



勝特力材料 886-3-5753170
勝特力电子(上海) 86-21-34970699
勝特力电子(深圳) 86-755-83298787
[Http://www.100y.com.tw](http://www.100y.com.tw)

STTH803D/G

HIGH FREQUENCY SECONDARY RECTIFIER

MAJOR PRODUCTS CHARACTERISTICS

$I_{F(AV)}$	8 A
V_{RRM}	300 V
T_j (max)	175 °C
V_F (max)	1 V
t_{rr} (max)	35 ns

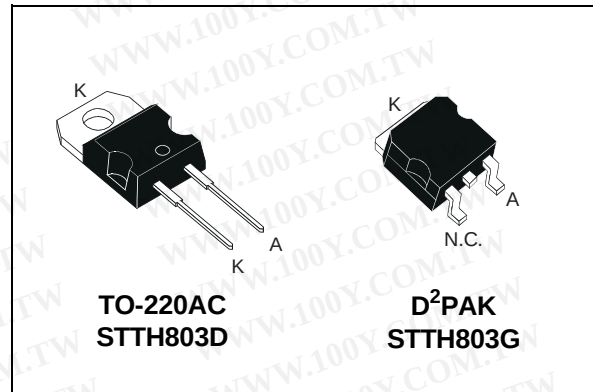
FEATURES AND BENEFITS

- COMBINES HIGHEST RECOVERY AND REVERSE VOLTAGE PERFORMANCE
- ULTRA-FAST, SOFT AND NOISE-FREE RECOVERY

DESCRIPTION

Single Fast Recovery Epitaxial Diode suited for Switch Mode Power Supply and high frequency DC/DC converters.

Packaged in TO-220AC or D²PAK this device is especially intended for secondary rectification.



ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
V_{RRM}	Repetitive peak reverse voltage		300	V
$I_{F(RMS)}$	RMS forward current		20	A
$I_{F(AV)}$	Average forward current	$T_c = 150^\circ\text{C} \quad \delta = 0.5$	8	A
I_{FSM}	Surge non repetitive forward current	$t_p = 10 \text{ ms}$ sinusoidal	100	A
I_{RSM}	Non repetitive avalanche current	$t_p = 20 \mu\text{s}$ square	4	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	2.5	°C/W

STATIC ELECTRICAL CHARACTERISTICS (per diode)

Symbol	Parameter	Tests conditions		Min.	Typ.	Max.	Unit
I_R^*	Reverse leakage current	$V_R = 300\text{ V}$	$T_j = 25^\circ\text{C}$			20	μA
			$T_j = 125^\circ\text{C}$		20	200	
V_F^{**}	Forward voltage drop	$I_F = 8\text{ A}$	$T_j = 25^\circ\text{C}$			1.25	V
		$I_F = 8\text{ A}$	$T_j = 125^\circ\text{C}$		0.85	1	

