

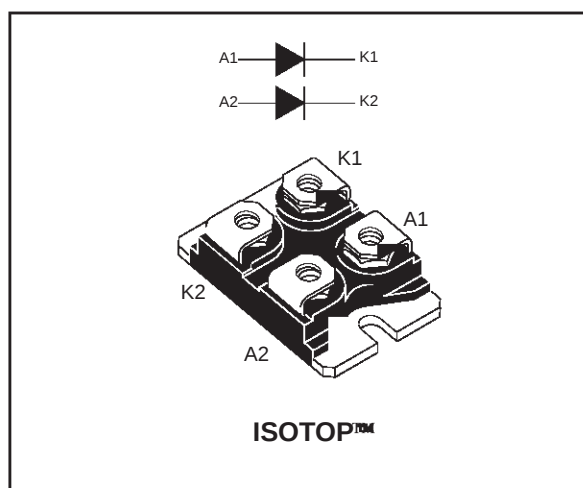
HIGH FREQUENCY SECONDARY RECTIFIER

MAJOR PRODUCTS CHARACTERISTICS

$I_F(AV)$	2 x 80 A
V_{RRM}	300 V
$T_j(max)$	150 °C
$V_F(max)$	0.95 V
$t_{rr}(max)$	80 ns

FEATURES AND BENEFITS

- COMBINES HIGHEST RECOVERY AND VOLTAGE PERFORMANCE
- ULTRA-FAST, SOFT AND NOISE-FREE RECOVERY
- ISOLATED 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			180	A
I _{F(AV)}	Average forward current	T _c = 80°C δ = 0.5	Per diode Perdevice	80 160	A
I _{FSM}	Surge non repetitive forward current	t _p = 10 ms sinusoidal		800	A
I _{RSM}	Non repetitive peak reverse current	t _p = 100 μs square		5	A
T _{stg}	Storage temperature range			- 55 to + 150	°C
T _j	Maximum operating junction temperature			150	°C

STTH16003TV

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	Junction to case	Per diode Total	0.7 0.4	$^{\circ}\text{C/W}$
$R_{th(c)}$		Coupling	0.1	

When the diodes 1 and 2 are used simultaneously:

$$\Delta T_j (\text{diode 1}) = P (\text{diode 1}) \times R_{th(j-c)} (\text{per diode}) + P (\text{diode 2}) \times R_{th(c)}$$

STATIC ELECTRICAL CHARACTERISTICS (per diode)

Symbol	Parameter	Tests conditions		Min.	Typ.	Max.	Unit
I_R^*	Reverse leakage current	$V_R = 300\text{ V}$	$T_j = 25^{\circ}\text{C}$			200	μA
			$T_j = 125^{\circ}\text{C}$		0.2	2	mA
V_F^{**}	Forward voltage drop	$I_F = 80\text{ A}$	$T_j = 25^{\circ}\text{C}$			1.2	V
			$T_j = 125^{\circ}\text{C}$		0.8	0.95	

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:

$$P = 0.75 \times I_{F(AV)} + 0.0025 \times I_F^2 (RMS)$$

RECOVERY CHARACTERISTICS

Symbol	Tests conditions			Min.	Typ.	Max.	Unit
trr	I _F = 0.5 A	I _{rr} = 0.25 A	I _R = 1A	T _j = 25°C		60	ns
	I _F = 1 A	di _F /dt = - 50 A/μs	V _R = 30 V			80	
tfr	I _F = 80 A di _F /dt = 200 A/μs			T _j = 25°C		1000	ns
V _{FP}	V _{FR} = 1.1 x V _F max.					5	V
S _{factor}	V _{CC} = 200 V I _F = 80 A			T _j = 125°C	0.3		-
I _{RM}	di _F /dt = 200 A/μs						16

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

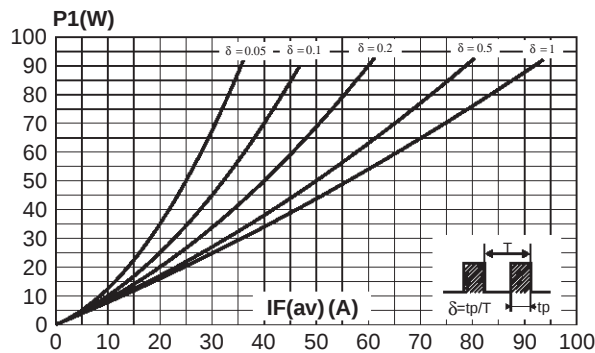


Fig. 2: Forward voltage drop versus forward current (Maximum values, per diode).

