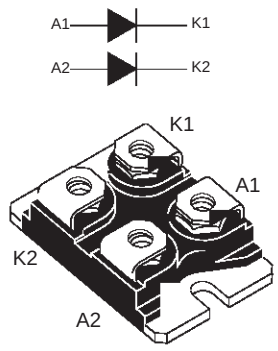
STTH12003TV

HIGH FREQUENCY SECONDARY RECTIFIER

MAJOR PRODUCT CHARACTERISTICS

$I_{F(AV)}$	2 x 60 A
V_{RRM}	300 V
Tj (max)	150 °C
V_F (max)	1 V
trr (max)	70 ns



ISOTOP™

FEATURES AND BENEFITS

- COMBINES HIGHEST RECOVERY AND REVERSE VOLTAGE PERFORMANCE
- ULTRA-FAST, SOFT AND NOISE-FREE RECOVERY
- INSULATED PACKAGE: ISOTOP
  Insulated voltage: 2500 V_{RMS}
  Capacitance: < 45 pF
- LOW INDUCTANCE AND LOW CAPACITANCE ALLOW SIMPLIFIED LAYOUT

DESCRIPTION

Dual rectifiers suited for Switch Mode Power Supply and high frequency DC to DC converters.

Packaged in ISOTOP, this device is intended for use in low voltage, high frequency inverters, free wheeling operation, welding equipment and telecom power supplies.

ABSOLUTE RATINGS (limiting values, per diode)

Symbol	Parameter			Value	Unit
V_{RRM}	Repetitive peak reverse voltage			300	V
$I_{F(RMS)}$	RMS forward current			150	A
$I_{F(AV)}$	Average forward current	Tc = 85°C δ = 0.5	Per diode Per device	60 120	A
I_{FSM}	Surge non repetitive forward current	tp = 10 ms sinusoidal		600	A
I_{RSM}	Non repetitive peak reverse current	tp = 100 µs square		5	A
T_{stg}	Storage temperature range			- 55 to + 150	°C
Tj	Maximum operating junction temperature			150	°C

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THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
$R_{th\ (j-c)}$	Junction to case	Per diode Total	0.8 0.45	°C/W
$R_{th\ (c)}$		Coupling	0.1	

When the diodes 1 and 2 are used simultaneously:

ΔTj (diode 1) = P (diode 1) x $R_{th(j-c)}$ (per diode) + P (diode 2) x $R_{th(C)}$

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			120	µA
			Tj = 125°C		0.12	1.2	mA
V_F **	Forward voltage drop	I_F = 60 A	Tj = 25°C			1.25	V
			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:

$P = 0.75 \times I_{F(AV)} + 0.0042 \times I_F{}^2{}_{(RMS)}$

RECOVERY CHARACTERISTICS

Symbol	Tests conditions		Min.	Typ.	Max.	Unit
trr	I_F = 0.5 A Irr = 0.25 A I_R = 1A	Tj = 25°C			55	ns
	I_F = 1 A dI_F/dt = - 50 A/µs V_R = 30 V	Tj = 25°C			70	
tfr	I_F = 60 A dI_F/dt = 200 A/µs	Tj = 25°C			600	ns
V_{FP}	V_{FR} = 1.1 x V_F max.	Tj = 25°C			5	V
S_{factor}	Vcc = 200 V I_F = 60 A dI_F/dt = 200 A/µs	Tj = 125°C		0.3		-
I_{RM}					14	A

Fig. 1: Conduction losses versus average current (per diode).

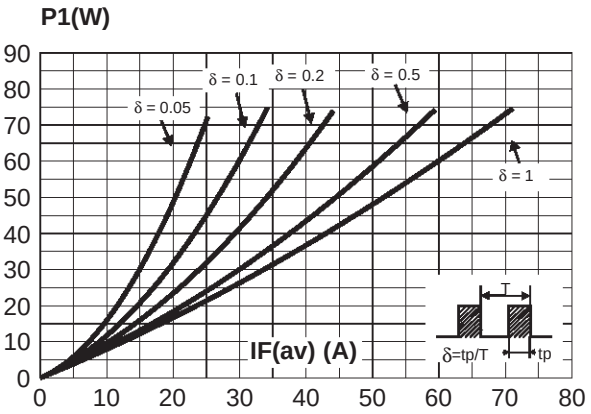


Fig. 2: Forward voltage drop versus forward current (per diode).

