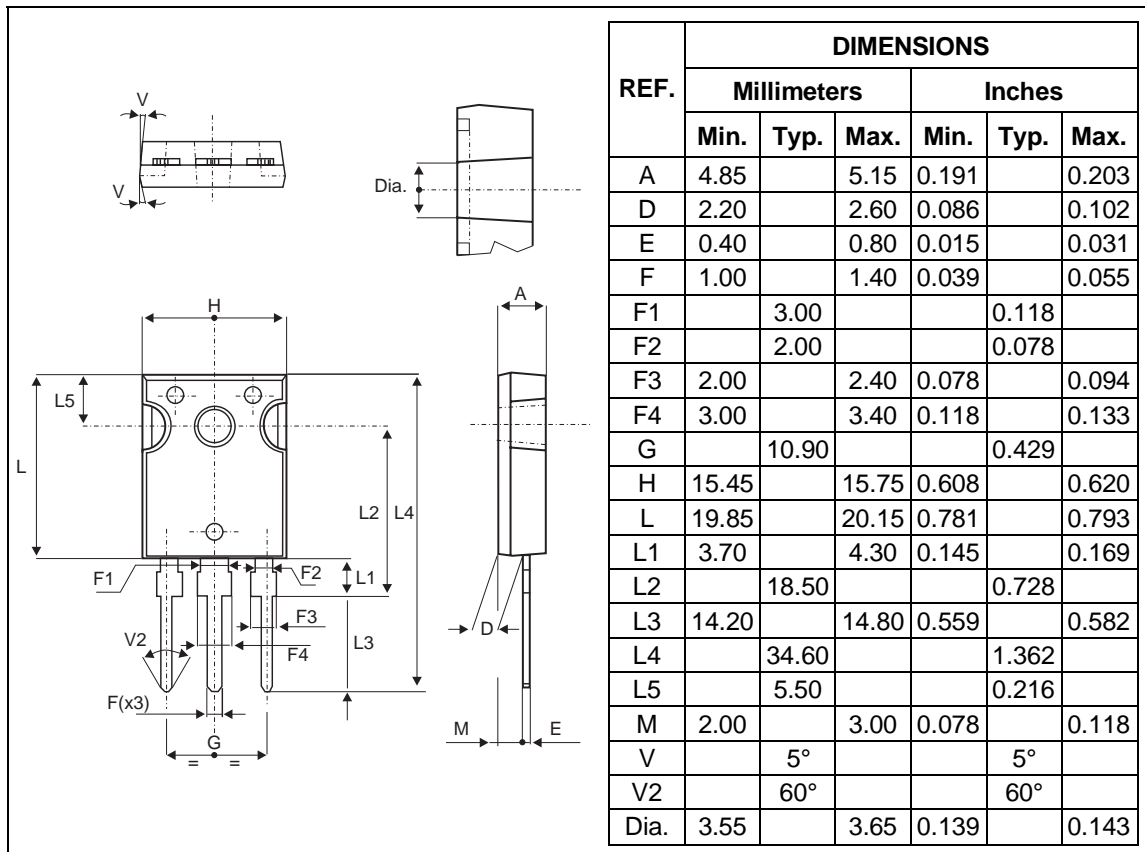


**Fig. 8:** Transient peak forward voltage versus  $dI_F/dt$  (90% confidence, per diode).



**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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