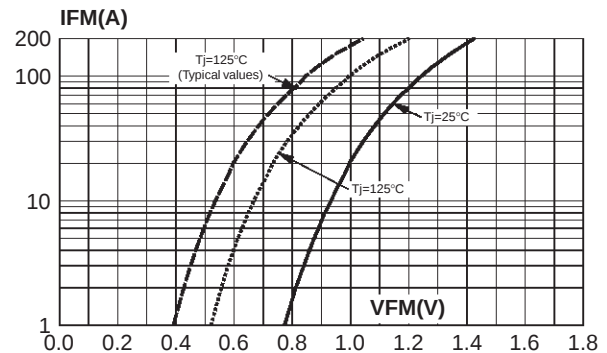


Fig. 3: Relative variation of thermal impedance junction to case versus pulse duration.

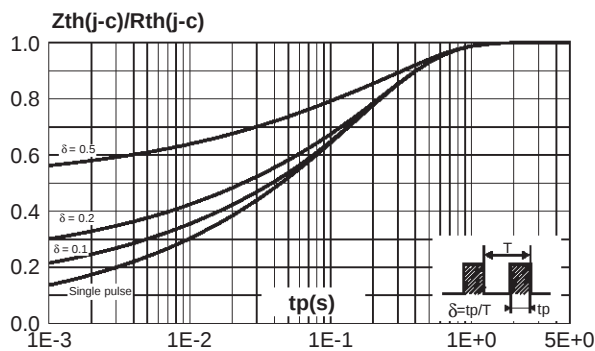


Fig. 4: Peak reverse recovery current versus dI_F/dt (90% confidence, per diode).

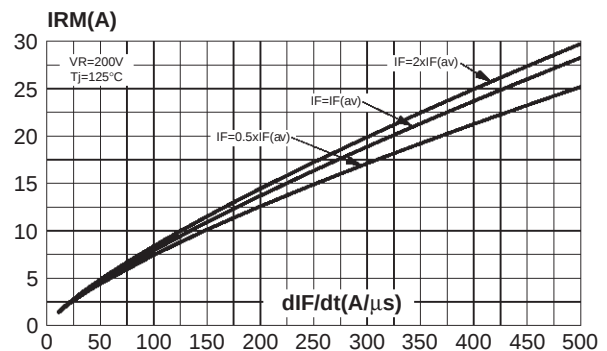


Fig. 5: Reverse recovery time versus dI_F/dt (90% confidence, per diode).

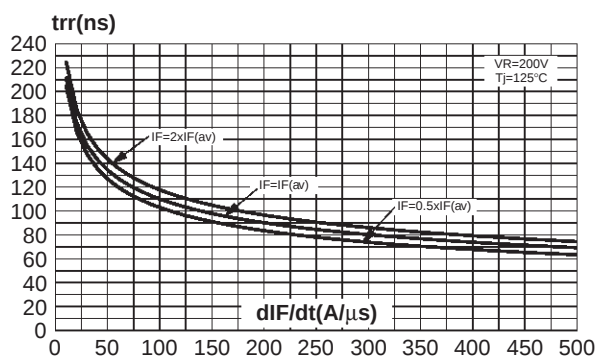


Fig. 6: Softness factor (t_b/t_a) versus dI_F/dt (typical values, per diode).

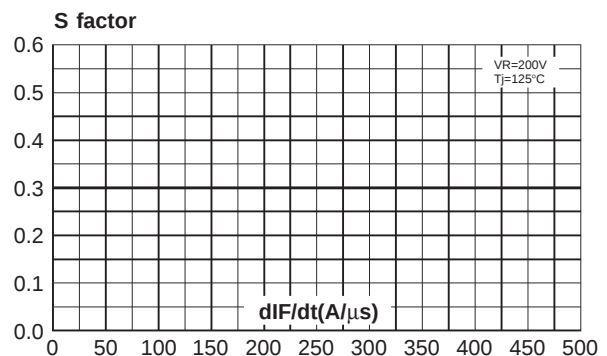


Fig. 7: Relative variation of dynamic parameters versus junction temperature (Reference: $T_j=125^{\circ}\text{C}$).

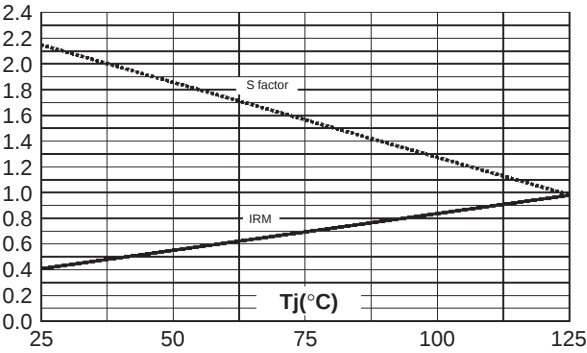


Fig. 8: Transient peak forward voltage versus dI_F/dt (90% confidence, per diode).