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

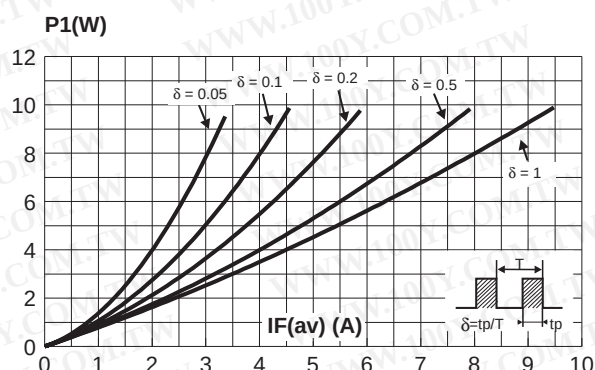
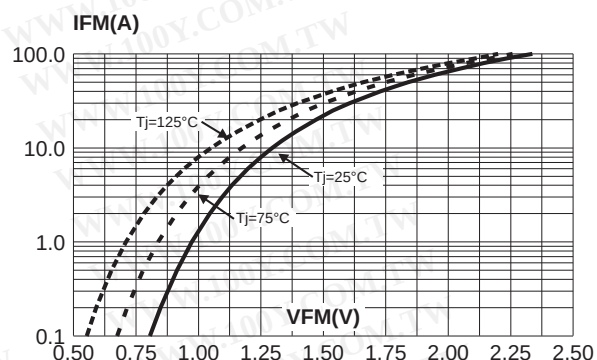
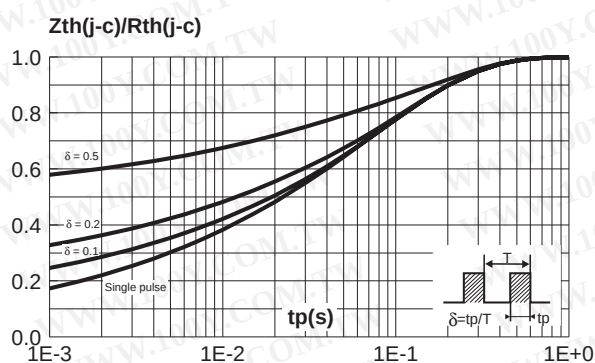
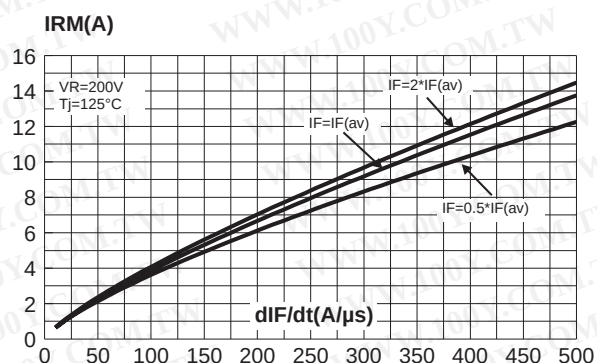
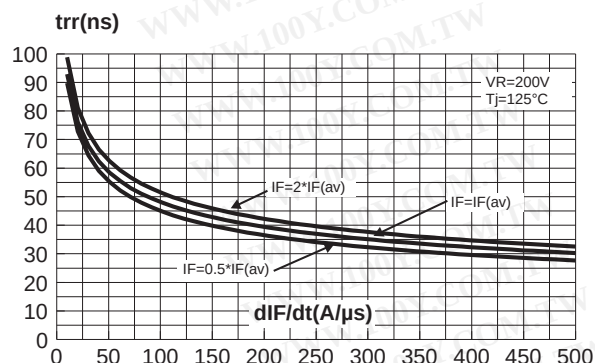
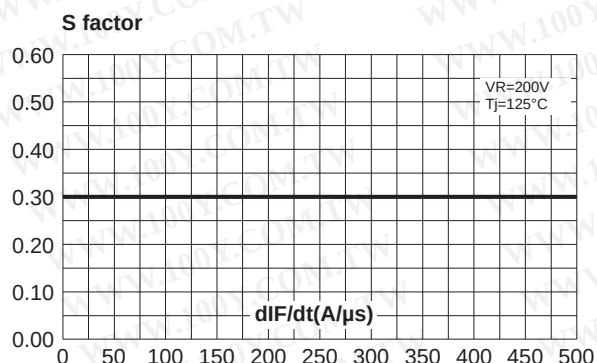
** $t_p = 380\text{ }\mu\text{s}$, $\delta < 2\%$

To evaluate the maximum conduction losses use the following equation :

$$P = 0.75 \times I_{F(AV)} + 0.031 I_F^2_{(RMS)}$$

RECOVERY CHARACTERISTICS

Symbol	Tests conditions			Min.	Typ.	Max.	Unit
t_{rr}	$I_F = 0.5\text{ A}$	$I_{rr} = 0.25\text{ A}$	$I_R = 1\text{ A}$	$T_j = 25^\circ\text{C}$		25	ns
	$I_F = 1\text{ A}$	$di_F/dt = -50\text{ A}/\mu\text{s}$	$V_R = 30\text{ V}$	$T_j = 25^\circ\text{C}$		35	
t_{fr}	$I_F = 8\text{ A}$	$di_F/dt = 100\text{ A}/\mu\text{s}$		$T_j = 25^\circ\text{C}$		200	ns
V_{FP}	$V_{FR} = 1.1 \times V_F \text{ max.}$			$T_j = 25^\circ\text{C}$		3.5	V
S_{factor}	$V_{CC} = 200\text{ V}$	$I_F = 8\text{ A}$	$T_j = 125^\circ\text{C}$		0.3		-
I_{RM}	$di_F/dt = 200\text{ A}/\mu\text{s}$					8	A

Fig. 1: Conduction losses versus average current.**Fig. 2:** Forward voltage drop versus forward current (maximum values).**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).**Fig. 5:** Reverse recovery time versus dI_F/dt (90% confidence).**Fig. 6:** Softness factor versus dI_F/dt (typical values).

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Fig. 7: Relative variation of dynamic parameters versus junction temperature (reference: $T_j = 125^\circ\text{C}$).

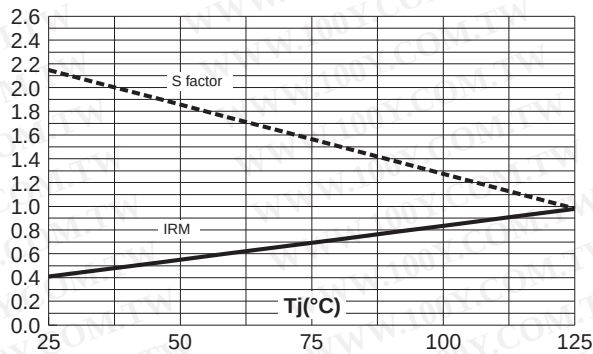


Fig. 8: Transient peak forward voltage versus dI_F/dt (90% confidence).

