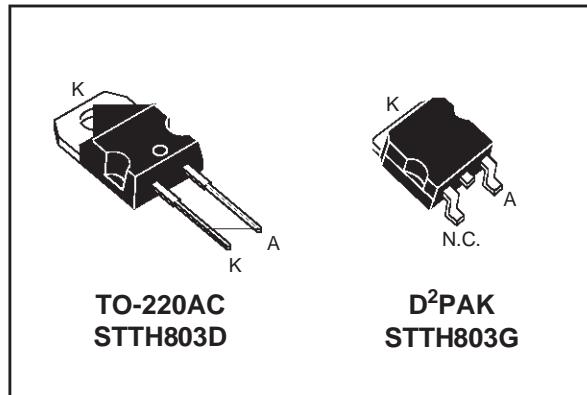


HIGH FREQUENCY SECONDARY RECTIFIER

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	8	A
I_{FSM}	Surge non repetitive forward current	100	A
I_{RSM}	Non repetitive avalanche current	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 V	T _j = 25°C			20	μA
			T _j = 125°C		20	200	
V _F **	Forward voltage drop	I _F = 8 A	T _j = 25°C			1.25	V
		I _F = 8 A	T _j = 125°C		0.85	1	

Pulse test : * tp = 5 ms, δ < 2 %

** tp = 380 μs, δ < 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
trr	I _F = 0.5 A	I _{rr} = 0.25 A	I _R = 1 A	T _j = 25°C		25	ns
	I _F = 1 A	dI _F /dt = - 50 A/μs	V _R = 30 V	T _j = 25°C		35	
tfr	I _F = 8 A dI _F /dt = 100 A/μs V _{FR} = 1.1 x V _F max.		T _j = 25°C			200	ns
			T _j = 25°C			3.5	V
Sfactor	V _{cc} = 200V I _F = 8 A		T _j = 125°C		0.3		-
I _{RM}	dI _F /dt = 200 A/μs					8	A

Fig. 1: Conduction losses versus average current.

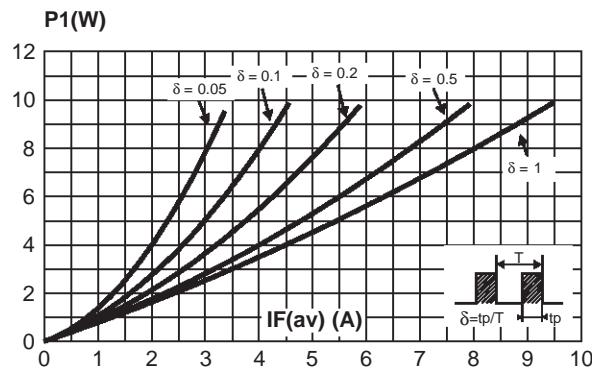


Fig. 2: Forward voltage drop versus forward current (maximum values).

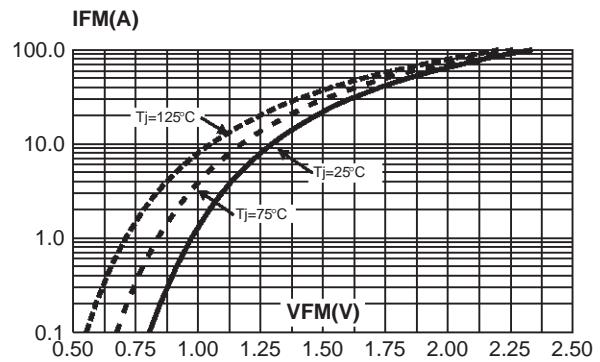


Fig. 3: Relative variation of thermal impedance junction to case versus pulse duration.

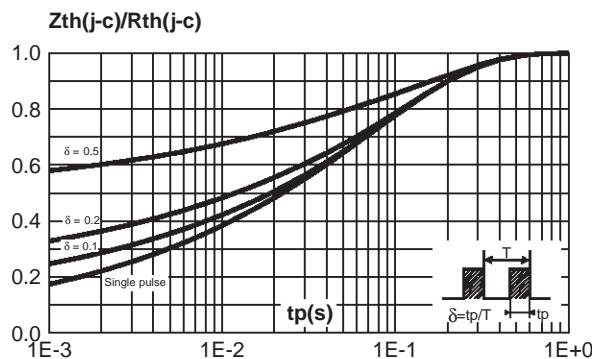


Fig. 4: Peak reverse recovery current versus dIF/dt (90% confidence).

