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STTH12003TV

HIGH FREQUENCY SECONDARY RECTIFIER

MAJOR PRODUCT CHARACTERISTICS

IF(AV)	2 x 60 A
VRRM	300 V
Tj (max)	150 °C
V _F (max)	1 V
trr (max)	70 ns

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.

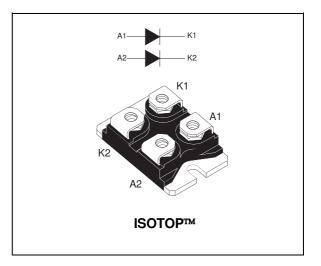
Packaged in ISOTOP, this device is intended for use in low voltage, high frequency inverters, free wheeling operation, welding equipment and telecom power supplies.

ABSOLUTE RATING	6 (limiting values,	per diode)
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Symbol	Paramete	Value	Unit		
V _{RRM}	Repetitive peak reverse voltage			300	V
I _{F(RMS)}	RMS forward current	150	А		
IF(AV)	Average forward current	$Tc = 85^{\circ}C$ $\delta = 0.5$	Per diode Per device	60 120	A
IFSM	Surge non repetitive forward current	tp = 10 ms si	nusoidal	600	А
IRSM	Non repetitive peak reverse current	tp = 100 μs sq	uare	5	А
T _{stg}	Storage temperature range	- 55 to + 150	°C		
Tj	Maximum operating junction temperation	150	°C		

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STTH12003TV

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit	
R _{th} (j-c)	Junction to case	Per diode Total	0.8 0.45	°C/W
Rth (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.	Тур.	Max.	Unit
I _R *	Reverse leakage	V _R = 300 V	Tj = 25°C			120	μA
	current		Tj = 125°C		0.12	1.2	mA
VF **	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 μ s, δ < 2%

To evaluate the maximum conduction losses use the following equation:

 $P = 0.75 \text{ x } I_{F(AV)} + 0.0042 \text{ x } I_{F}^{2}(RMS)$

RECOVERY CHARACTERISTICS

Symbol	Tests conditions			Тур.	Max.	Unit
trr	$I_F = 0.5 A$ $Irr = 0.25 A$ $I_R = 1A$	Tj = 25°C			55	ns
	$I_F = 1 \text{ A}$ $dI_F/dt = -50 \text{ A}/\mu \text{s}$ $V_R = 30 \text{ V}$	Tj = 25°C			70	
tfr	$I_F = 60 \text{ A} \qquad \qquad dI_F/dt = 200 \text{ A}/\mu\text{s}$	Tj = 25°C			600	ns
V _{FP}	V _{FR} = 1.1 x V _F max.	Tj = 25°C			5	V
Sfactor	Vcc = 200 V IF = 60 A	Tj = 125°C		0.3		-
IRM	dl _F /dt = 200 A/µs				14	А

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

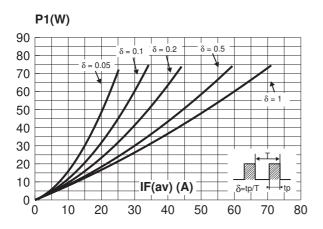


Fig. 3: Relative variation of thermal impedance junction to case versus pulse duration.

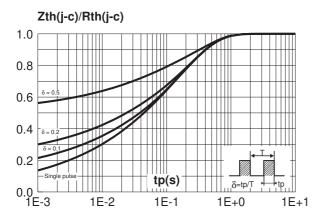


Fig. 5: Reverse recovery time versus dlF/dt (90% confidence, per diode).

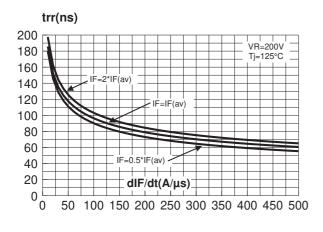


Fig. 2: Forward voltage drop versus forward current (per diode).

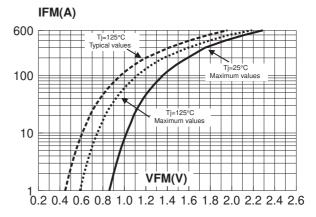


Fig. 4: Peak reverse recovery current versus dI_F/dt (90% confidence, per diode).

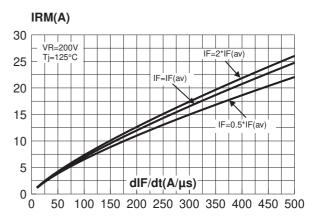
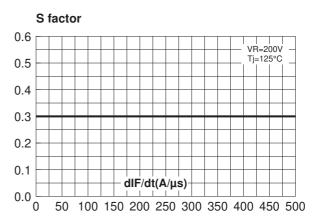


Fig. 6: Softness factor (tb/ta) versus dl_F/dt (typical values, per diode).



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STTH12003TV

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

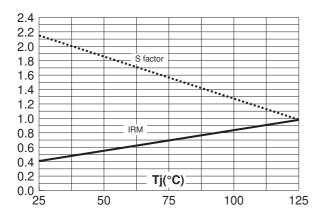


Fig. 9: Forward recovery time versus dI_F/dt (90% confidence, per diode).

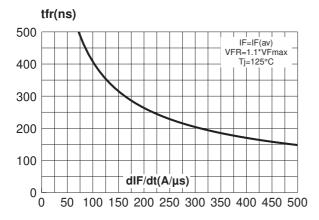
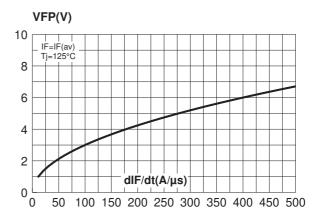


Fig. 8: Transient peak forward voltage versus dI_F/dt (90% confidence, per diode).



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PACKAGE MECHANICAL DATA ISOTOP

			DIMEN	SIONS	
	REF.	REF. Millimeters		Inches	
		Min.	Max.	Min.	Max.
	Α	11.80	12.20	0.465	0.480
. .	A1	8.90	9.10	0.350	0.358
	В	7.8	8.20	0.307	0.323
	С	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	0 typ.	0.976	6 typ.
	G	14.90	15.10	0.587	0.594
	G1	12.60	12.80	0.496	0.504
S	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
	Р	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

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

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