

TURBO 2 ULTRAFast HIGH VOLTAGE RECTIFIER

MAIN PRODUCT CHARACTERISTICS

$I_{F(AV)}$	2 x 15 A
V_{RRM}	600 V
$I_{RM} (typ.)$	8 A
$T_j (max)$	175 °C
$V_F (max)$	1.8 V
$t_{rr} (max)$	50 ns

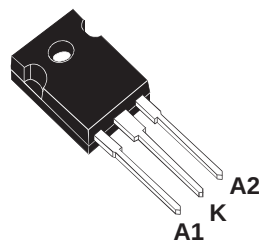
FEATURES AND BENEFITS

- Ultrafast switching
- Low reverse recovery current
- Reduces switching losses
- Low thermal resistance

DESCRIPTION

The STTH30R06CW, which is using ST Turbo 2 600V technology, is specially suited as boost diode in continuous mode power factor corrections and hard switching conditions.

The device is also intended for use as a free wheeling diode in power supplies and other power switching applications.



TO-247
STTH30R06CW

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
V_{RRM}	Repetitive peak reverse voltage		600	V
$I_{F(RMS)}$	RMS forward current		30	A
$I_{F(AV)}$	Average forward current	Per diode Per device	15 30	A
I_{FSM}	Surge non repetitive forward current	tp = 10 ms Sinusoidal	120	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 _{th(j-c)}	Junction to case	Per diode	1.5	°C/W
		Total	1.0	
R _{th(c)}		Coupling	0.5	

STATIC ELECTRICAL CHARACTERISTICS (per diode)

Symbol	Parameter	Tests conditions		Min.	Typ.	Max.	Unit
I _R	Reverse leakage current	V _R = 600V	T _j = 25°C			60	μA
			T _j = 125°C		70	800	
V _F	Forward voltage drop	I _F = 15 A	T _j = 25°C			2.9	V
			T _j = 125°C		1.4	1.8	

To evaluate the maximum conduction losses use the following equation :
 $P = 1.16 \times I_{F(AV)} + 0.043 I_{F(RMS)}^2$

DYNAMIC ELECTRICAL CHARACTERISTICS

Symbol	Tests conditions		Min.	Typ.	Max.	Unit
trr	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				50	
I _{RM}	V _R = 400 V I _F = 15A dI _F /dt = - 200A/μs	T _j = 125°C		7.5	9.0	A
S factor				0.15		
Qrr				220		nC
tfr	I _F = 15 A dI _F /dt = 120 A/μs V _{FR} = 1.1 x V _{Fmax}	T _j = 25°C			200	ns
V _{FP}					6	V

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

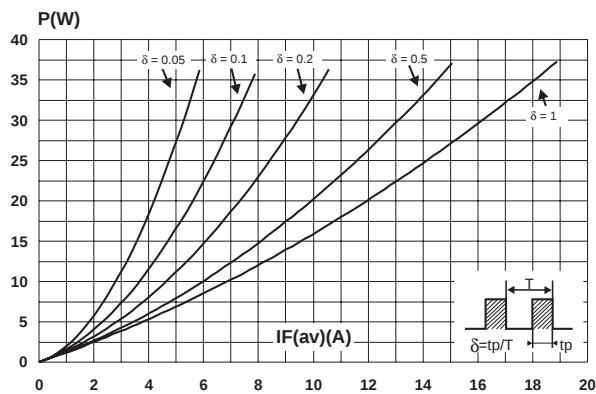


Fig. 2: Forward voltage drop versus forward current (per leg).

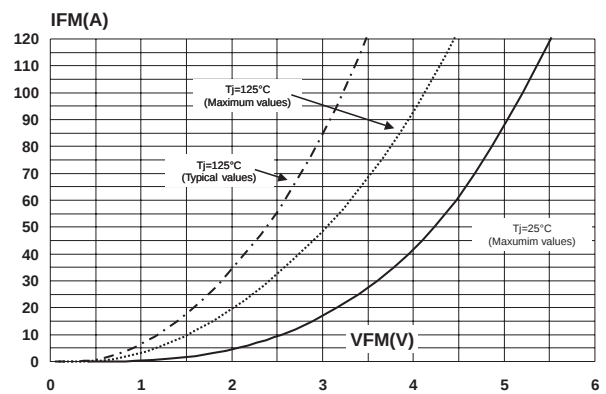


Fig. 3: Relative variation of thermal impedance junction to case versus pulse duration.

