

## Excellent Integrated System Limited

Stocking Distributor

Click to view price, real time Inventory, Delivery & Lifecycle Information:

[STMicroelectronics](#)

[STTH60L06CW](#)

For any questions, you can email us directly:

[sales@integrated-circuit.com](mailto:sales@integrated-circuit.com)



# STTH60L06C

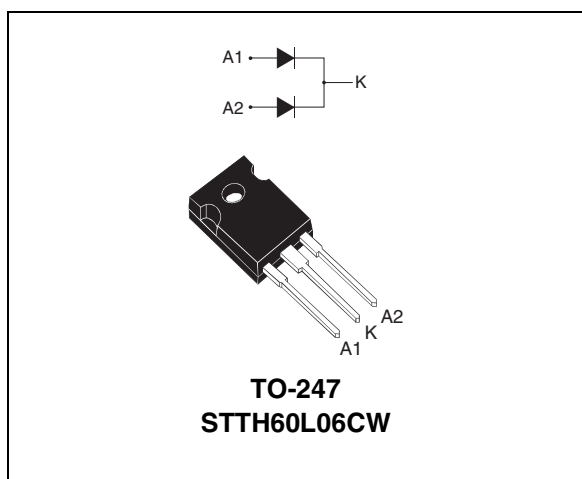
## TURBO 2 ULTRAFAST HIGH VOLTAGE RECTIFIER

**Table 1: Main Product Characteristics**

$I_{F(AV)}$	Up to 2 x 40 A
$V_{RRM}$	600 V
$T_j$	175°C
$V_F$ (typ)	1.0 V
$t_{rr}$ (max)	65 ns

### FEATURES AND BENEFITS

- Ultrafast switching
- Low reverse current
- Low thermal resistance
- Reduces switching & conduction losses



### DESCRIPTION

The STTH60L06, which is using ST Turbo 2 600V technology, is specially suited for use in switching power supplies, and industrial applications, as rectification and discontinuous mode PFC boost diode.

**Table 2: Order Codes**

Part Number	Marking
STTH60L06CW	STTH60L06CW

**Table 3: Absolute Ratings** (limiting values, per diode)

Symbol	Parameter		Value	Unit	
$V_{RRM}$	Repetitive peak reverse voltage		600	V	
$I_{F(RMS)}$	RMS forward voltage		60	A	
$I_{F(AV)}$	Average forward current $\delta = 0.5$	$T_c = 125^\circ\text{C}$	Per diode	30	A
		$T_c = 110^\circ\text{C}$	Per device	60	
		$T_c = 100^\circ\text{C}$	Per diode	40	
		$T_c = 80^\circ\text{C}$	Per device	80	
$I_{FSM}$	Surge non repetitive forward current	$t_p = 10\text{ms}$ sinusoidal	210	A	
$T_{stg}$	Storage temperature range		-65 to + 175	°C	
$T_j$	Maximum operating junction temperature		175	°C	

## STTH60L06C

**Table 4: Thermal Resistance**

Symbol	Parameter		Value (max.)	Unit
$R_{th(j-c)}$	Junction to case	Per diode	1.05	°C/W
		Total	0.68	
$R_{th(c)}$	Coupling		0.3	°C/W

When the diodes 1 and 2 are used simultaneously:  
 $\Delta T_j(\text{diode } 1) = P(\text{diode } 1) \times R_{th(j-c)}(\text{Per diode}) + P(\text{diode } 2) \times R_{th(c)}$

**Table 5: Static Electrical Characteristics (per diode)**

Symbol	Parameter	Test conditions		Min.	Typ	Max.	Unit
$I_R$ *	Reverse leakage current	$T_j = 25^\circ\text{C}$	$V_R = V_{RRM}$			25	$\mu\text{A}$
		$T_j = 150^\circ\text{C}$			80	800	
$V_F$ **	Forward voltage drop	$T_j = 25^\circ\text{C}$	$I_F = 30\text{A}$			1.55	V
		$T_j = 150^\circ\text{C}$			1.0	1.25	
		$T_j = 25^\circ\text{C}$	$I_F = 60\text{A}$			1.78	
		$T_j = 150^\circ\text{C}$			1.24	1.55	

