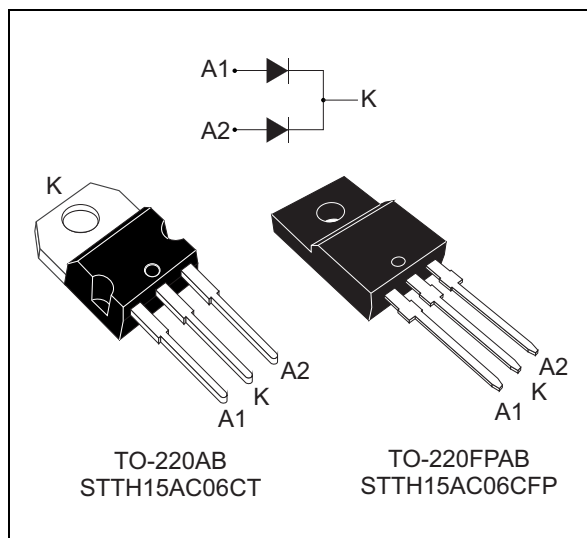




Features

- Ultrafast switching
- Low reverse recovery current
- Reduces switching and conduction losses
- Low thermal resistance
- insulated package TO-220FPAB:
 - Insulated voltage: 2500 V_{DC}

Description

The STTH15AC06C uses ST Turbo 2 600 V technology and is suited as a boost diode in air conditioning equipment for continuous mode interleaved power factor correction.

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

Table 1. Device summary

Symbol	Value
$I_{F(AV)}$	2 x 7.5 A
V_{RRM}	600 V
$t_{rr} (max)$	25 ns
$V_F (max)$	1.5 V
$T_j (max)$	175 °C

1 Characteristics

Table 2. Absolute ratings (limiting values per diode at 25 °C, unless otherwise specified)

Symbol	Parameter		Value	Unit
V_{RRM}	Repetitive peak reverse voltage		600	V
$I_{F(RMS)}$	Forward rms current		15	A
$I_{F(AV)}$	Average forward current	Per diode	7.5	A
		Per device	15	
I_{FSM}	Surge non repetitive forward current	$t_p = 10$ ms sinusoidal	80	A
T_{stg}	Storage temperature range		-65 to +175	°C
T_j	Maximum operating junction temperature		175	°C

Table 3. Thermal parameters

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	Junction to case (TO-220AB)	Per diode	2.8	°C/W
		Total	1.7	
	Coupling (TO-220AB)		0.6	
	Junction to case (TO-220FPAB)	Per diode	6	
		Total	4.5	
	Coupling (TO-220FPAB)		3	

Table 4. Static electrical characteristics (per diode)

Symbol	Parameter	Test conditions		Min.	Typ.	Max.	Unit
$I_R^{(1)}$	Reverse leakage current	$T_j = 25\text{ °C}$	$V_R = V_{RRM}$			1	μA
		$T_j = 150\text{ °C}$			10	100	
$V_F^{(2)}$	Forward voltage drop	$T_j = 25\text{ °C}$	$I_F = 7.5\text{ A}$			1.9	V
		$T_j = 150\text{ °C}$			1.15	1.50	
		$T_j = 25\text{ °C}$	$I_F = 15\text{ A}$			2.2	
		$T_j = 150\text{ °C}$			1.4	1.8	

1. Pulse test: $t_p = 5$ ms, $\delta < 2\%$

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

To evaluate the conduction losses use the following equation:

$$P = 1.2 \times I_{F(AV)} + 0.04 I_{F(RMS)}^2$$

Table 5. Dynamic characteristics (per diode)

Symbol	Parameter	Test conditions		Min.	Typ.	Max.	Unit
t_{rr}	Reverse recovery time	$T_j = 25\text{ }^{\circ}\text{C}$	$I_F = 0.5\text{ A}$, $I_{rr} = 0.25\text{ A}$, $I_R = 1\text{ A}$			25	ns
			$I_F = 1\text{ A}$, $V_R = 30\text{ V}$, $dI_F/dt = -50\text{ A}/\mu\text{s}$		35	50	
I_{RM}	Reverse recovery current	$T_j = 125\text{ }^{\circ}\text{C}$	$I_F = 7.5\text{ A}$, $V_R = 400\text{ V}$, $dI_F/dt = -100\text{ A}/\mu\text{s}$		3.7	5	A
t_{fr}	Forward recovery time	$T_j = 25\text{ }^{\circ}\text{C}$	$I_F = 7.5\text{ A}$, $V_{FR} = 1.5\text{ V}$, $dI_F/dt = 100\text{ A}/\mu\text{s}$			100	ns
V_{FP}	Forward recovery voltage				2.5		V

