

HIGH EFFICIENCY ULTRAFAST DIODE

MAIN PRODUCT CHARACTERISTICS

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

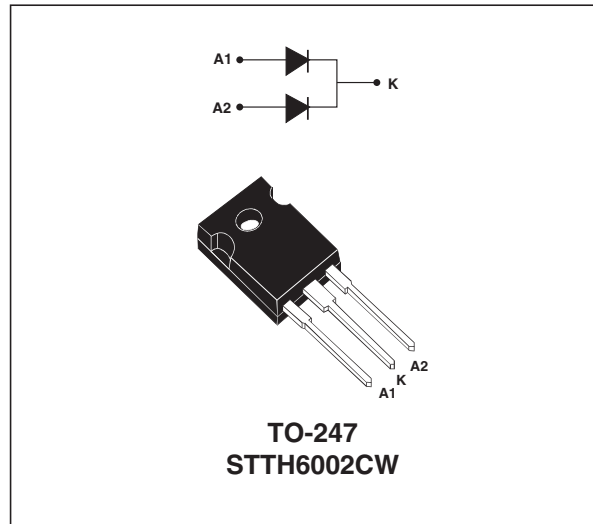
FEATURES AND BENEFITS

- 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 $\delta = 0.5$	$T_c = 140^\circ\text{C}$ Per diode	30	A
		$T_c = 125^\circ\text{C}$ Per device	60	
I_{FSM}	Surge non repetitive forward current	$t_p = 10 \text{ ms}$ Sinusoidal	330	A
T_{stg}	Storage temperature range		- 65 + 175	°C
T_j	Maximum operating junction temperature		175	°C

STTH6002C

THERMAL PARAMETERS

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

When the diodes 1 and 2 are used simultaneously:

$$\Delta T_j (\text{diode1}) = P(\text{diode1}) \times R_{th(j-c)} (\text{per diode}) + P(\text{diode2}) \times R_{th(c)}$$

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Tests conditions		Min.	Typ.	Max.	Unit
I _R *	Reverse leakage current	T _j = 25°C	V _R = V _{RRM}			30	μA
		T _j = 125°C			30	300	
V _F **	Forward voltage drop	T _j = 25°C	I _F = 30 A			1.05	V
		T _j = 25°C	I _F = 60 A			1.18	
		T _j = 150°C	I _F = 30 A		0.75	0.84	
		T _j = 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 :

$$P = 0.69 \times I_{F(AV)} + 0.005 I_{F(RMS)}^2$$

DYNAMIC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Tests conditions		Min.	Typ.	Max.	Unit
t _{rr}	Reverse recovery time	T _j = 25°C	I _F = 1 A V _R = 30V dI _F /dt = 200 A/μs		22	27	ns
I _{RM}	Reverse recovery current	T _j = 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	T _j = 25°C	I _F = 30 A dI _F /dt = 200 A/μs V _{FR} = 1.1 x V _{Fmax}			220	ns
V _{FP}	Forward recovery voltage	T _j = 25°C	I _F = 30 A dI _F /dt = 200 A/μs		2.5		V

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

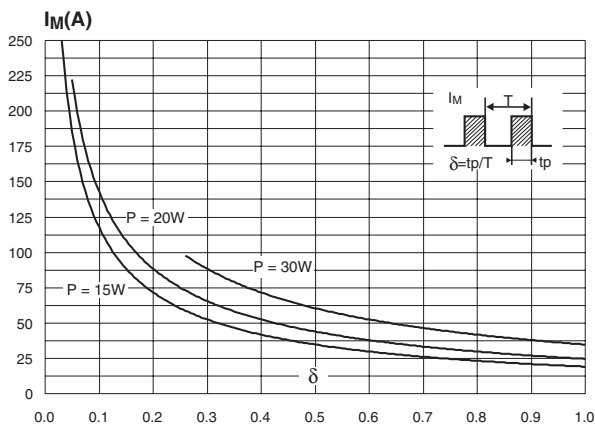


Fig. 2-1: Forward voltage drop versus forward current (typical values, per diode).

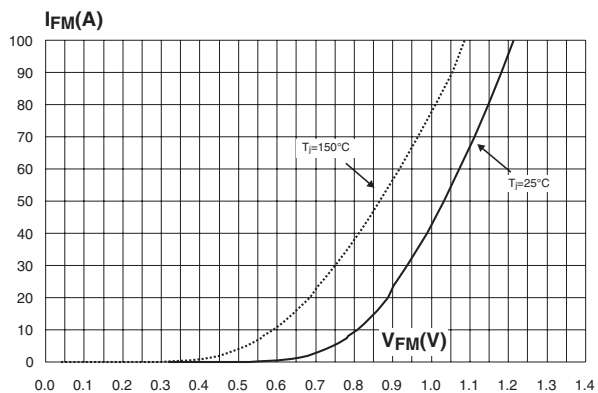


Fig. 2-2: Forward voltage drop versus forward current (maximum values, per diode).