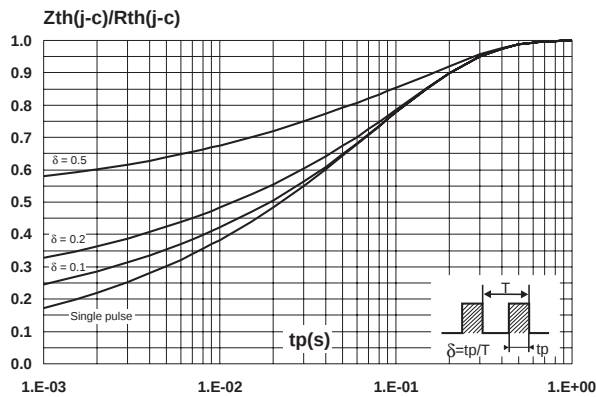


Fig. 4: Peak reverse recovery current versus dI_F/dt (90% confidence, per leg).

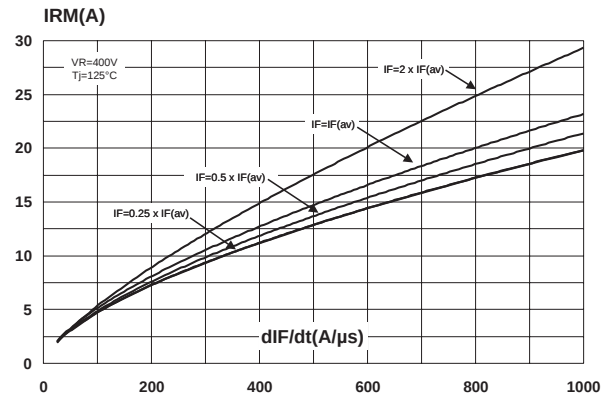


Fig. 5: Reverse recovery time versus dI_F/dt (90% confidence, per leg).

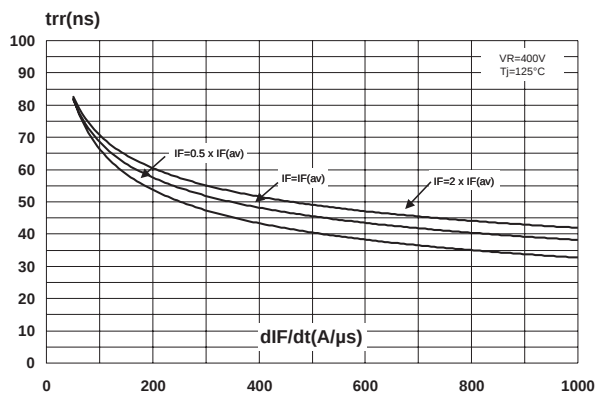


Fig. 6: Reverse recovery charges versus dI_F/dt (90% confidence, per leg).

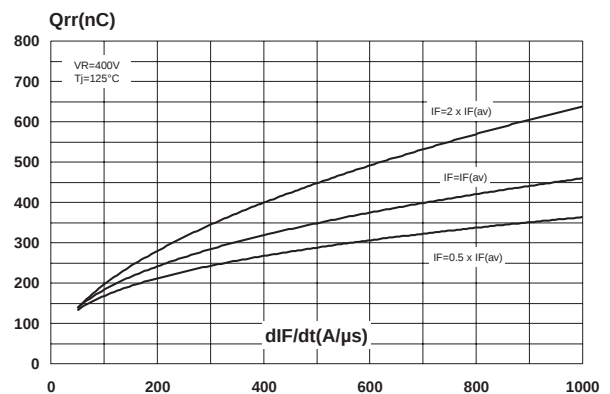


Fig. 7: Softness factor versus di_F/dt (typical values, per leg).