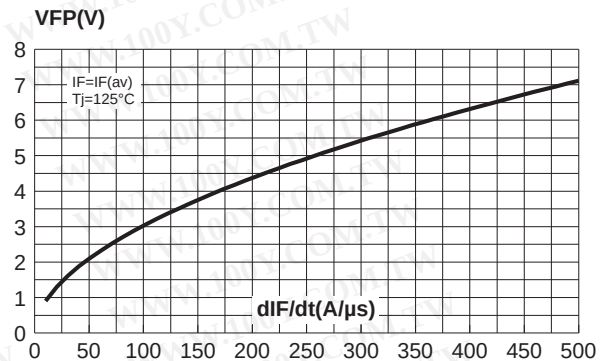
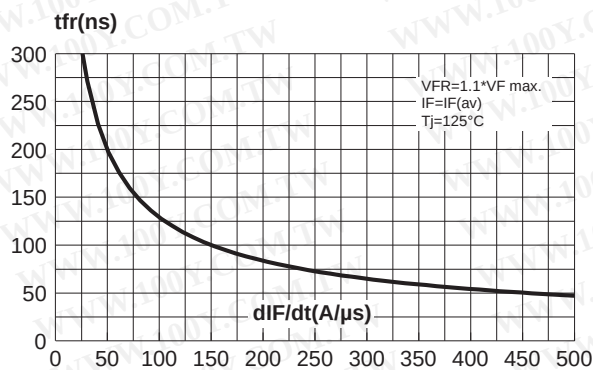
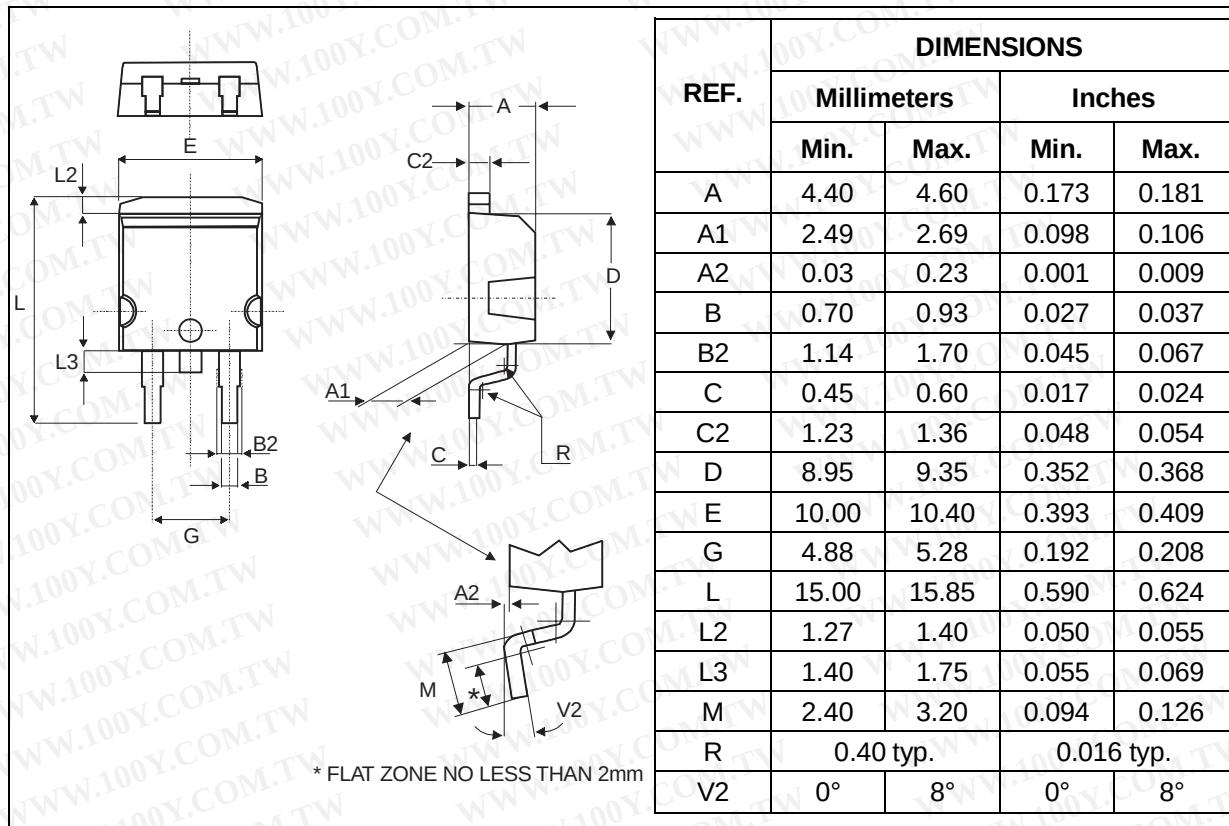
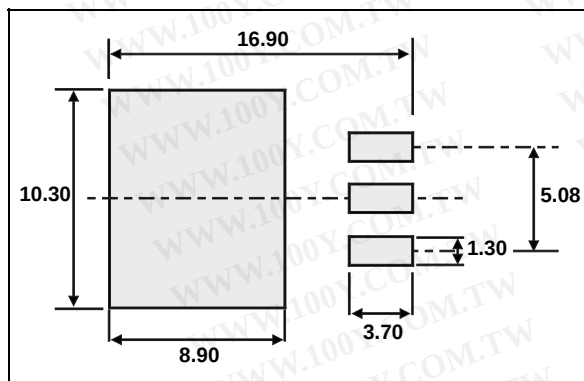


