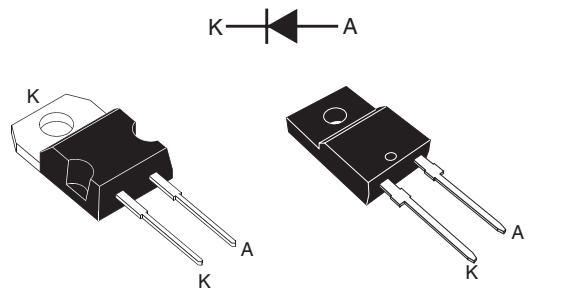
STTH8S06

Turbo 2 ultrafast high voltage rectifier

Features

- Ultrafast recovery
- Low reverse recovery current
- Reduces losses in diode and switching transistor
- Low thermal resistance
- Higher frequency operation
- Insulated TO-220FPAC version
  - Insulation voltage = 1500 V rms
  - Package capacitance = 12 pF



TO-220AC
STTH8S06D

TO-220FPAC
STTH8S06FP

Description

ST's **STTH8S06** is a state of the art ultrafast recovery diode. By the use of **600 V Pt doping planar technology**, this diode will out-perform the power factor corrections circuits operating in hardswitching conditions. The extremely low reverse recovery current of the **STTH8S06**, reduces significantly the switching power losses of the MOSFET and thus increases the efficiency of the application. This leads designers to reduce the size of their heatsinks.

This device is also intended for applications in power supplies and power conversions systems, motor drive, and other power switching applications.

Table 1. Device summary

$I_{F(AV)}$	8 A
V_{RRM}	600 V
I_{RM}(typ.)	4.4 A
T_j (max)	175 °C
V_F (typ)	1.5 V
t_{rr} (typ)	12 ns

1 Characteristics

Table 2. Absolute ratings (limiting values)

Symbol	Parameter		Value	Unit
V_{RRM}	Repetitive peak reverse voltage		600	V
$I_{F(AV)}$	Average forward current		8	A
I_{FSM}	Surge non repetitive forward current	t_p = 10 ms	60	A
T_{stg}	Storage temperature range		-65 to + 175	°C
T_j	Maximum operating junction temperature		175	°C

Table 3. Thermal parameter

Symbol	Parameter		Maximum	Unit
$R_{th(j-c)}$	Junction to case	TO-220AC	3.0	°C/W
		TO220FPAC	5.5	

Table 4. Static electrical characteristics

Symbol	Parameter	Test conditions		Min.	Typ	Max.	Unit
I_R	Reverse leakage current	T_j = 25 °C	V_R = 600 V			20	µA
		T_j= 125 °C			25	200	
V_F	Forward voltage drop	T_j = 25 °C	I_F = 8 A			3.4	V
		T_j = 125 °C			1.5	1.9	

To evaluate the maximum conduction losses use the following equation:
$P = 1.20 \times I_{F(AV)} + 0.087\ I_{F^2(RMS)}$

Table 5. Dynamic electrical characteristics

Symbol	Parameter	Test conditions		Min.	Typ	Max.	Unit
t_{rr}	Reverse recovery time	I_F = 1 A, dI_F/dt = - 200 A/µs, V_R = 30 V			12	18	ns
I_{RM}	Reverse current	T_j = 25 °C	I_F = 8 A, dI_F/dt = - 200 A/µs, V_R = 200 V		1.6	2.2	A
S_{factor}	Softness factor				1		-
Q_{rr}	Reverse recovery charges				17		nC
I_{RM}	Reverse current	T_j = 125 °C	I_F = 8 A, dI_F/dt = - 200 A/µs, V_R = 200 V		4.4	6.0	A
S_{factor}	Softness factor				0.3		-
Q_{rr}	Reverse recovery charges				90		nC

