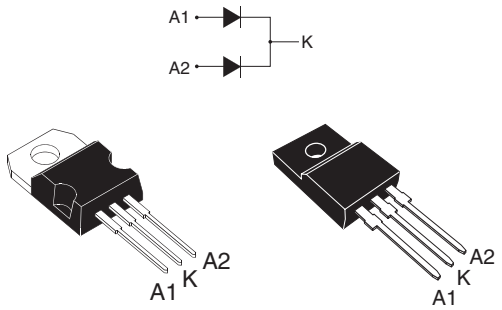
STTH16L06C

TURBO 2 ULTRAFAST HIGH VOLTAGE RECTIFIER

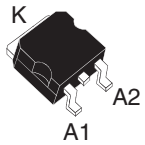
Table 1: Main Product Characteristics

$I_{F(AV)}$	Up to 2 x 10 A
V_{RRM}	600 V
T_j	175°C
V_F (typ)	1.05 V
t_{rr} (max)	35 ns



TO-220AB
STTH16L06CT

TO-220FPAB
STTH16L06CFP



D^2PAK
STTH16L06CG

FEATURES AND BENEFITS

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

DESCRIPTION

The STTH16L06, 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
STTH16L06CT	STTH16L06CT
STTH16L06CFP	STTH16L06CFP

Part Number	Marking
STTH16L06CG	STTH16L06CG
STTH16L06GG-TR	STTH16L06CG

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				30	A
$I_{F(AV)}$	Average forward current $\delta = 0.5$	TO-220AB / D^2PAK	Tc = 140°C Tc = 135°C Tc = 130°C Tc = 120°C	Per diode Per device Per diode Per device	8 16 10 20	A
		TO-220FPAB	Tc = 110°C Tc = 80°C	Per diode Per device	8 16	
I_{FSM}	Surge non repetitive forward current		tp = 10ms sinusoidal		90	A
T_{stg}	Storage temperature range				-65 to + 175	°C
T_j	Maximum operating junction temperature				175	°C

Table 4: Thermal Resistance

Symbol	Parameter			Value (max).	Unit
$R_{th(j-c)}$	Junction to case	TO-220AB / D^2PAK	Per diode	2.5	°C/W
		TO-220FPAB	Per diode	5	
		TO-220AB / D^2PAK	Total	1.6	
		TO-220FPAB	Total	3.8	
$R_{th(c)}$	Coupling	TO-220AB / D^2PAK		0.7	°C/W
		TO-220FPAB		2.5	

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

Table 5: Static Electrical Characteristics

Symbol	Parameter	Test conditions		Min.	Typ	Max.	Unit
I_R *	Reverse leakage current	T_j = 25°C	$V_R = V_{RRM}$			8	µA
		T_j = 150°C			25	240	
V_F **	Forward voltage drop	T_j = 25°C	I_F = 8A			1.8	V
		T_j = 150°C			1.05	1.35	
		T_j = 25°C	I_F = 16A			2.08	
		T_j = 150°C			1.28	1.64	

Pulse test: * tp = 5 ms, δ < 2%
** tp = 380 µs, δ < 2%

To evaluate the conduction losses use the following equation: P = 1.06 x $I_{F(AV)}$ + 0.036 I_F^2(RMS)

Table 6: Dynamic Characteristics (per diode)

Symbol	Parameter	Test conditions		Min.	Typ	Max.	Unit
t_{rr}	Reverse recovery time	T_j = 25°C	I_F = 0.5A Irr = 0.25A I_R =1A			35	ns
			I_F = 1A dI_F/dt = 50 A/µs V_R =30V		40	55	
I_{RM}	Reverse recovery current	T_j = 125°C	I_F = 8A V_R = 400V dI_F/dt = 100 A/µs		4.5	6.5	A
t_{fr}	Forward recovery time	T_j = 25°C	I_F = 8A dI_F/dt = 100 A/µs V_{FR} = 1.1 x V_{Fmax}			200	ns
V_{FP}	Forward recovery voltage	T_j = 25°C	I_F = 8A dI_F/dt = 100 A/µs V_{FR} = 1.1 x V_{Fmax}		3.5		V

