



STTH3003CW

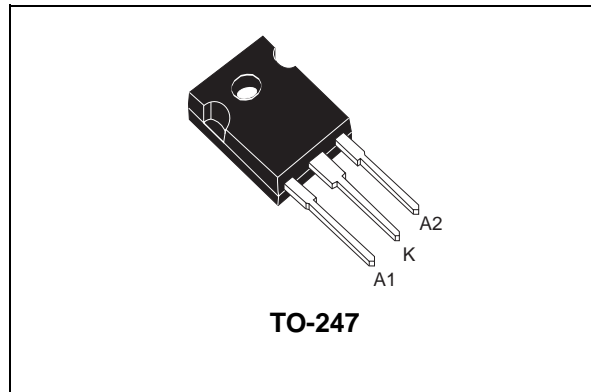
HIGH FREQUENCY SECONDARY RECTIFIER

MAJOR PRODUCT CHARACTERISTICS

$I_{F(AV)}$	2 x 15 A
V_{RRM}	300 V
$T_j(\text{max})$	175 °C
$V_F(\text{max})$	1 V
$t_{rr}(\text{max})$	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	$t_p = 10 \text{ ms sinusoidal}$	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	

STTH3003CW

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
R _{th(j-c)}	Junction to case	Per diode	2.0	°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 V	T _j = 25°C			40	μA
			T _j = 125°C		40	400	
V _F **	Forward voltage drop	I _F = 15 A	T _j = 25°C			1.25	V
			T _j = 125°C		0.85	1	

Pulse test : * t_p = 5 ms, δ < 2 %

** t_p = 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 _{rr}	I _F = 0.5 A I _{rr} = 0.25 A I _R = 1A	T _j = 25°C			30	ns
	I _F = 1 A dI _F /dt = - 50 A/μs V _R = 30V				40	
t _{fr}	I _F = 15 A dI _F /dt = 100 A/μs	T _j = 25°C			300	ns
V _{FP}	V _{FR} = 1.1 x V _F max.				3.5	V
S _{factor}	V _{CC} = 200 V I _F = 15 A	T _j = 125°C		0.3		-
I _{RM}	dI _F /dt = 200A/μs				8.5	A

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

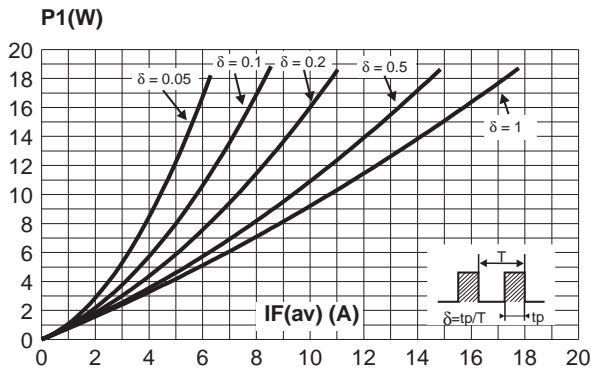


Fig. 2: Forward voltage drop versus forward current (maximum values, per diode).

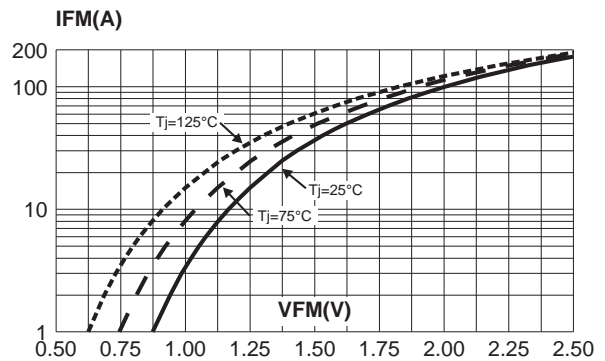


Fig. 3: Relative variation of thermal impedance junction to case versus pulse duration.

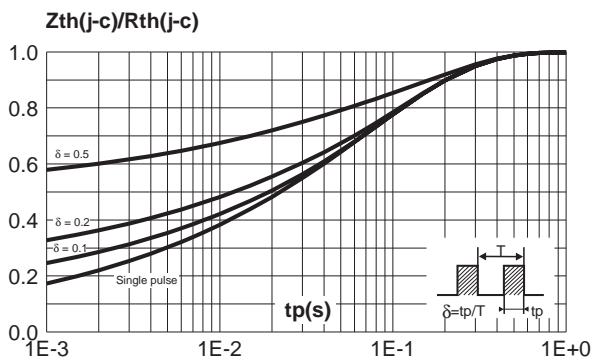


Fig. 4: Peak reverse recovery current versus dI_F/dt (90% confidence, per diode).

