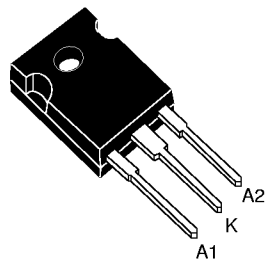
STTH3003CW

HIGH FREQUENCY SECONDARY RECTIFIER

MAJOR PRODUCT CHARACTERISTICS

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



TO-247

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	Tc = 135°C δ = 0.5	Per diode Per device	15 30	A
I_{FSM}	Surge non repetitive forward current	tp = 10 ms sinusoidal		140	A
I_{RSM}	Non repetitive peak reverse current	tp = 20 µs square		7	A
T_{stg}	Storage temperature range			-65 +175	°C
Tj	Maximum operating junction temperature			+175	°C

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	Tj = 25°C			40	µA
			Tj = 125°C		40	400	
V_F **	Forward voltage drop	I_F = 15 A	Tj = 25°C			1.25	V
			Tj = 125°C		0.85	1	

Pulse test : * tp = 5 ms, δ < 2 %

** tp = 380 µs, δ < 2%

To evaluate the maximum conduction losses use the following equation :

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

RECOVERY CHARACTERISTICS

Symbol	Tests conditions		Min.	Typ.	Max.	Unit
trr	I_F = 0.5 A Irr = 0.25 A I_R = 1A	Tj = 25°C			30	ns
	I_F = 1 A dI_F/dt = - 50 A/µs V_R = 30V				40	
tfr	I_F = 15 A dI_F/dt = 100 A/µs	Tj = 25°C			300	ns
V_{FP}	V_{FR} = 1.1 x VF max.				3.5	V
S_{factor}	Vcc = 200 V I_F = 15 A	Tj = 125°C		0.3		-
I_{RM}	dI_F/dt = 200A/µs				8.5	A

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

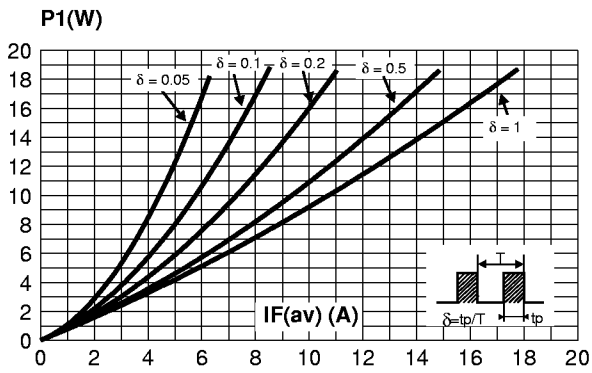


Fig. 2: Forward voltage drop versus forward current (maximum values, per diode).

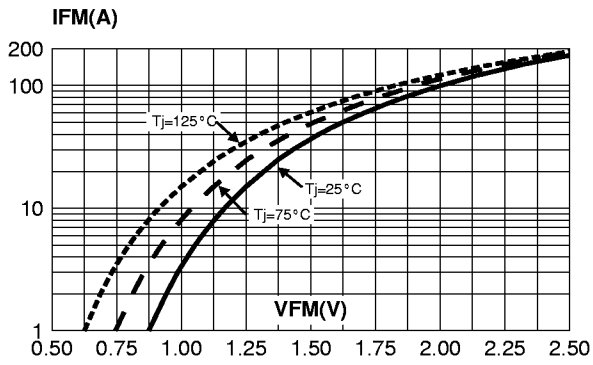


Fig. 3: Relative variation of thermal impedance junction to case versus pulse duration.

