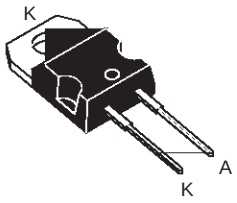
STTH803D/G

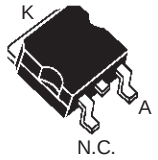
HIGH FREQUENCY SECONDARY RECTIFIER

MAJOR PRODUCTS CHARACTERISTICS

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



TO-220AC
STTH803D



D^2PAK
STTH803G

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 D^2PAK 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	Tc = 150°C δ = 0.5	8	A
I_{FSM}	Surge non repetitive forward current	tp = 10 ms sinusoidal	100	A
I_{RSM}	Non repetitive avalanche current	tp = 20 µs square	4	A
T_{stg}	Storage temperature range		-65 +175	°C
Tj	Maximum operating junction temperature		+ 175	°C

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	Tj = 25°C			20	µA
			Tj = 125°C		20	200	
V_F **	Forward voltage drop	I_F = 8 A	Tj = 25°C			1.25	V
		I_F = 8 A	Tj = 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 Irr = 0.25 A I_R = 1 A	Tj = 25°C			25	ns
	I_F = 1 A dI_F/dt = - 50 A/µs V_R = 30 V	Tj = 25°C			35	
tfr	I_F = 8 A dI_F/dt = 100 A/µs V_{FR} = 1.1 x V_F max.	Tj = 25°C			200	ns
V_{FP}		Tj = 25°C			3.5	V
S_{factor}	Vcc = 200V I_F = 8 A dI_F/dt = 200 A/µs	Tj = 125°C		0.3		-
I_{RM}					8	A

Fig. 1: Conduction losses versus average current.

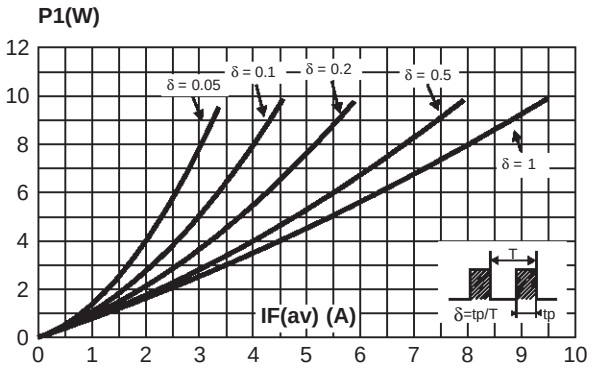


Fig. 2: Forward voltage drop versus forward current (maximum values).

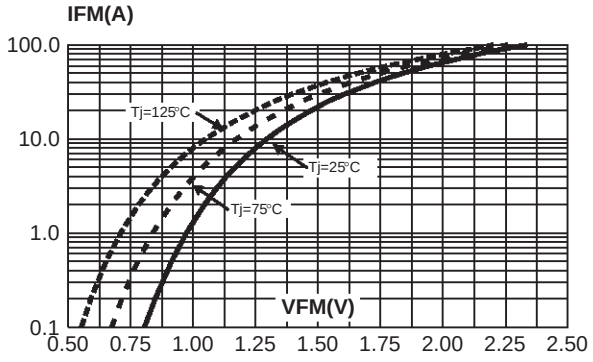


Fig. 3: Relative variation of thermal impedance junction to case versus pulse duration.

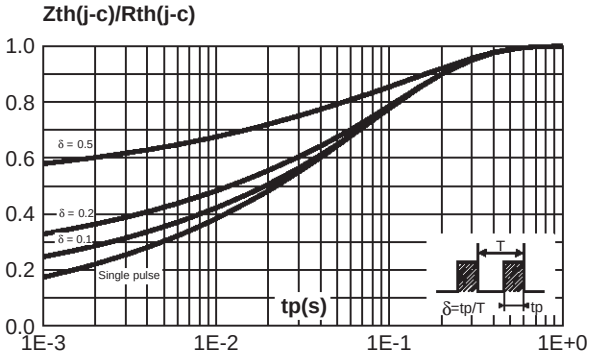


Fig. 4: Peak reverse recovery current versus dI_F/dt (90% confidence).