Figure 1. Average forward power dissipation versus average forward current (per diode)

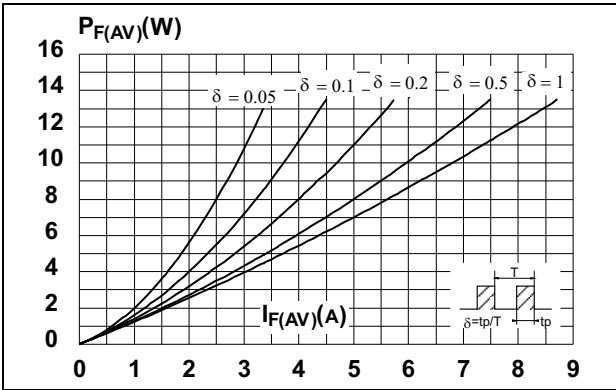


Figure 2. Forward voltage drop versus forward current (typical values, per diode)

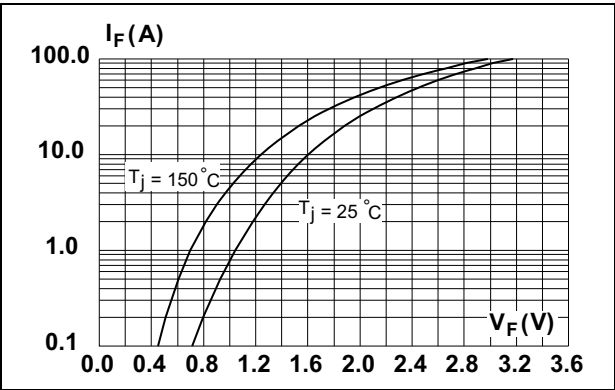


Figure 3. Forward voltage drop versus forward current (maximum values, per diode)

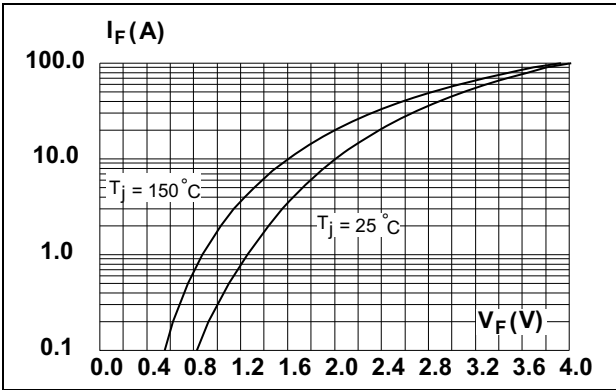
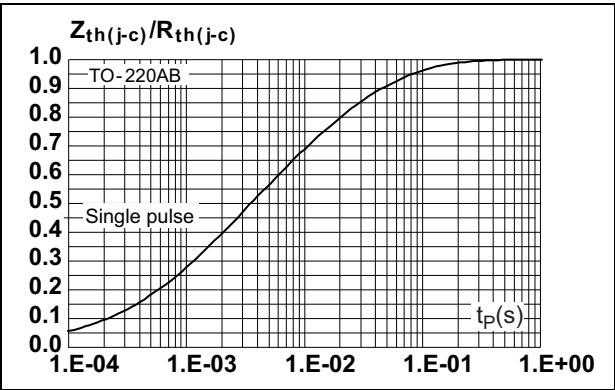


Figure 4. Relative variation of thermal impedance, junction to case, versus pulse duration (TO-220AB)



3 Ordering information

Table 8. Ordering information

Order code	Marking	Package	Weight	Base qty	Delivery mode
STTH15AC06CT	STTH15AC06CT	TO-220AB	1.9 g	50	Tube
STTH15AC06CFP	STTH15AC06CFP	TO-220FPAB	2.0 g	50	Tube