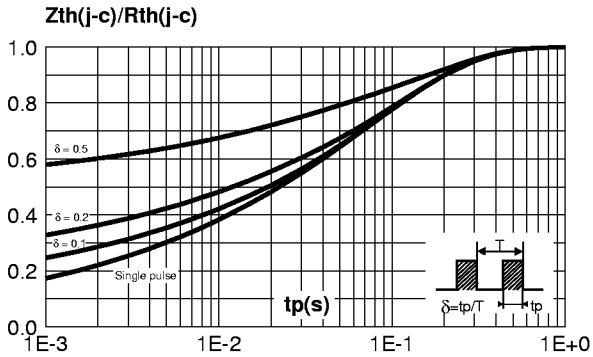


Fig. 4: Peak reverse recovery current versus dI_F/dt (90% confidence, per diode).

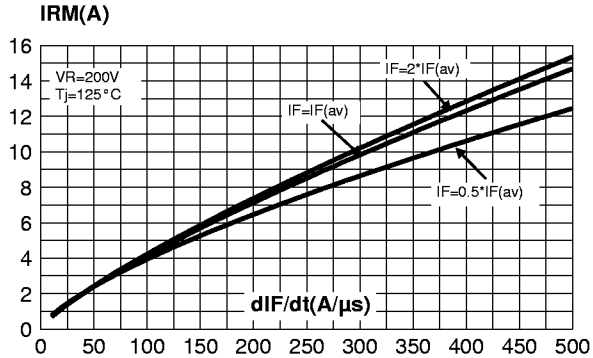


Fig. 5: Reverse recovery time versus dI_F/dt (90% confidence, per diode).

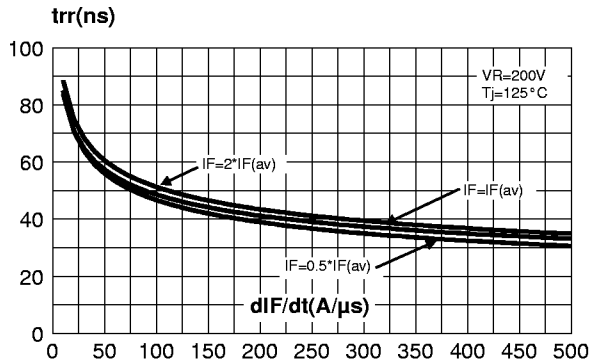


Fig. 6: Softness factor versus dI_F/dt (typical values, per diode).

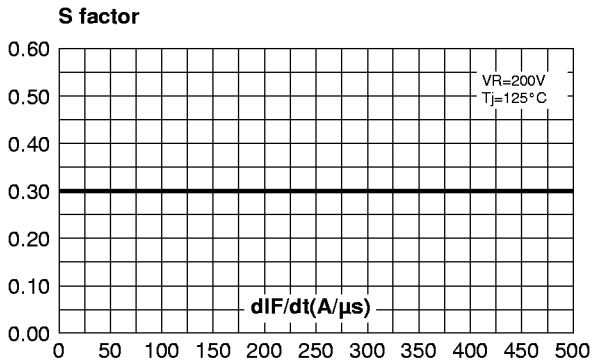


Fig. 7: Relative variation of dynamic parameters versus junction temperature (reference: Tj = 125°C).

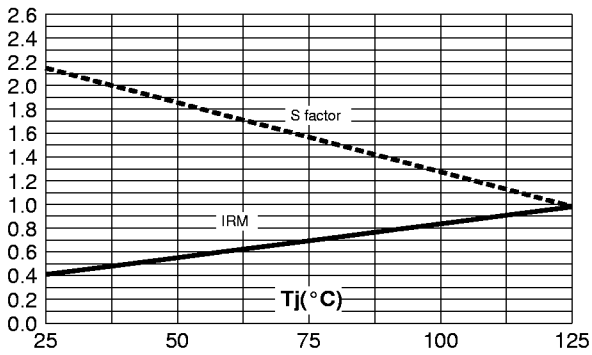


Fig. 8: Transient peak forward voltage versus dI_F/dt (90% confidence, per diode).

