

**HIGH EFFICIENCY ULTRAFAST DIODE**
**MAIN PRODUCT CHARACTERISTICS**

<b>I<sub>F(AV)</sub></b>	<b>1.5 A</b>
<b>V<sub>RRM</sub></b>	<b>200 V</b>
<b>T<sub>j</sub> (max)</b>	<b>175 °C</b>
<b>V<sub>F</sub> (max)</b>	<b>0.75 V</b>
<b>t<sub>rr</sub>(max)</b>	<b>32 ns</b>

**FEATURES AND BENEFITS**

- Very low conduction losses
- Negligible switching losses
- Low forward and reverse recovery times
- High junction temperature

**DESCRIPTION**

The STTH152 which is using ST's new 200V planar technology, is specially suited for switching mode base drive & transistor circuits.

The device is also intended for use as a free wheeling diode in power supplies and other power switching applications.


**ABSOLUTE RATINGS** (limiting values)

Symbol	Parameter		Value	Unit
V <sub>RRM</sub>	Repetitive peak reverse voltage		200	V
I <sub>F(AV)</sub>	Average forward current	T <sub>I</sub> = 115°C δ = 0.5	1.5	A
I <sub>FSM</sub>	Surge non repetitive forward current	t <sub>p</sub> =10 ms Sinusoidal	80	A
T <sub>stc</sub>	Storage temperature range		-65 +175	°C
T <sub>j</sub>	Maximum operating junction temperature		175	°C

**THERMAL RESISTANCES**

Symbol	Parameter	Value	Unit
R <sub>th(j-a)</sub>	Junction to ambient*	45	°C/W

\* On infinite heatsink with 10mm lead length.

## STTH152

### STATIC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Tests conditions		Min.	Typ.	Max.	Unit
$I_R^*$	Reverse leakage current	$T_j = 25^\circ\text{C}$	$V_R = V_{RRM}$			1.5	$\mu\text{A}$
		$T_j = 125^\circ\text{C}$			2	40	
$V_F^{**}$	Forward voltage drop	$T_j = 25^\circ\text{C}$	$I_F = 1.5\text{A}$			0.95	V
		$T_j = 125^\circ\text{C}$			0.66	0.75	

Pulse test : \*  $t_p = 5\text{ ms}$ ,  $\delta < 2\%$

\*\*  $t_p = 380\ \mu\text{s}$ ,  $\delta < 2\%$

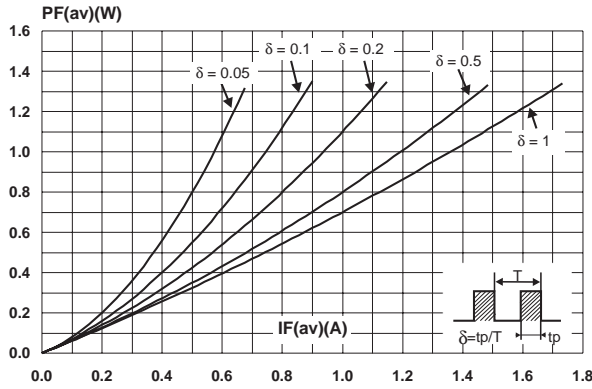
To evaluate the maximum conduction losses use the following equation :