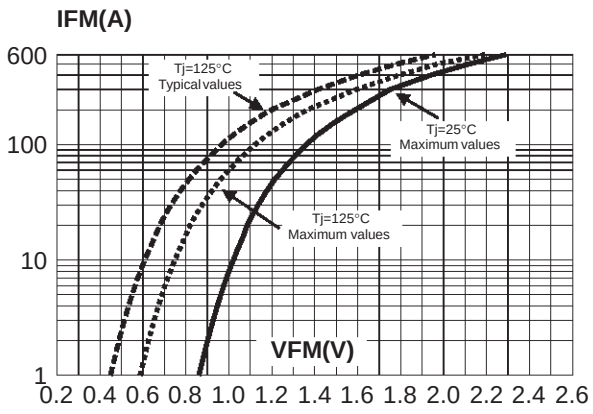


Fig. 3: Relative variation of thermal impedance junction to case versus pulse duration.

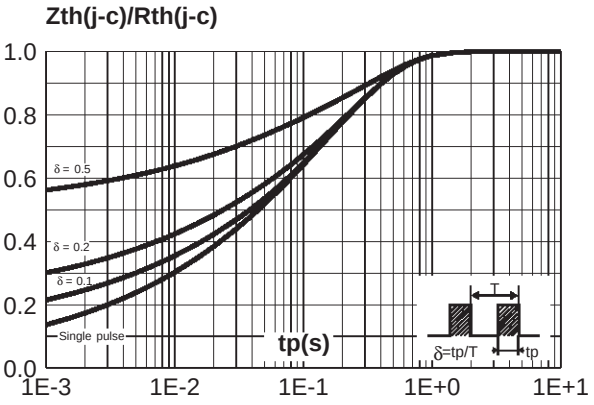


Fig. 4: Peak reverse recovery current versus dI_F/dt (90% confidence, per diode).

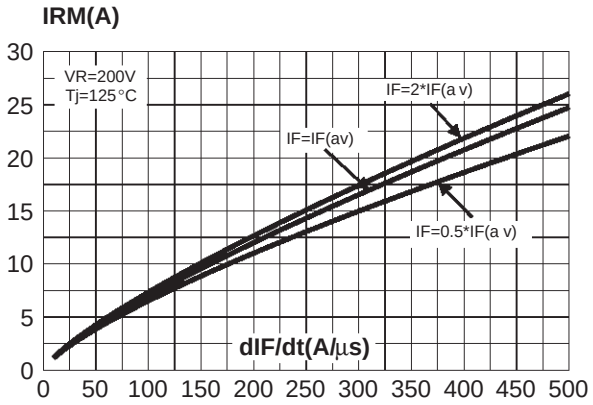


Fig. 5: Reverse recovery time versus dI_F/dt (90% confidence, per diode).

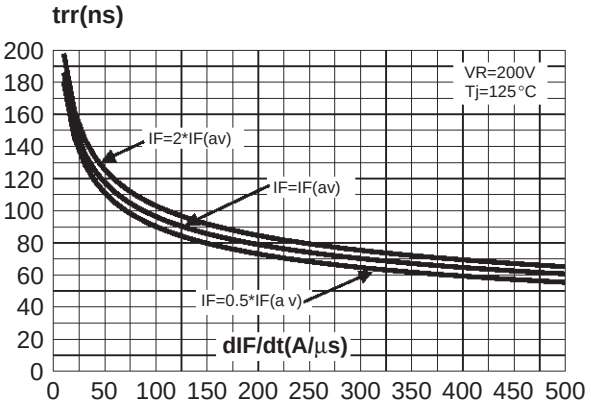


Fig. 6: Softness factor (tb/ta) versus dI_F/dt (typical values, per diode).

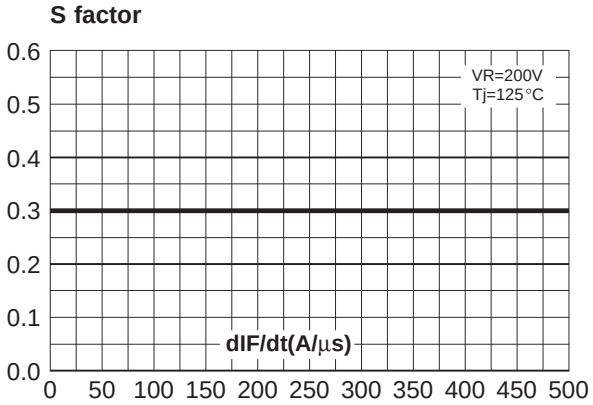


Fig. 7: Relative variation of dynamic parameters versus junction temperature (reference: Tj = 125°C).