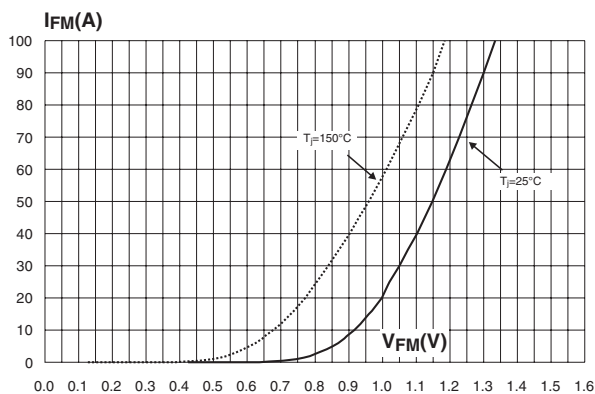


Fig. 3: Relative variation of thermal impedance junction to case versus pulse duration.

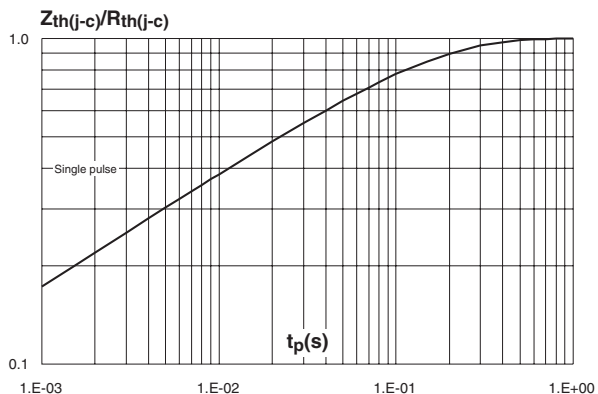


Fig. 4: Junction capacitance versus reverse voltage applied (typical values, per diode).

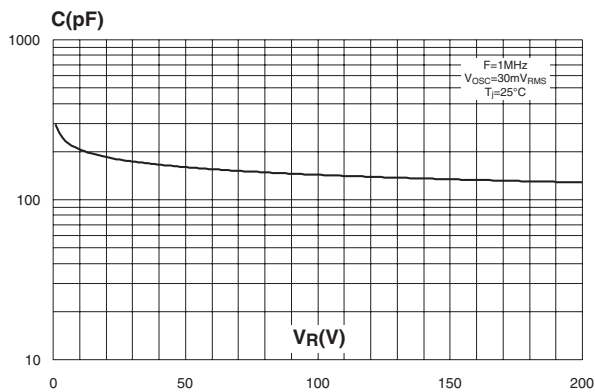


Fig. 5: Reverse recovery charges versus di_F/dt (typical values, per diode).

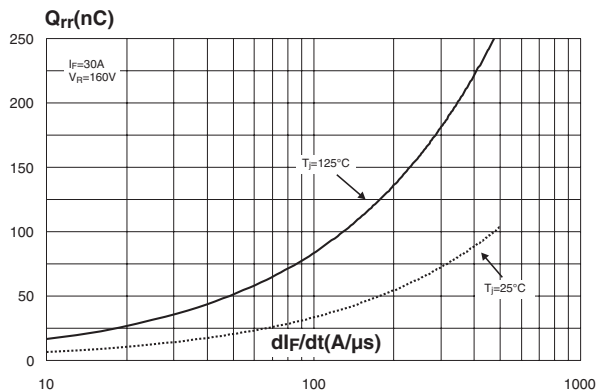


Fig. 6: Reverse recovery time versus di_F/dt (typical values, per diode).

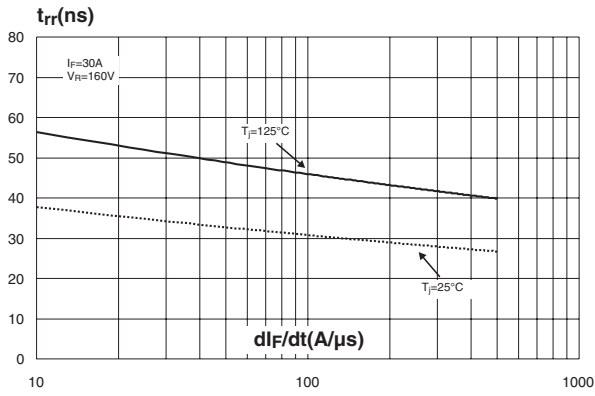


Fig. 7: Peak reverse recovery current versus di_F/dt (typical values, per diode).