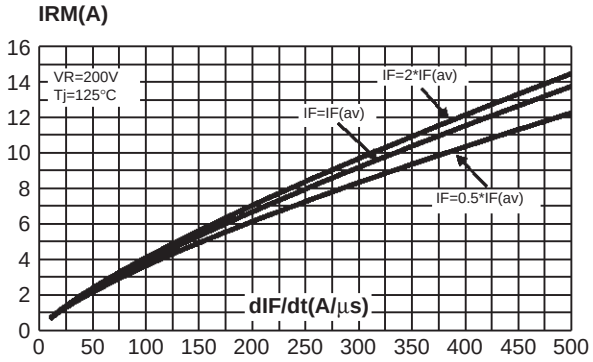


Fig. 5: Reverse recovery time versus dI_F/dt (90% confidence).

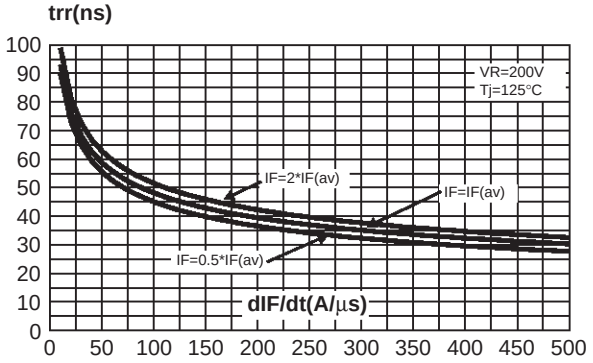


Fig. 6: Softness factor versus dI_F/dt (typical values).

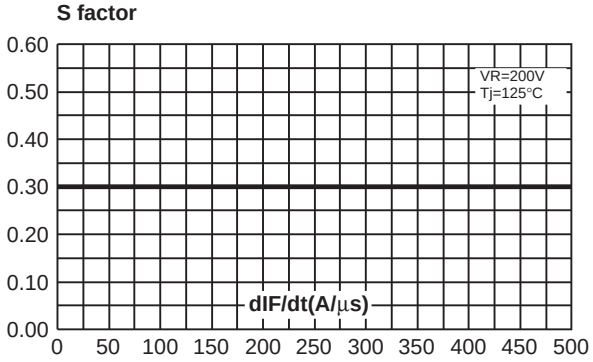


Fig. 7: Relative variation of dynamic parameters versus junction temperature (reference: Tj = 125°C).

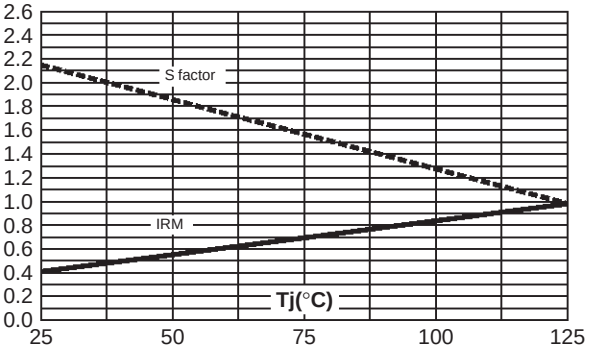


Fig. 8: Transient peak forward voltage versus dI_F/dt (90% confidence).