Figure 1. Forward voltage drop versus forward current

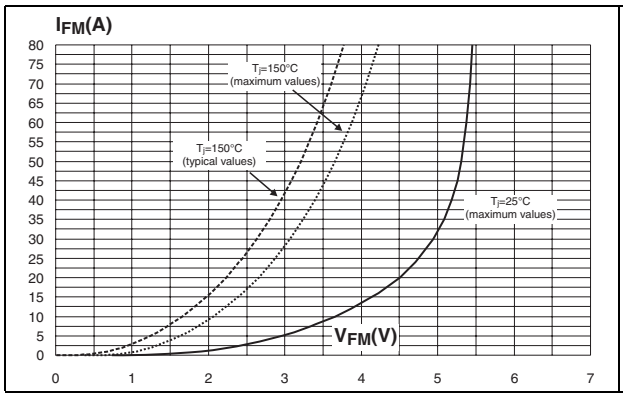


Figure 2. Relative variation of thermal impedance junction to case versus pulse duration (TO-220AC)

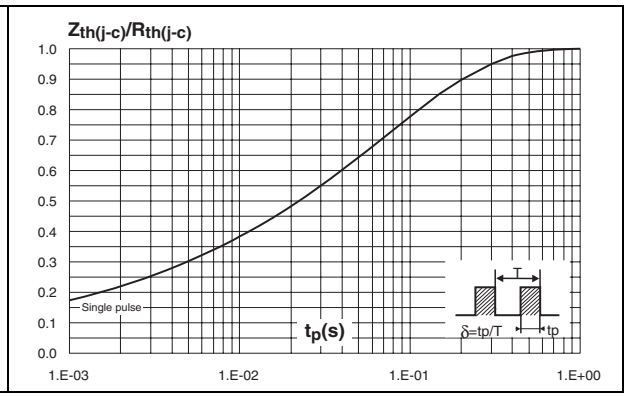


Figure 3. Relative variation of thermal impedance junction to case versus pulse duration(TO-220FPAC)

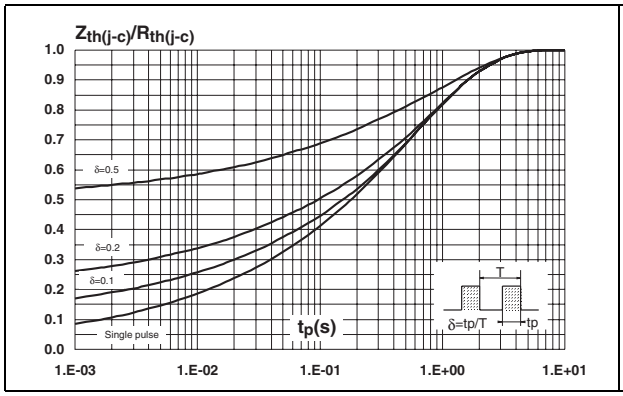
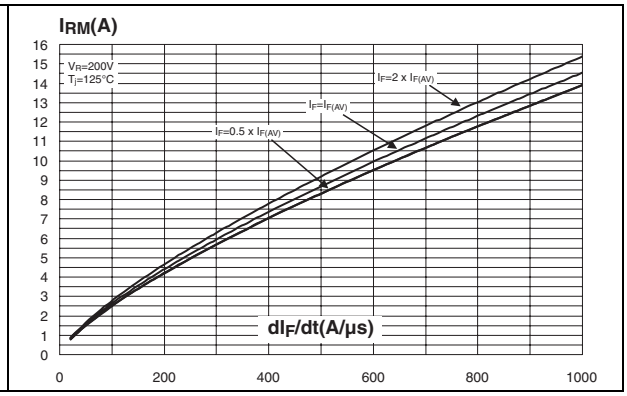


Figure 4. Peak reverse recovery current versus dI_F/dt (typical values)



3 Ordering information

Table 8. Ordering information

Order code	Marking	Package	Weight	Base qty	Delivery mode
STTH8S06D	STTH8S06D	TO-220AC	1.9 g	50	Tube
STTH8S06FP	STTH8S06FP	TO-220FPAC	1.64 g	50	Tube