Pulse test: \*  $t_p = 5 \text{ ms}$ ,  $\delta < 2\%$   
 \*\*  $t_p = 380 \mu\text{s}$ ,  $\delta < 2\%$

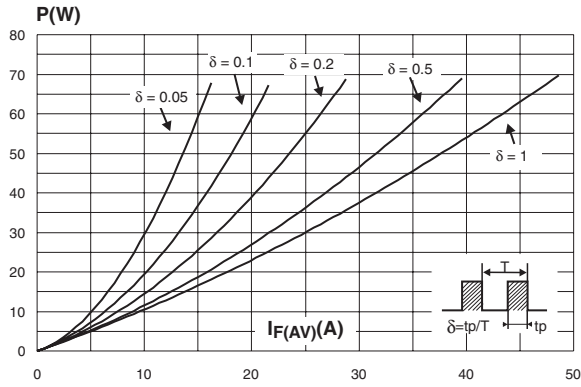
To evaluate the conduction losses use the following equation:  $P = 0.95 \times I_{F(AV)} + 0.010 I_F^2(\text{RMS})$

**Table 6: Dynamic Characteristics (per diode)**

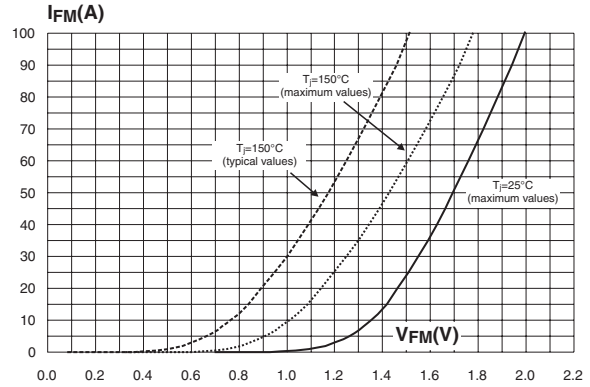
Symbol	Parameter	Test conditions		Min.	Typ	Max.	Unit
$t_{rr}$	Reverse recovery time	$T_j = 25^\circ\text{C}$	$I_F = 0.5\text{A}$ $I_{rr} = 0.25\text{A}$ $I_R = 1\text{A}$			65	ns
			$I_F = 1\text{A}$ $di_F/dt = 50 \text{ A}/\mu\text{s}$ $V_R = 30\text{V}$		65	90	
$I_{RM}$	Reverse recovery current	$T_j = 125^\circ\text{C}$	$I_F = 30\text{A}$ $V_R = 400\text{V}$ $di_F/dt = 100 \text{ A}/\mu\text{s}$		11.5	16	A
$t_{fr}$	Forward recovery time	$T_j = 25^\circ\text{C}$	$I_F = 30\text{A}$ $di_F/dt = 100 \text{ A}/\mu\text{s}$ $V_{FR} = 1.1 \times V_{Fmax}$			500	ns
$V_{FR}$	Forward recovery voltage	$T_j = 25^\circ\text{C}$	$I_F = 30\text{A}$ $di_F/dt = 100 \text{ A}/\mu\text{s}$ $V_{FR} = 1.1 \times V_{Fmax}$		2.5		V

**STTH60L06C**

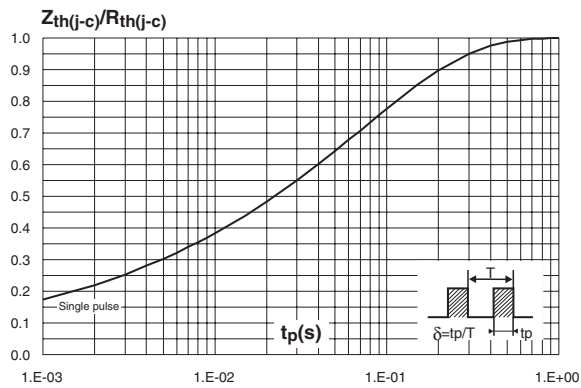
**Figure 1: Conduction losses versus average forward current (per diode)**