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

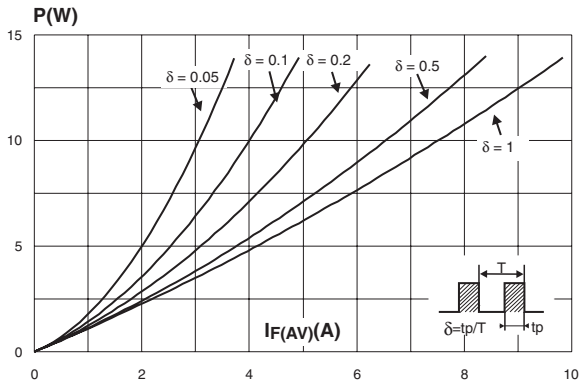


Figure 2: Forward voltage drop versus forward current (per diode)

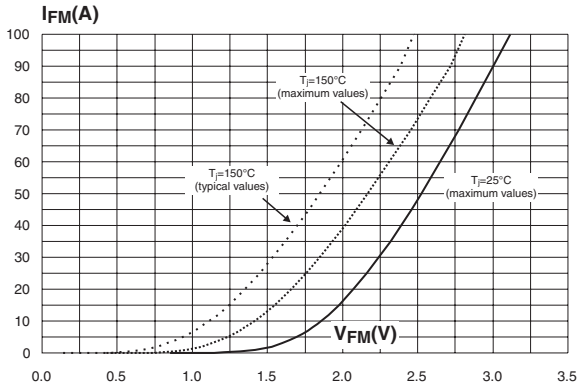


Figure 3: Relative variation of thermal impedance junction to case versus pulse duration (TO-220AB & D²PAK)

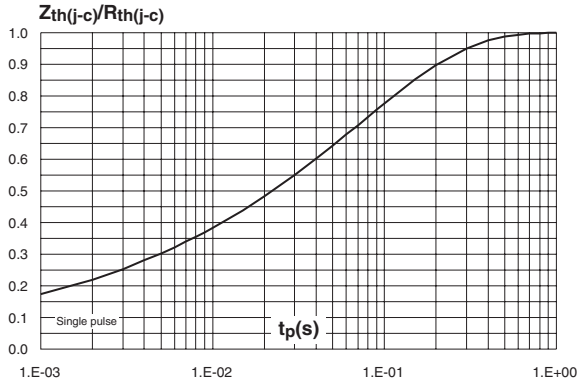


Figure 4: Relative variation of thermal impedance junction to case versus pulse duration (TO-220FPAB)

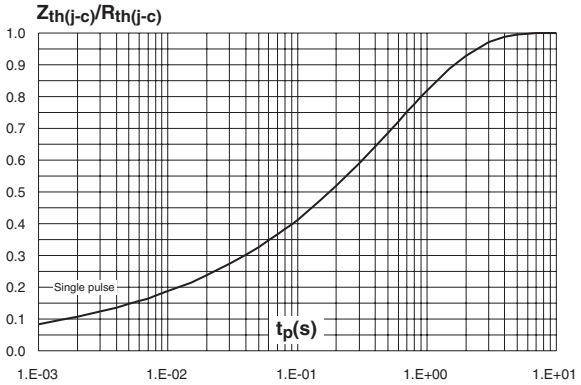


Figure 5: Peak reverse recovery current versus dI_F/dt (typical values, per diode)

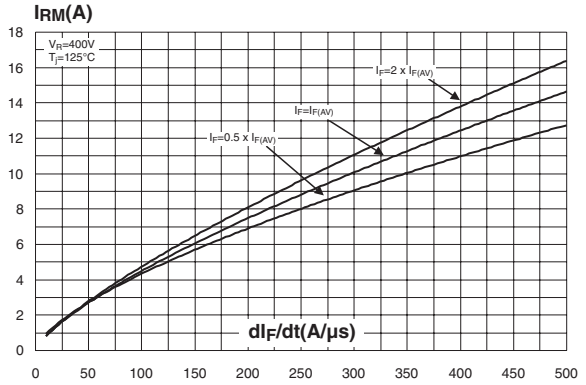


Figure 6: Reverse recovery time versus dI_F/dt (typical values, per diode)