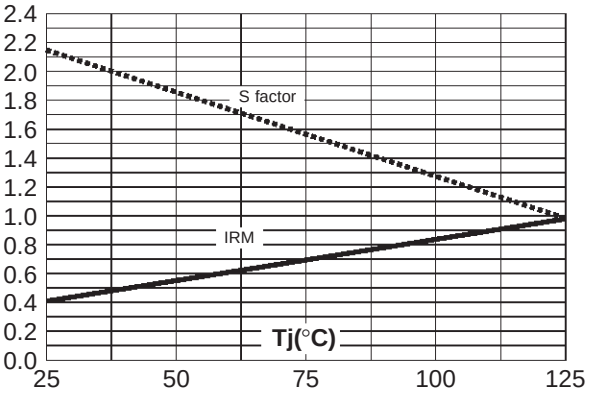


Fig. 8: Transient peak forward voltage versus dI_F/dt (90% confidence, per diode).

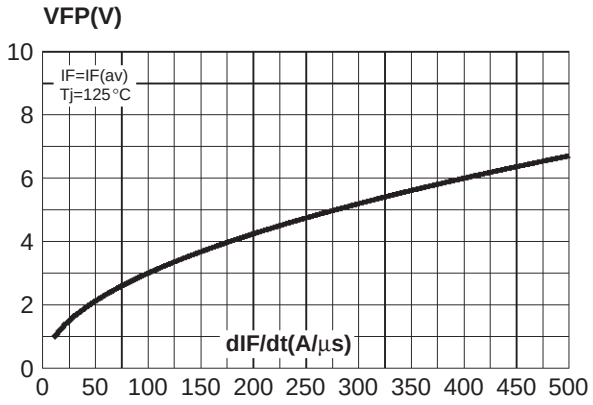
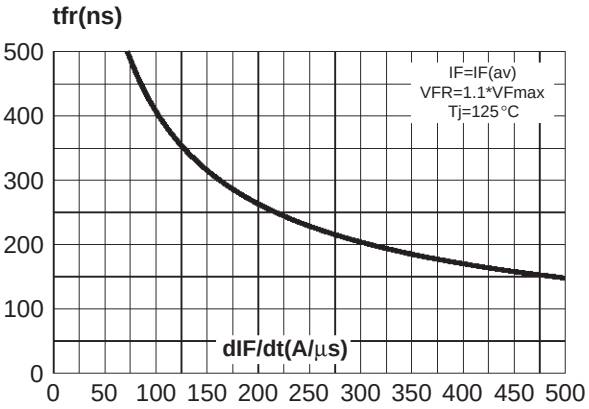
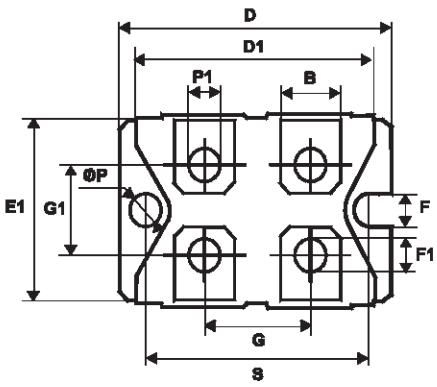


Fig. 9: Forward recovery time versus dI_F/dt (90% confidence, per diode).



PACKAGE MECHANICAL DATA
ISOTOP



REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	11.80	12.20	0.465	0.480
A1	8.90	9.10	0.350	0.358
B	7.8	8.20	0.307	0.323
C	0.75	0.85	0.030	0.033
C2	1.95	2.05	0.077	0.081
D	37.80	38.20	1.488	1.504
D1	31.50	31.70	1.240	1.248
E	25.15	25.50	0.990	1.004
E1	23.85	24.15	0.939	0.951
E2	24.80 typ.		0.976 typ.	
G	14.90	15.10	0.587	0.594
G1	12.60	12.80	0.496	0.504
G2	3.50	4.30	0.138	0.169
F	4.10	4.30	0.161	0.169
F1	4.60	5.00	0.181	0.197
P	4.00	4.30	0.157	0.69
P1	4.00	4.40	0.157	0.173
S	30.10	30.30	1.185	1.193

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Ordering code	Marking	Package	Weight	Base qty	Delivery mode
STTH12003TV1	STTH12003TV	ISOTOP	27g without screws	10 with screws	Tube

- Cooling method: by conduction (C)
- Recommended torque value: 1.3 N.m.
- Maximum torque value: 1.5 N.m.
- Epoxy meets UL 94,V0