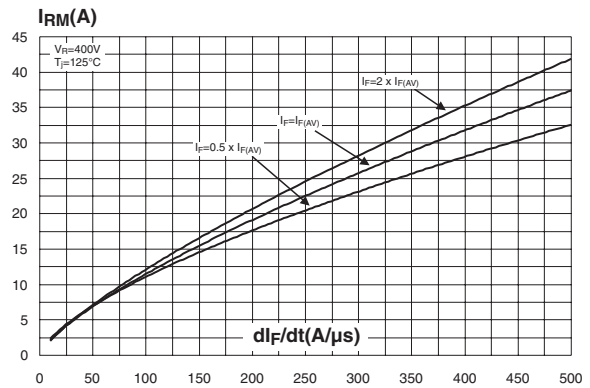
**Figure 2: Forward voltage drop versus forward current (per diode)**



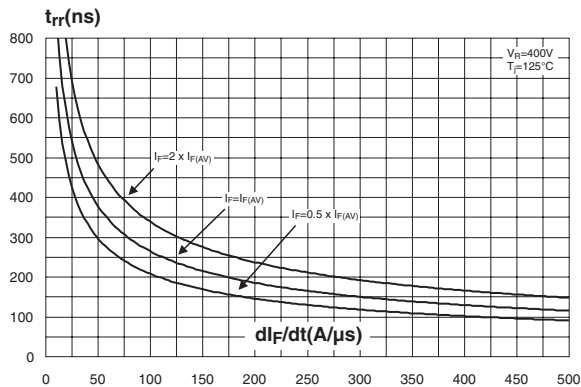
**Figure 3: Relative variation of thermal impedance junction to case versus pulse duration**



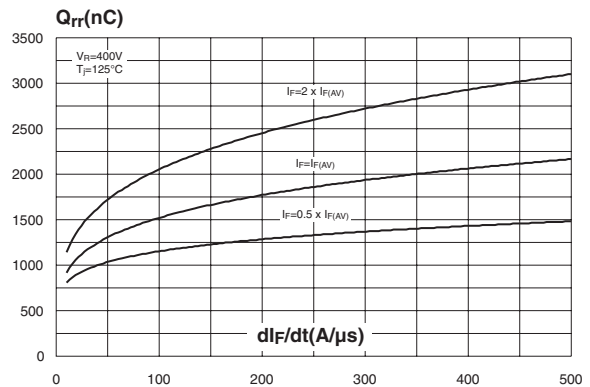
**Figure 4: Peak reverse recovery current versus diF/dt (typical values, per diode)**