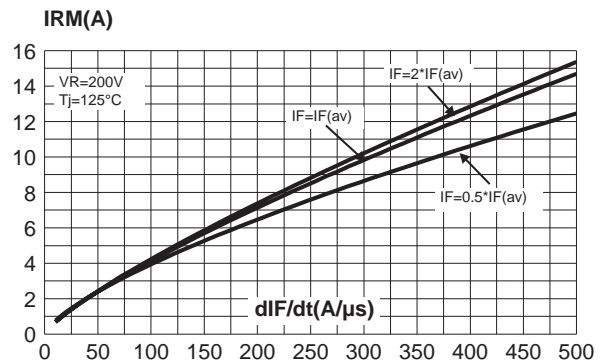


Fig. 5: Reverse recovery time versus dI_F/dt (90% confidence, per diode).

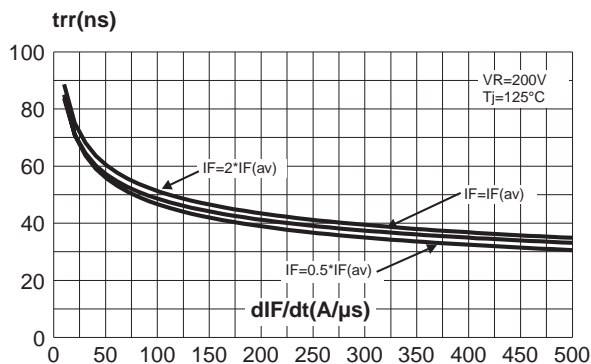
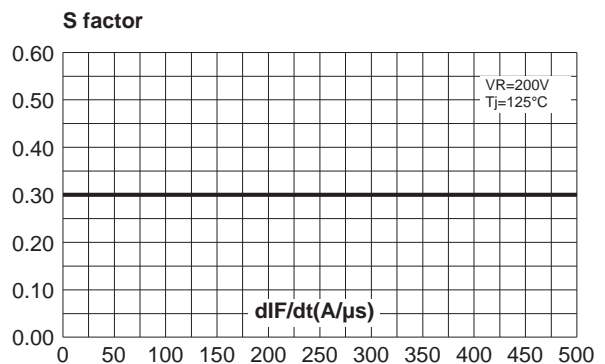


Fig. 6: Softness factor versus dI_F/dt (typical values, per diode).



STTH3003CW

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

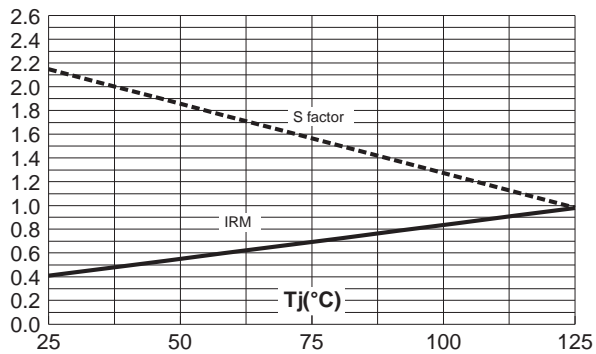


Fig. 8: Transient peak forward voltage versus dI_F/dt (90% confidence, per diode).