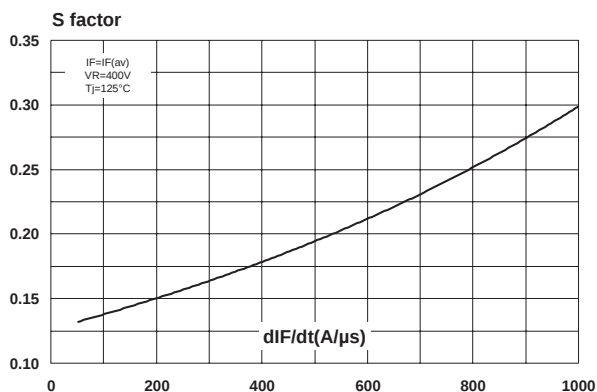


Fig. 8: Relative variation of dynamic parameters versus junction temperature.

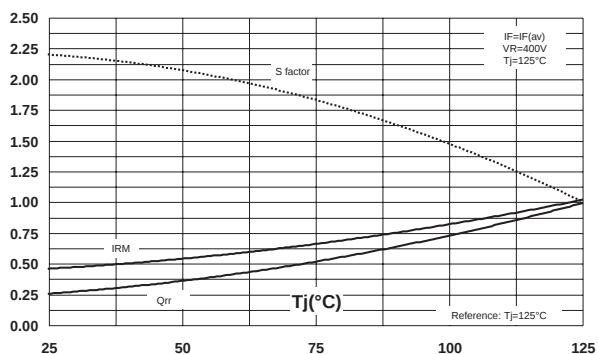


Fig. 9: Transient peak forward voltage versus di_F/dt (90% confidence, per leg).

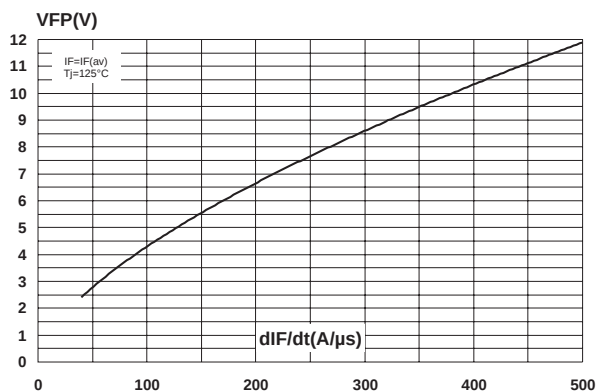


Fig. 10: Forward recovery time versus di_F/dt (90% confidence, per leg).

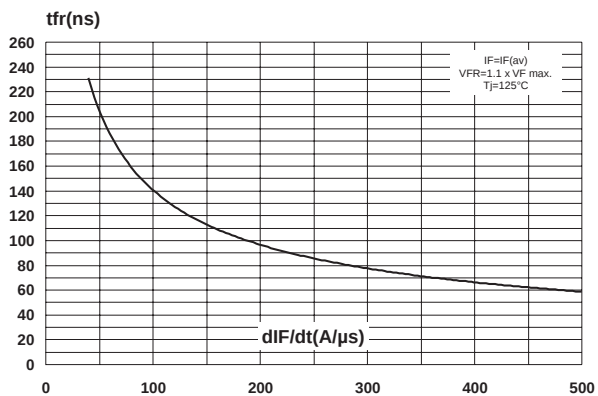
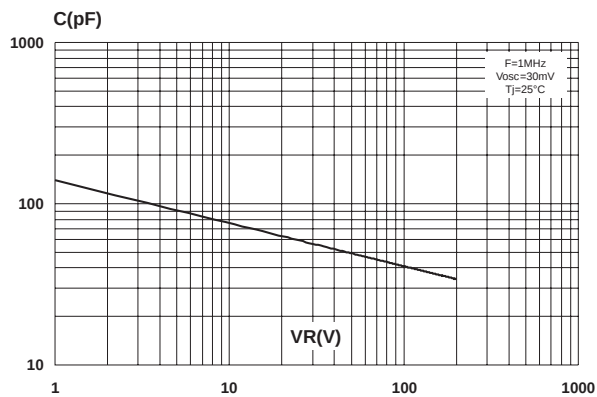


Fig. 11: Junction capacitance versus reverse voltage applied (typical values, per leg).



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
STTH30R06CW	STTH30R06CW	TO-247	4.36 g	30	Tube

- Epoxy meets UL 94,V0

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