$$P = 0.60 \times I_{F(AV)} + 0.10 \times I_{F(RMS)}^2$$

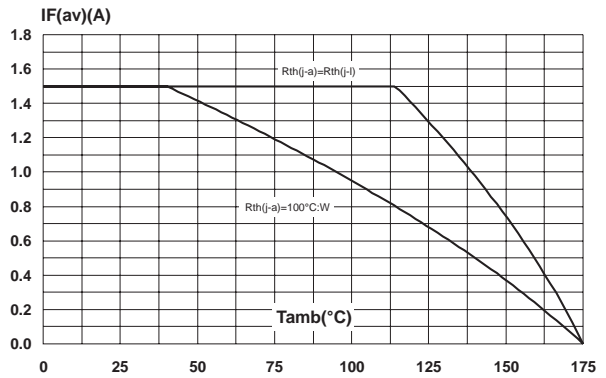
### DYNAMIC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Tests conditions		Min.	Typ.	Max.	Unit
$t_{rr}$	Reverse recovery time	$I_F = 1\text{A}$ $V_R = 30\text{V}$	$dI_F/dt = -50\text{A}/\mu\text{s}$ $T_j = 25^\circ\text{C}$			32	ns
$t_{fr}$	Forward recovery time	$I_F = 1.5\text{A}$ $V_{FR} = 1.1 \times V_{Fmax}$	$dI_F/dt = 50\text{A}/\mu\text{s}$ $T_j = 25^\circ\text{C}$		50		ns
$V_{FP}$	Forward recovery voltage		$T_j = 25^\circ\text{C}$			1.8	

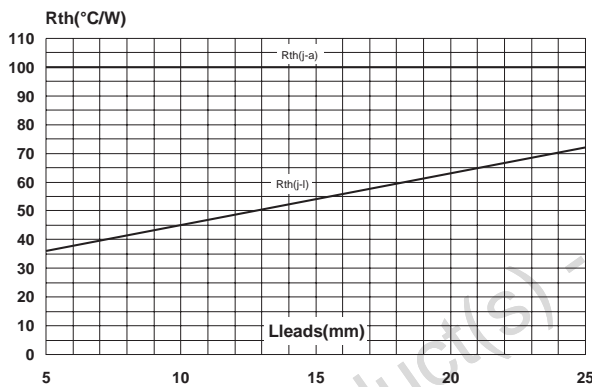
**Fig. 1:** Average forward power dissipation versus average forward current.



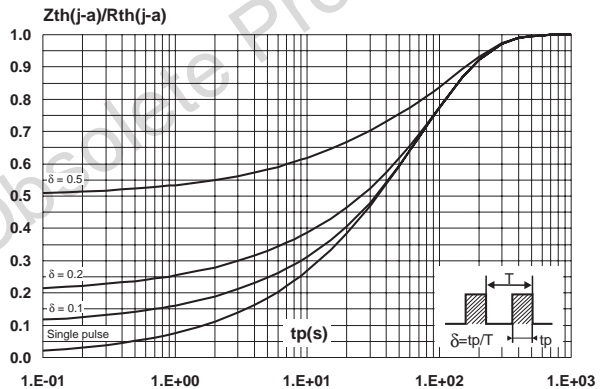
**Fig. 2:** Average forward current versus ambient temperature ( $\delta=0.5$ ).



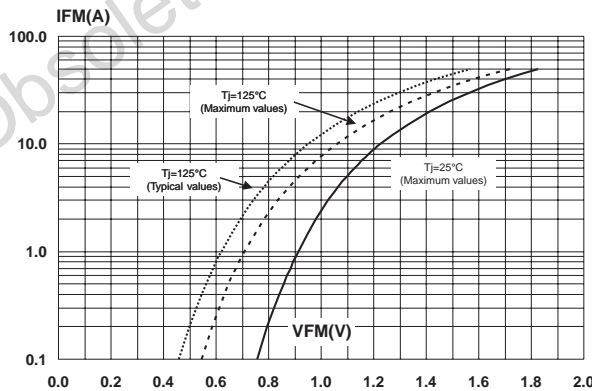
**Fig. 3:** Thermal resistance versus lead length.



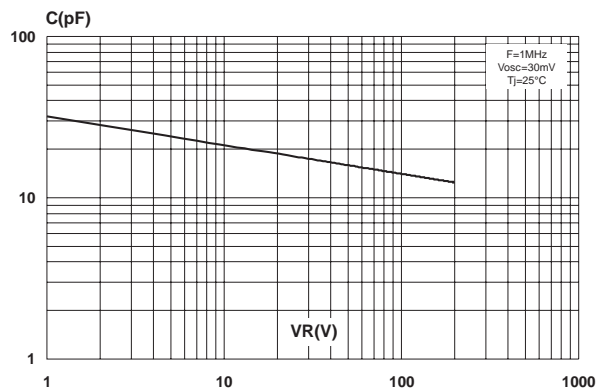
**Fig. 4:** Relative variation of thermal impedance junction to ambient versus pulse duration (printed circuit board epoxy FR4, Leads = 10mm).



