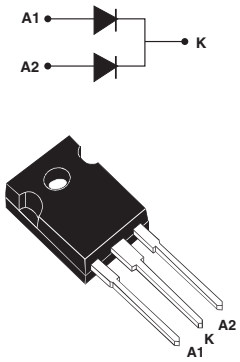
Yixin

STTH6002C

HIGH EFFICIENCY ULTRAFAST DIODE

MAIN PRODUCT CHARACTERISTICS

$I_{F(AV)}$	2 x 30 A
V_{RRM}	200 V
Tj (max)	175 °C
V_F (typ)	0.75 V
t_{rr} (typ)	22 ns



TO-247
STTH6002CW

FEATURES AND BENEFITS

- Suited for SMPS
- Low losses
- Low forward and reverse recovery times
- High surge current capability
- High junction temperature
- Low leakage current

DESCRIPTION

Dual center tap rectifier suited for Switch Mode Power Supplies and High frequency DC to DC converters.
Packaged in TO-247, this device is intended for use in low voltage, high frequency inverters, free wheeling and polarity protection applications.

ABSOLUTE RATINGS (limiting values, per diode)

Symbol	Parameter			Value	Unit
V_{RRM}	Repetitive peak reverse voltage			200	V
$I_{F(RMS)}$	RMS forward current			50	A
$I_{F(AV)}$	Average forward current δ =0.5	Tc = 140°C	Per diode	30	A
		Tc = 125°C	Per device	60	
I_{FSM}	Surge non repetitive forward current	tp = 10 ms Sinusoidal		330	A
T_{stg}	Storage temperature range			- 65 + 175	°C
Tj	Maximum operating junction temperature			175	°C

THERMAL PARAMETERS

Symbol	Parameter		Maximum	Unit
$R_{th\ (j-c)}$	Junction to case	Per diode	1.2	°C/W
		Per device	0.8	
$R_{th\ (j-c)}$	Coupling		0.4	°C/W

When the diodes 1 and 2 are used simultaneously:
Δ Tj (diode1) = P(diode1) x $R_{th(j-c)}$ (per diode) + P(diode2) x $R_{th(c)}$

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Tests conditions		Min.	Typ.	Max.	Unit
I_R*	Reverse leakage current	Tj = 25°C	$V_R = V_{RRM}$			30	µA
		Tj = 125°C			30	300	
V_F**	Forward voltage drop	Tj = 25°C	I_F = 30 A			1.05	V
		Tj = 25°C	I_F = 60 A			1.18	
		Tj = 150°C	I_F = 30 A		0.75	0.84	
		Tj = 150°C	I_F = 60 A			0.99	

Pulse test: * tp = 5ms, δ < 2%

** tp = 380µs, δ < 2%

To evaluate the maximum conduction losses use the following equation :
$P = 0.69 \times I_{F(AV)} + 0.005\ I_F{}^2{}_{(RMS)}$

DYNAMIC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Tests conditions		Min.	Typ.	Max.	Unit
t_{rr}	Reverse recovery time	Tj = 25°C	I_F = 1 A V_R = 30V dI_F/dt = 200 A/µs		22	27	ns
I_{RM}	Reverse recovery current	Tj = 125°C	I_F = 30 A V_R = 160V dI_F/dt = 200 A/µs		6.3	8.2	A
t_{fr}	Forward recovery time	Tj = 25°C	I_F = 30 A dI_F/dt = 200 A/µs $V_{FR} = 1.1 \times V_F$max			220	ns
V_{FP}	Forward recovery voltage	Tj = 25°C	I_F = 30 A dI_F/dt = 200 A/µs		2.5		V

Fig. 1: Peak current versus duty cycle (per diode).

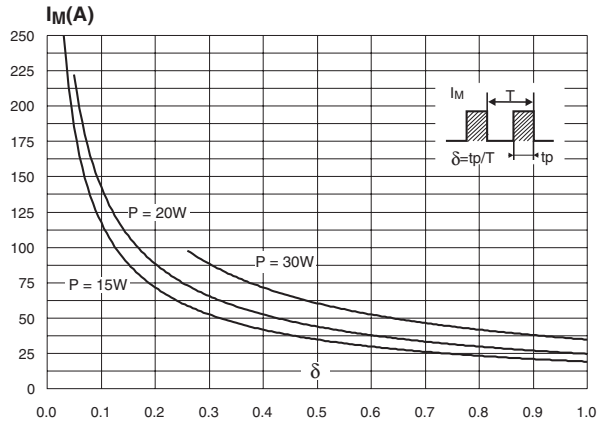


Fig. 2-1: Forward voltage drop versus forward current (typical values, per diode).

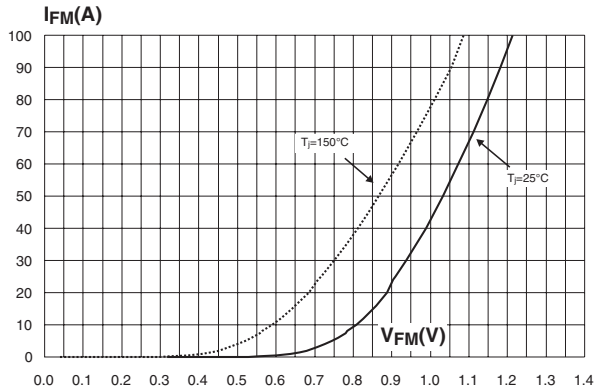


Fig. 2-2: Forward voltage drop versus forward current (maximum values, per diode).