**Figure 5: Reverse recovery time versus diF/dt (typical values, per diode)**

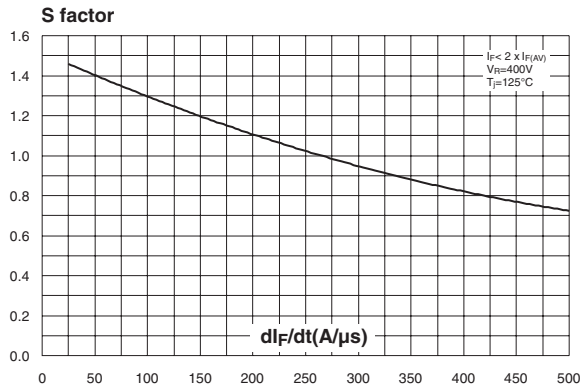


**Figure 6: Reverse recovery charges versus diF/dt (typical values, per diode)**

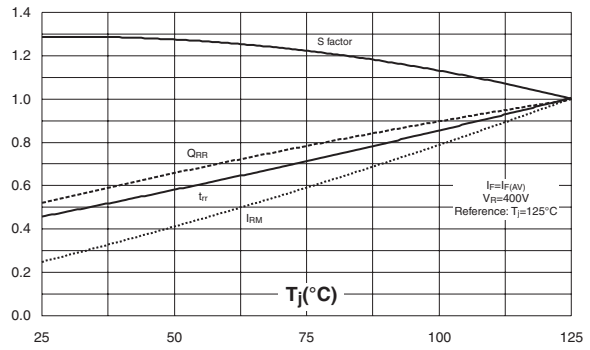


**STTH60L06C**

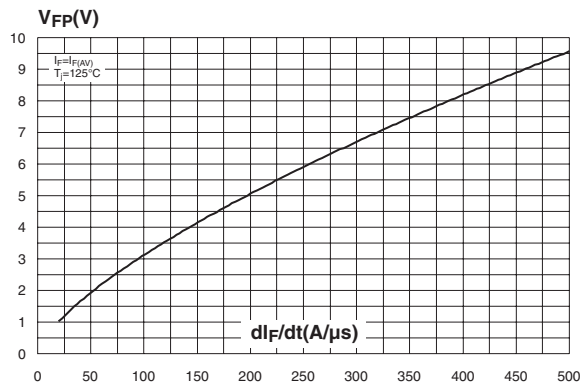
**Figure 7: Reverse recovery softness factor versus  $di_F/dt$  (typical values, per diode)**



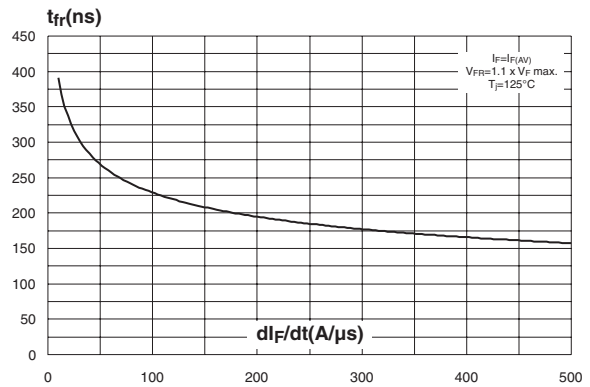
**Figure 8: Relative variations of dynamic parameters versus junction temperature**



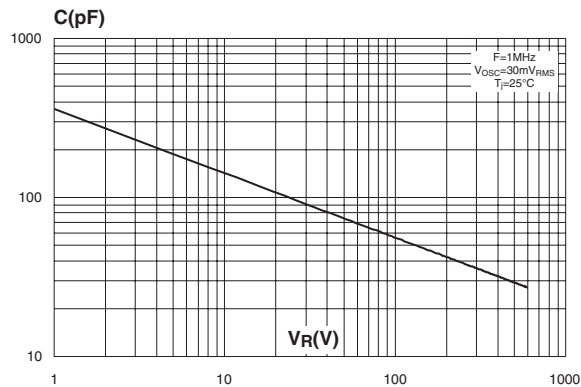
**Figure 9: Transient peak forward voltage versus  $di_F/dt$  (typical values, per diode)**