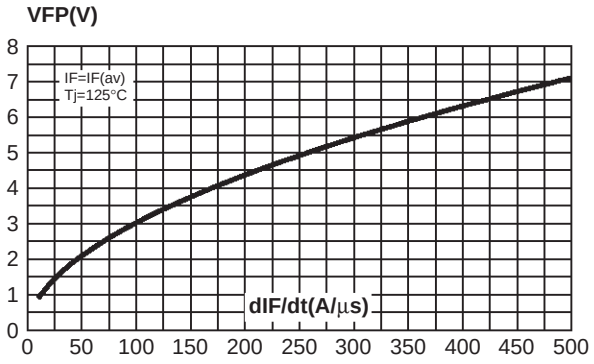
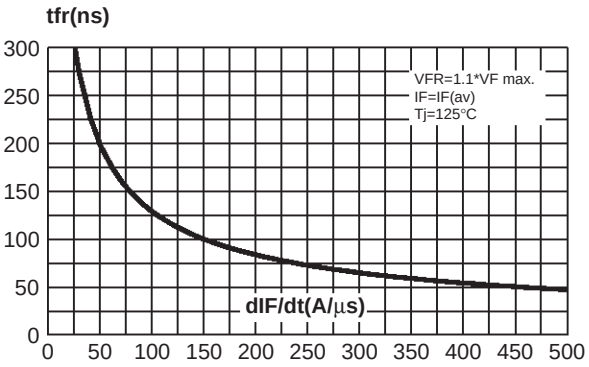
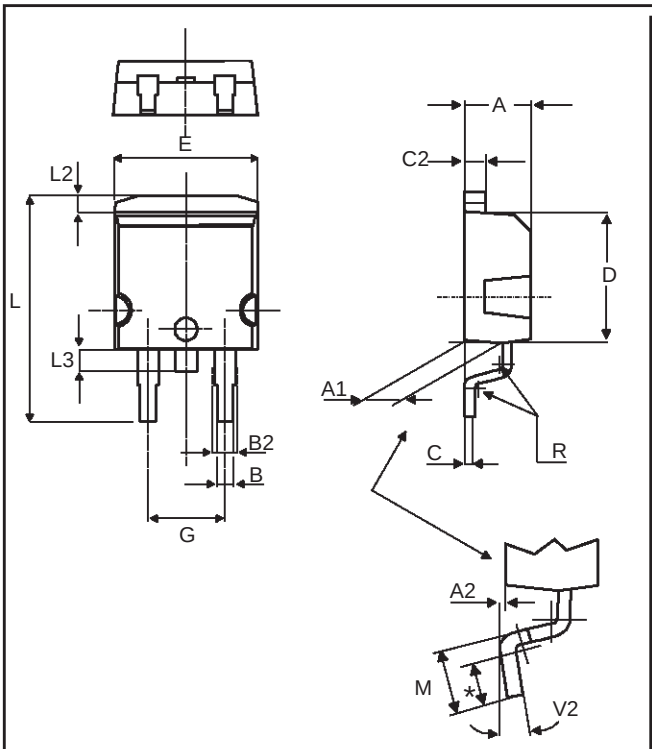


Fig. 9: Forward recovery time versus dI_F/dt (90% confidence).



PACKAGE MECHANICAL DATA

D^2PAK

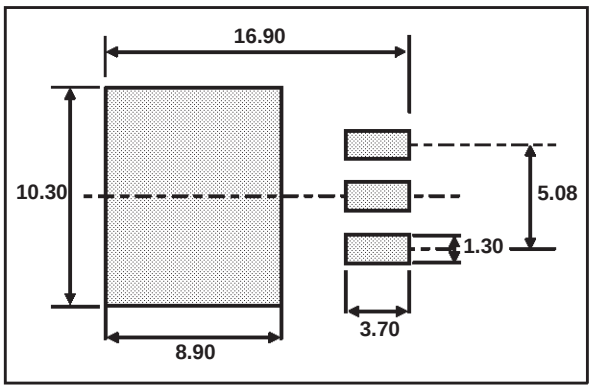


* FLAT ZONE NO LESSTHAN 2mm

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°

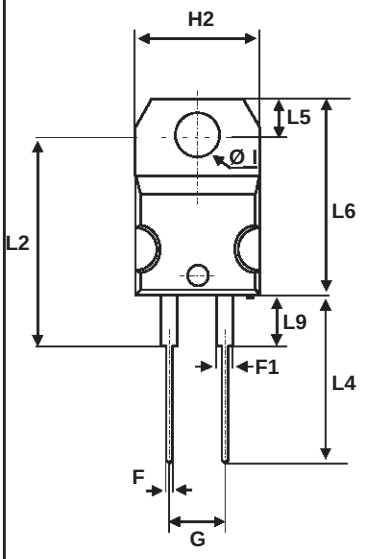
FOOT PRINT DIMENSIONS (in millimeters)

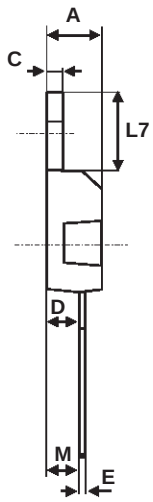
D^2PAK



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^2PAK	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