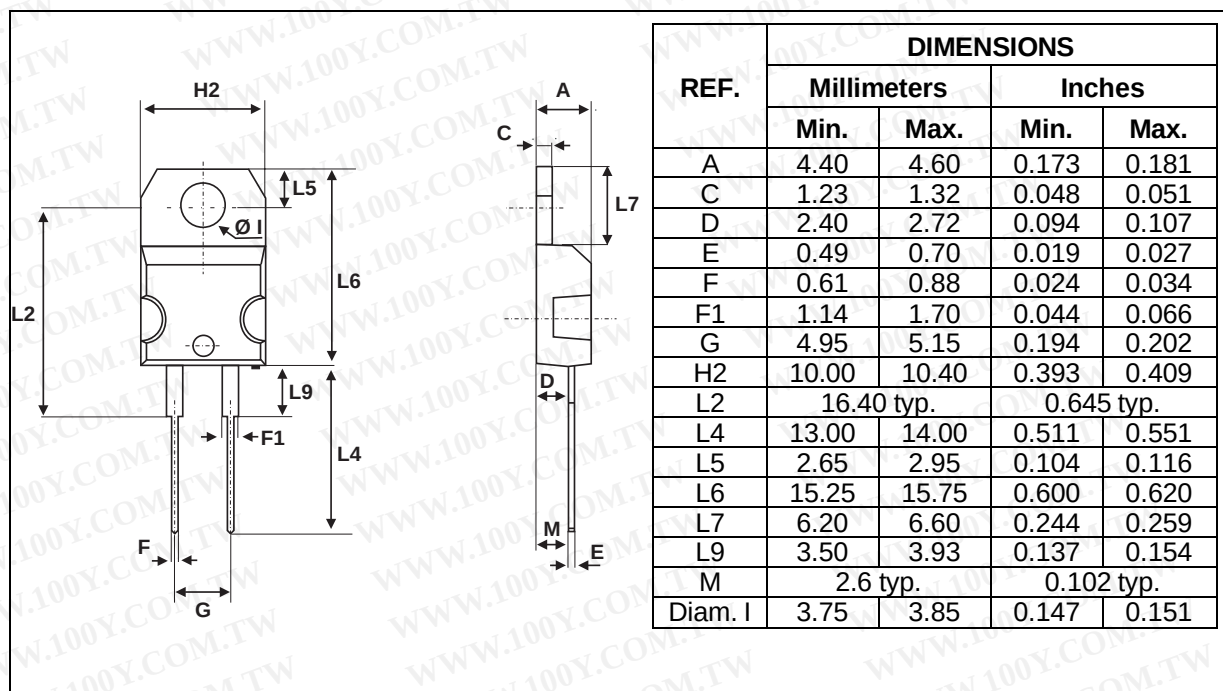
Fig. 9: Forward recovery time versus dI_F/dt (90% confidence).



PACKAGE MECHANICAL DATA
D²PAK

FOOT PRINT DIMENSIONS (in millimeters)
D²PAK


STTH803D/G

PACKAGE MECHANICAL DATA TO-220AC



Ordering code	Marking	Package	Weight	Base qty	Delivery mode
STTH803D	STTH803D	TO-220AC	1.86g	50	Tube
STTH803G	STTH803G	D ² PAK	1.48g	50	Tube

- Cooling method: by conduction (C)
- Recommended torque value (TO-220AC): 0.55 N.m.
- Maximum torque value (TO-220AC): 0.70 N.m.
- Epoxy meets UL 94,V0

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