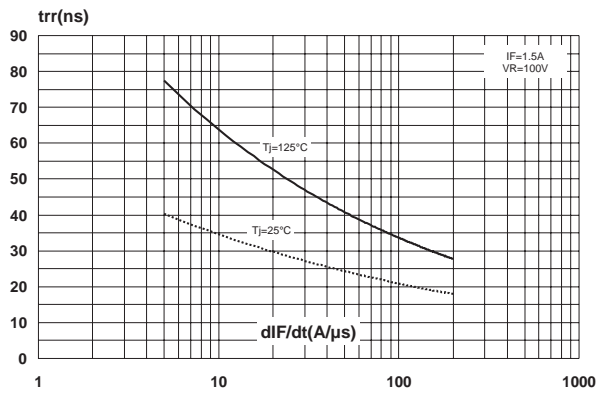
**Fig. 5:** Forward voltage drop versus forward current.



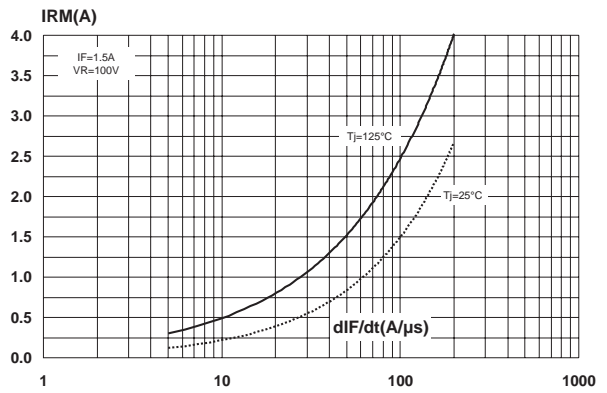
**Fig. 6:** Junction capacitance versus reverse voltage applied (typical values).



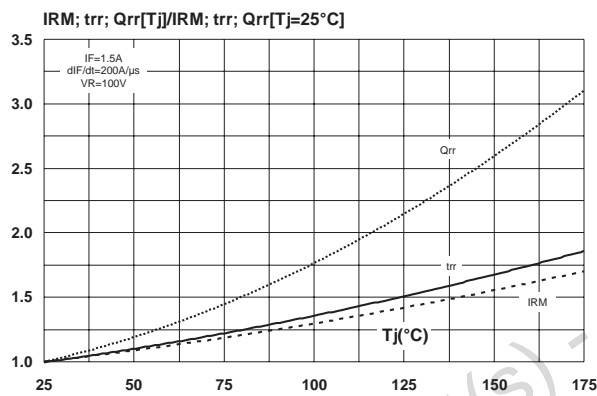
**Fig. 7:** Reverse recovery time versus  $di_F/dt$  (90% confidence).



**Fig. 8:** Peak reverse recovery current versus  $di_F/dt$  (90% confidence).



**Fig. 9:** Relative variations of dynamic parameters versus junction temperature.



Obsolete Product(s) - Obsolete Product(s)

## PACKAGE MECHANICAL DATA

DO-15

REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	6.05	6.75	0.238	0.266
B	2.95	3.53	0.116	0.139
C	26	31	1.024	1.220
D	0.71	0.88	0.028	0.035

Ordering code	Marking	Package	Weight	Base qty	Delivery mode
STTH152	STTH152	DO-15	0.4 g	1000	Ammopack
STTH152RL	STTH152	DO-15	0.4 g	6000	Tape and reel

- White band indicates cathode
- Epoxy meets UL 94,V0

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