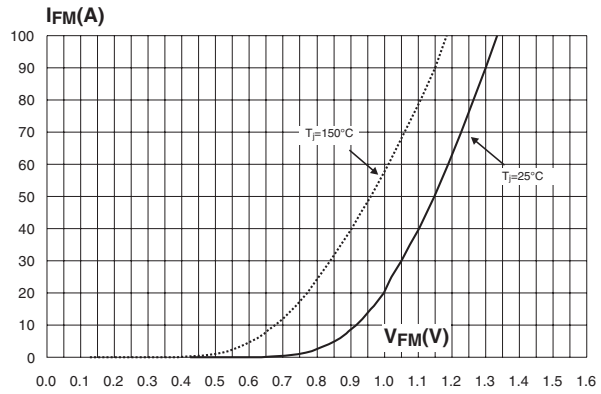


Fig. 3: Relative variation of thermal impedance junction to case versus pulse duration.

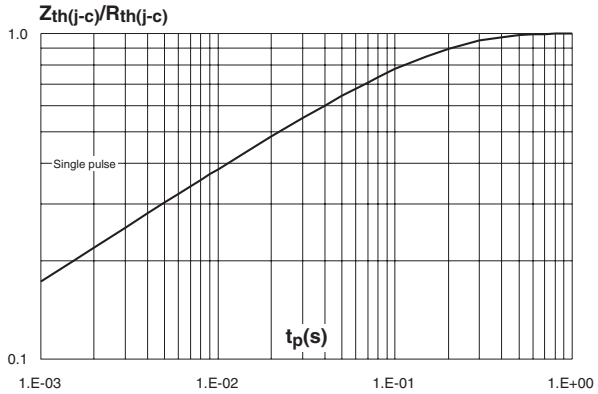


Fig. 4: Junction capacitance versus reverse voltage applied (typical values, per diode).

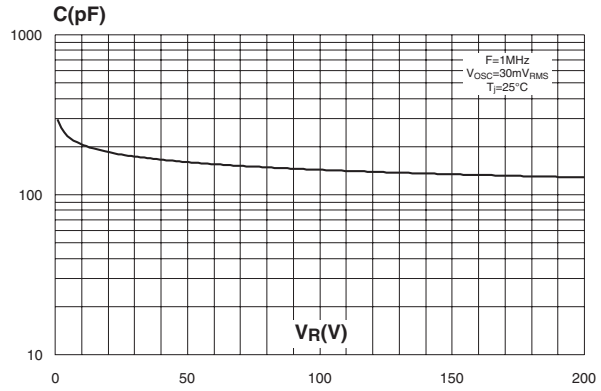


Fig. 5: Reverse recovery charges versus dI_F/dt (typical values, per diode).

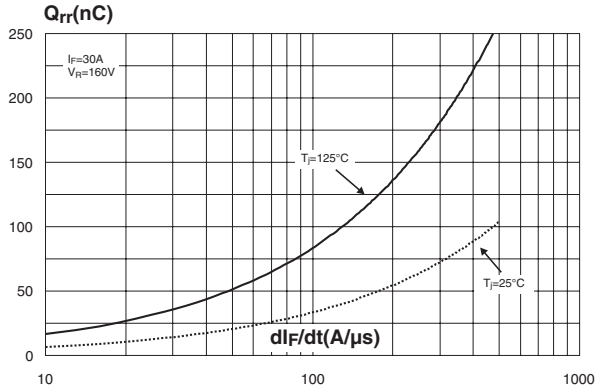


Fig. 6: Reverse recovery time versus dI_F/dt (typical values, per diode).

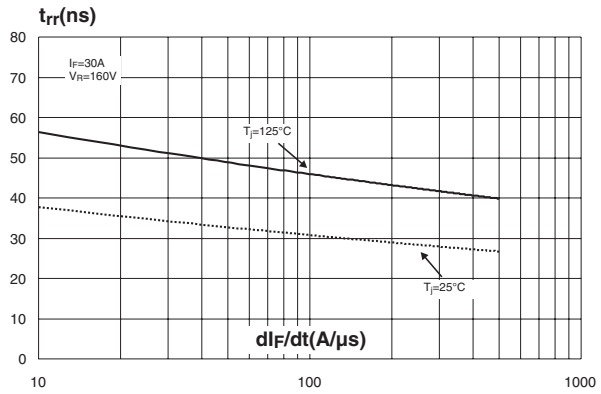


Fig. 7: Peak reverse recovery current versus dI_F/dt (typical values, per diode).

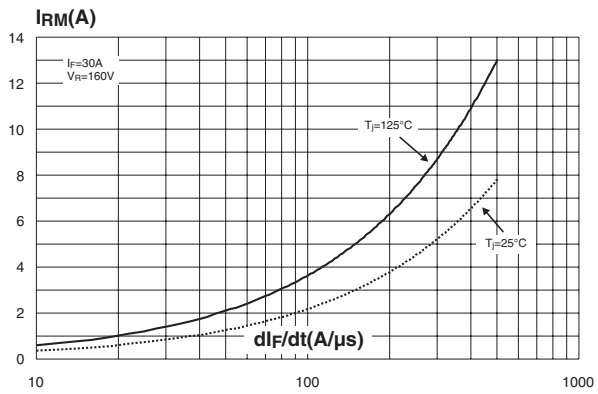


Fig. 8: Dynamic parameters versus junction temperature.