**Figure 10: Forward recovery time versus  $di_F/dt$  (typical values, per diode)**

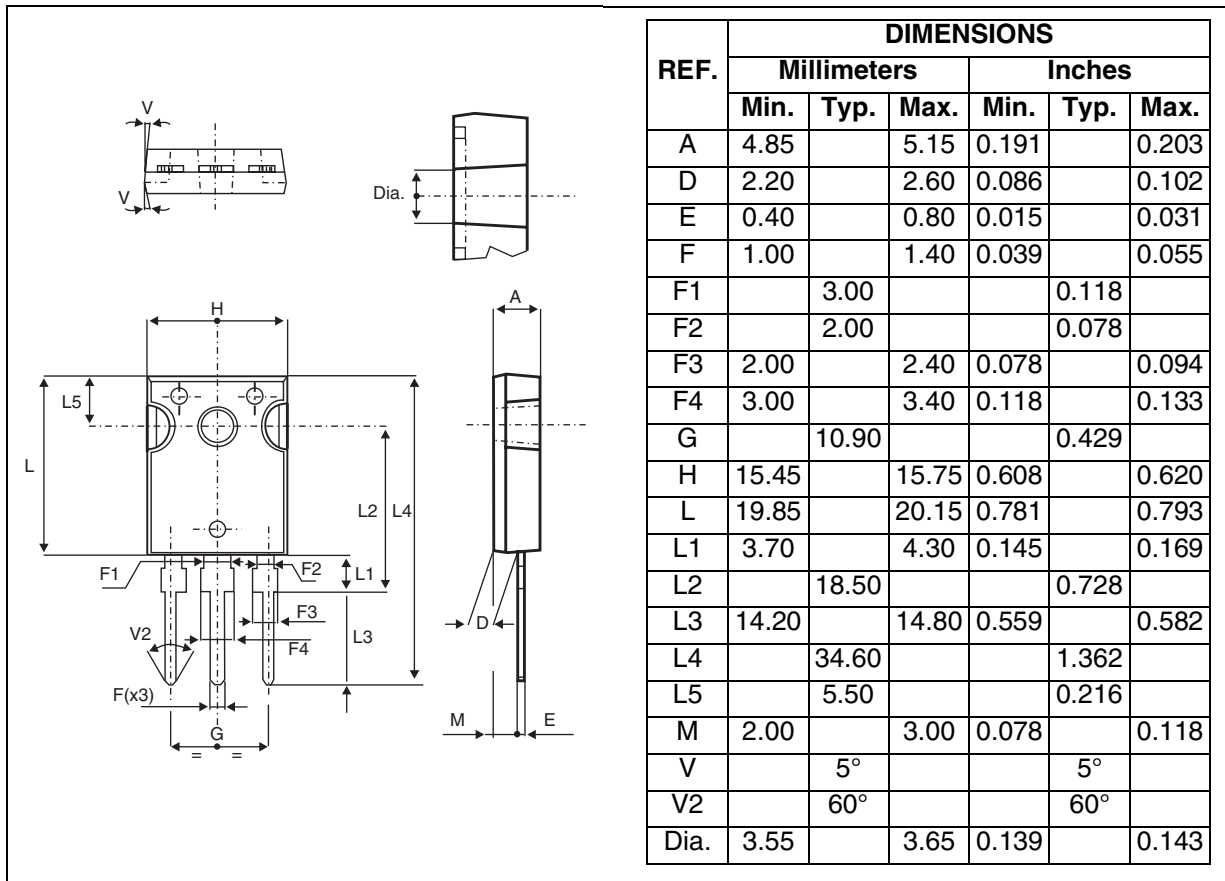


**Figure 11: Junction capacitance versus reverse voltage applied (typical values, per diode)**



**STTH60L06C**

**Figure 12: TO-247 Package Mechanical Data**



**Table 7: Ordering Information**

Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STTH60L06CW	STTH60L06CW	TO-247	4.46 g	50	Tube

- Epoxy meets UL94, V0
- Cooling method: by conduction (C)
- Recommended torque value: 0.8 m.N.
- Maximum torque value: 1.0 m.N.

**Table 8: Revision History**

Date	Revision	Description of Changes
07-Sep-2004	1	First issue

## STTH60L06C

---

Information furnished is believed to be accurate and reliable. However, STMicroelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of STMicroelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. STMicroelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of STMicroelectronics.

The ST logo is a registered trademark of STMicroelectronics.  
All other names are the property of their respective owners

© 2004 STMicroelectronics - All rights reserved

**STMicroelectronics group of companies**

Australia - Belgium - Brazil - Canada - China - Czech Republic - Finland - France - Germany - Hong Kong - India - Israel - Italy - Japan - Malaysia - Malta - Morocco - Singapore - Spain - Sweden - Switzerland - United Kingdom - United States of America

[www.st.com](http://www.st.com)