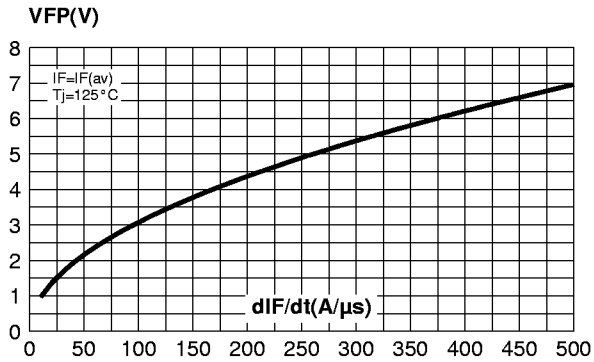
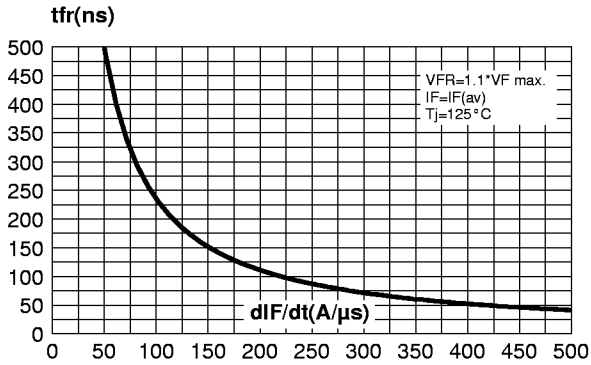
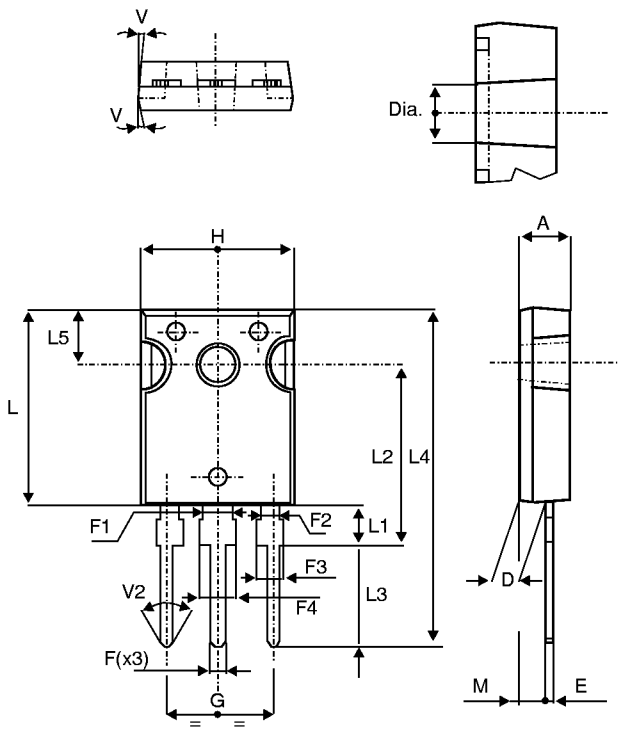


Fig. 9: Forward recovery time versus dI_F/dt (90% confidence, per diode).



PACKAGE MECHANICAL DATA

TO-247



REF.	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.85		5.15	0.191		0.203
D	2.20		2.60	0.086		0.102
E	0.40		0.80	0.015		0.031
F	1.00		1.40	0.039		0.055
F1		3.00			0.118	
F2		2.00			0.078	
F3	2.00		2.40	0.078		0.094
F4	3.00		3.40	0.118		0.133
G		10.90			0.429	
H	15.45		15.75	0.608		0.620
L	19.85		20.15	0.781		0.793
L1	3.70		4.30	0.145		0.169
L2		18.50			0.728	
L3	14.20		14.80	0.559		0.582
L4		34.60			1.362	
L5		5.50			0.216	
M	2.00		3.00	0.078		0.118
V		5°			5°	
V2		60°			60°	
Dia.	3.55		3.65	0.139		0.143

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