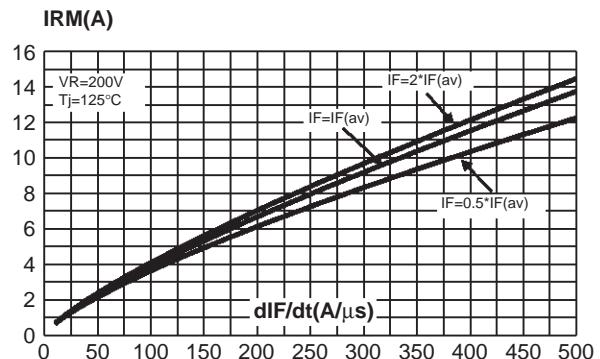


Fig. 5: Reverse recovery time versus dIF/dt (90% confidence).

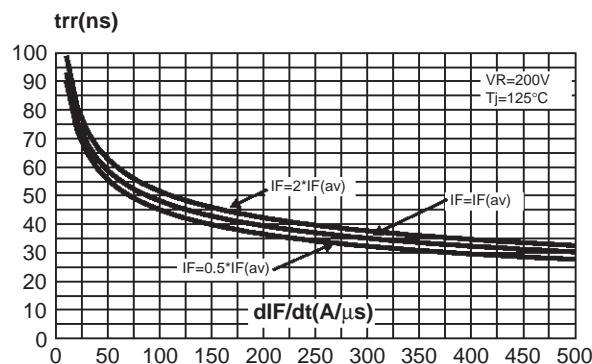
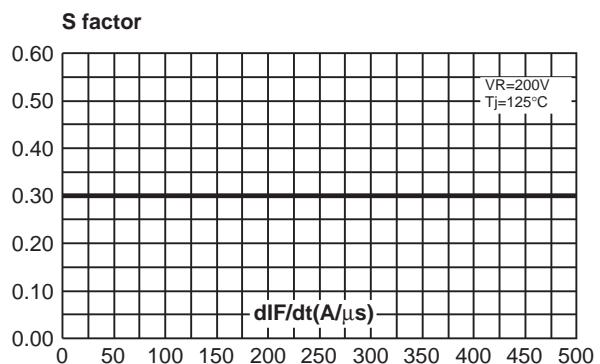


Fig. 6: Softness factor versus dIF/dt (typical values).



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

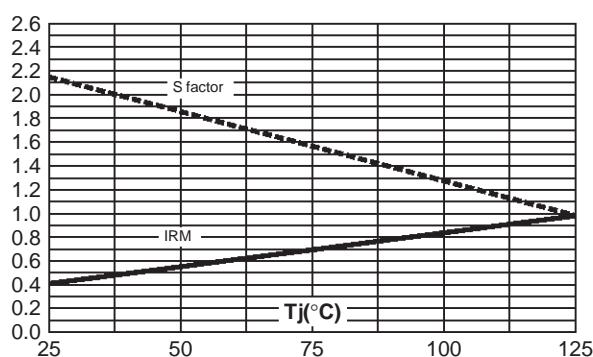


Fig. 8: Transient peak forward voltage versus dI_F/dt (90% confidence).