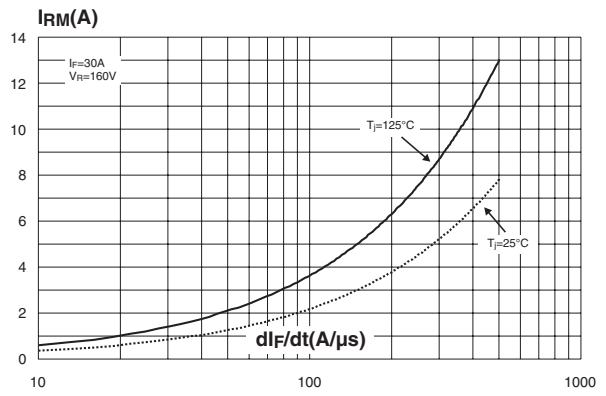
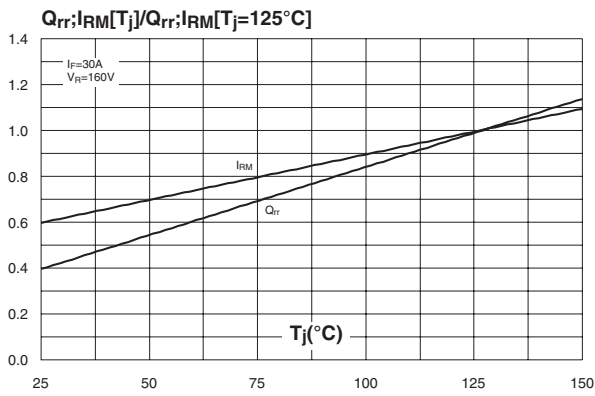
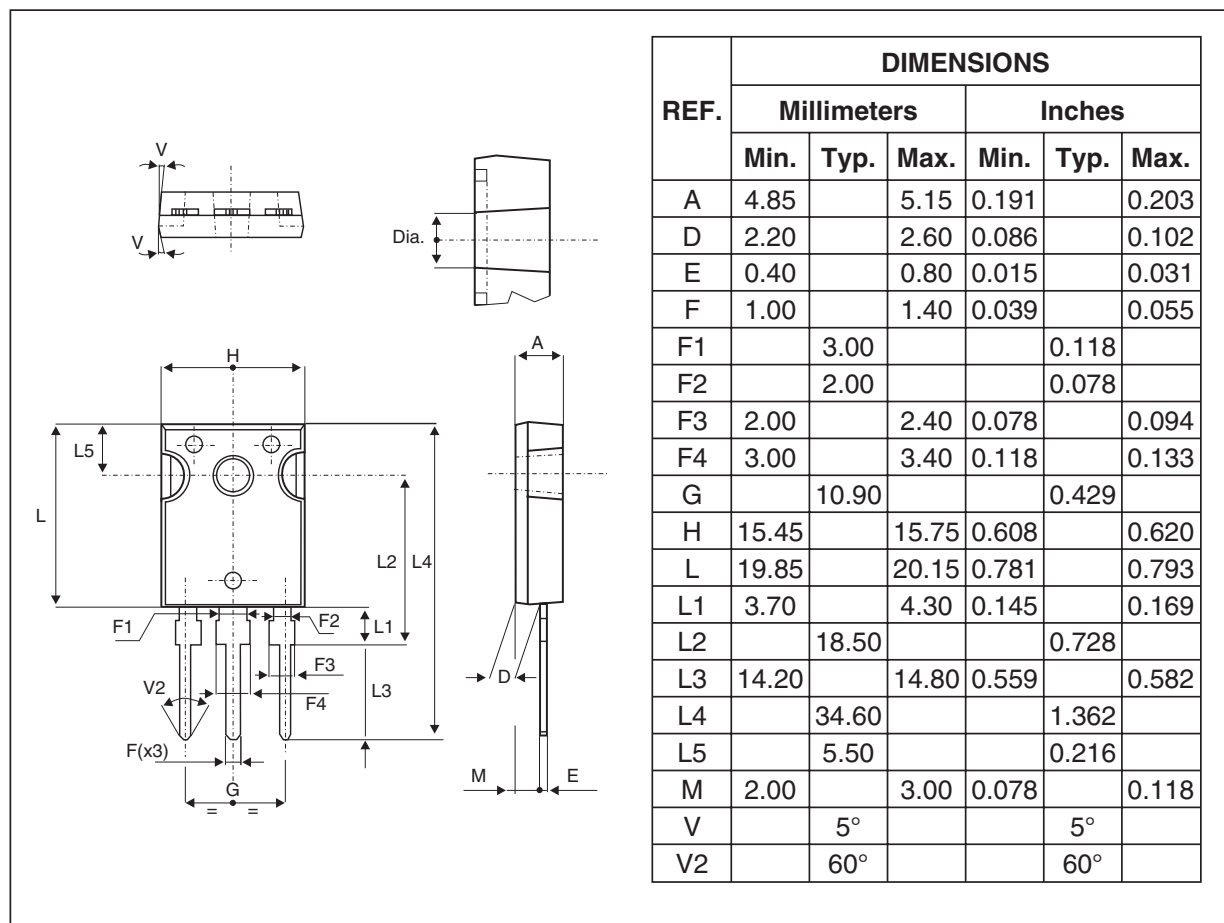


Fig. 8: Dynamic parameters versus junction temperature.



PACKAGE MECHANICAL DATA
 TO-247


Ordering code	Marking	Package	Weight	Base qty	Delivery mode
STTH6002CW	STTH6002CW	TO-247	4.46 g	30	Tube

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