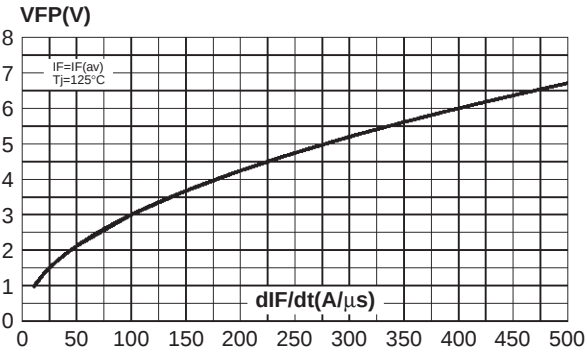
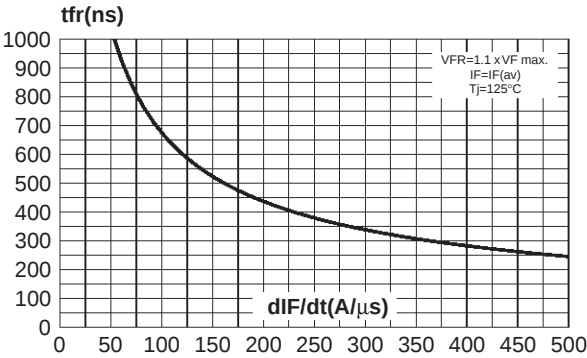
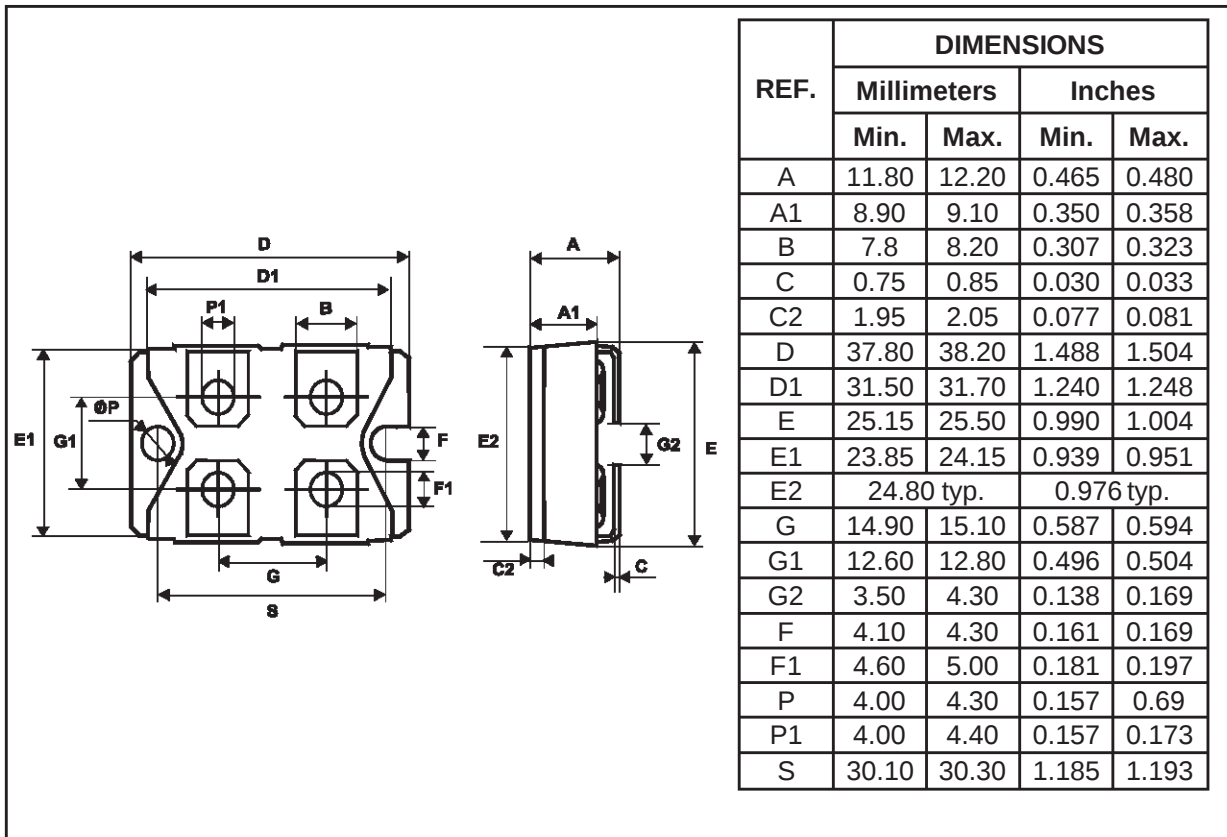


Fig.9: Forward recovery time versus dI_F/dt (90% confidence, per diode).



PACKAGE MECHANICAL DATA
ISOTOP


Type	Marking	Package	Weight	Base qty	Delivery mode
STTH16003TV1	STTH16003TV	ISOTOP	27 g. 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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