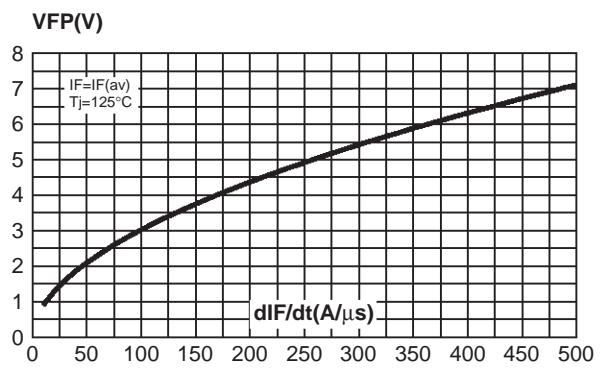
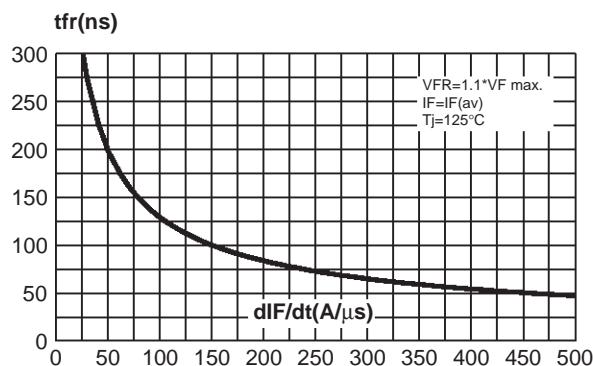
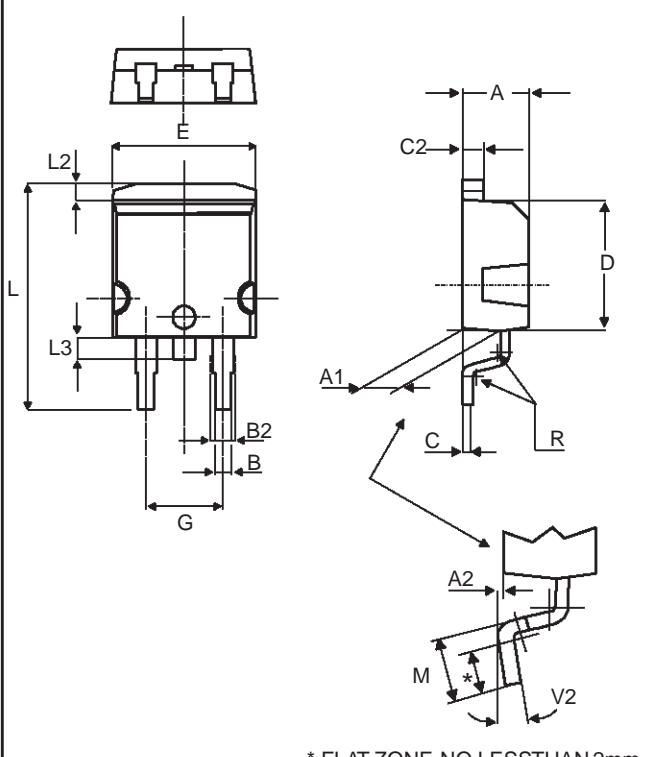
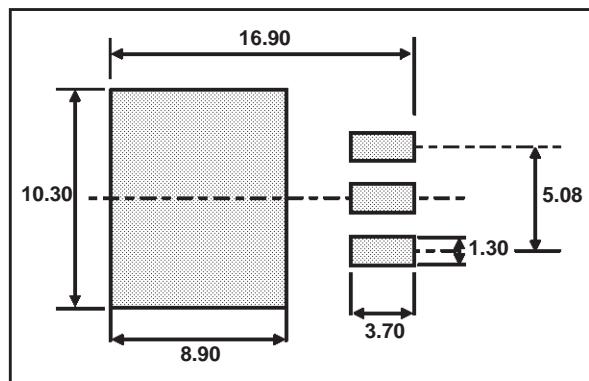


Fig. 9: Forward recovery time versus dI_F/dt (90% confidence).



PACKAGE MECHANICAL DATA
D²PAK


REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.40	4.60	0.173	0.181
A1	2.49	2.69	0.098	0.106
A2	0.03	0.23	0.001	0.009
B	0.70	0.93	0.027	0.037
B2	1.14	1.70	0.045	0.067
C	0.45	0.60	0.017	0.024
C2	1.23	1.36	0.048	0.054
D	8.95	9.35	0.352	0.368
E	10.00	10.40	0.393	0.409
G	4.88	5.28	0.192	0.208
L	15.00	15.85	0.590	0.624
L2	1.27	1.40	0.050	0.055
L3	1.40	1.75	0.055	0.069
M	2.40	3.20	0.094	0.126
R	0.40 typ.		0.016 typ.	
V2	0°	8°	0°	8°

FOOT PRINT DIMENSIONS (in millimeters)
D²PAK

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PACKAGE MECHANICAL DATA TO-220AC

REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.40	4.60	0.173	0.181
C	1.23	1.32	0.048	0.051
D	2.40	2.72	0.094	0.107
E	0.49	0.70	0.019	0.027
F	0.61	0.88	0.024	0.034
F1	1.14	1.70	0.044	0.066
G	4.95	5.15	0.194	0.202
H2	10.00	10.40	0.393	0.409
L2	16.40 typ.		0.645 typ.	
L4	13.00	14.00	0.511	0.551
L5	2.65	2.95	0.104	0.116
L6	15.25	15.75	0.600	0.620
L7	6.20	6.60	0.244	0.259
L9	3.50	3.93	0.137	0.154
M	2.6 typ.		0.102 typ.	
Diam. I	3.75	3.85	0.147	0.151

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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