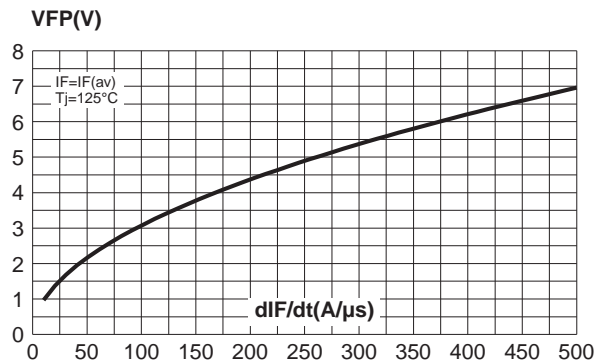
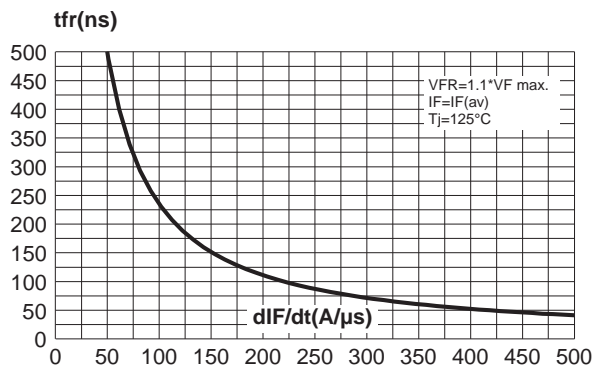
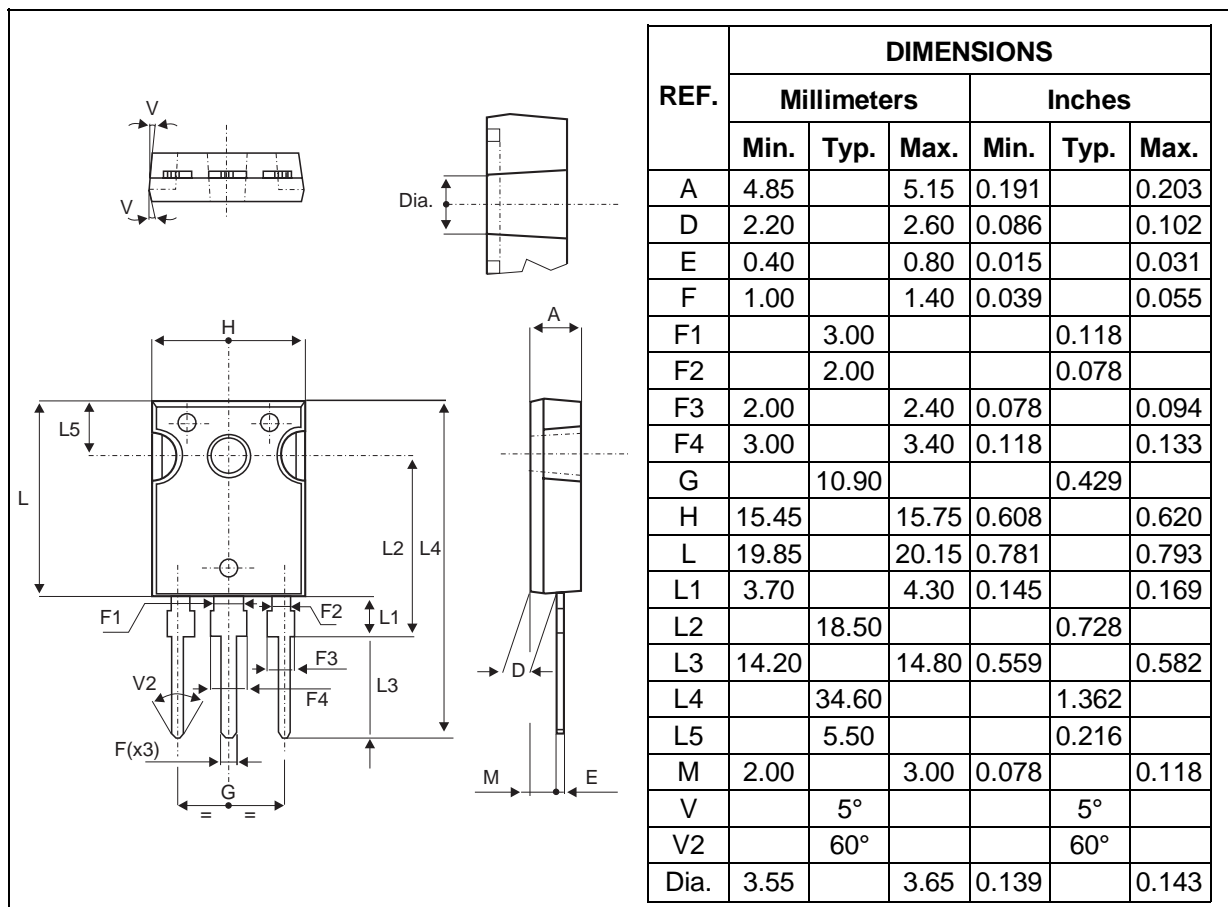


Fig. 9: Forward recovery time versus dI_F/dt (90% confidence, per diode).



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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