

HIGH EFFICIENCY ULTRAFAST DIODE

MAIN PRODUCT CHARACTERISTICS

I_{F(AV)}	1.5 A
V_{RRM}	200 V
T_j (max)	175 °C
V_F (max)	0.75 V
trr(max)	32 ns

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 _{RRM}	Repetitive peak reverse voltage		200	V
I _{F(AV)}	Average forward current	T _I = 115°C δ = 0.5	1.5	A
I _{FSM}	Surge non repetitive forward current	t _p =10 ms Sinusoidal	80	A
T _{stg}	Storage temperature range		-65 +175	°C
T _j	Maximum operating junction temperature		175	°C

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
R _{th (j-a)}	Junction to ambient*	45	°C/W

* On infinite heatsink with 10mm lead length.

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	μA
		$T_j = 125^\circ\text{C}$			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 : * $t_p = 5\text{ ms}$, $\delta < 2\%$

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

To evaluate the maximum conduction losses use the following equation :

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

DYNAMIC ELECTRICAL CHARACTERISTICS

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

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

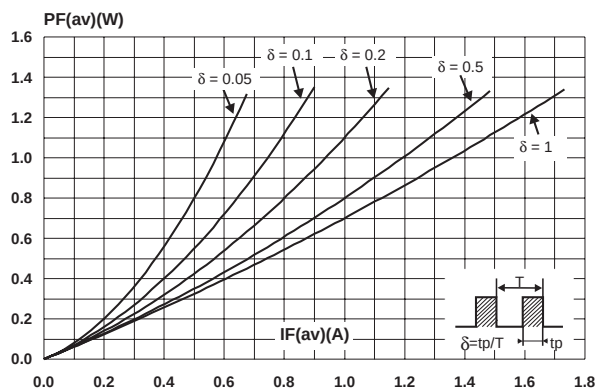


Fig. 2: Average forward current versus ambient temperature ($\delta=0.5$).

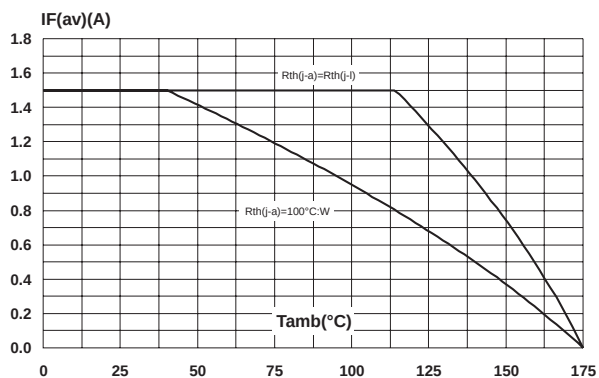


Fig. 3: Thermal resistance versus lead length.

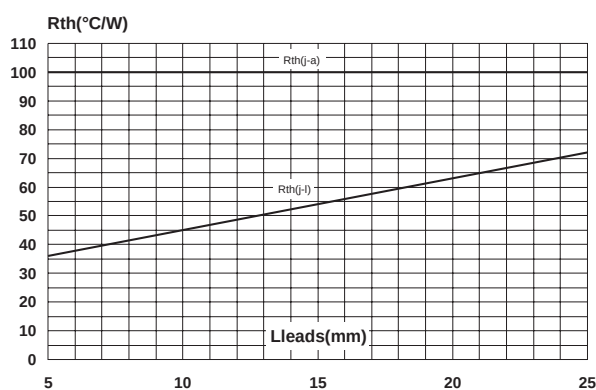


Fig. 4: Relative variation of thermal impedance junction to ambient versus pulse duration (printed circuit board epoxy FR4, Leads = 10mm).

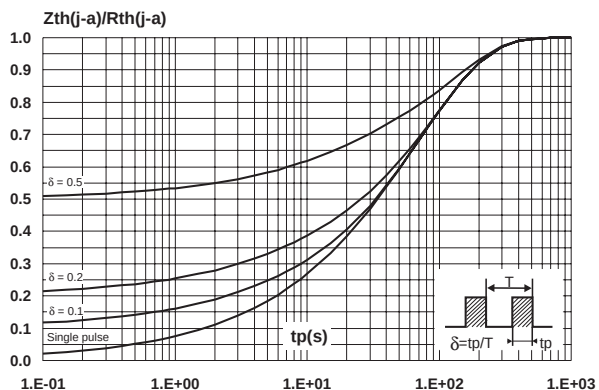


Fig. 5: Forward voltage drop versus forward current.

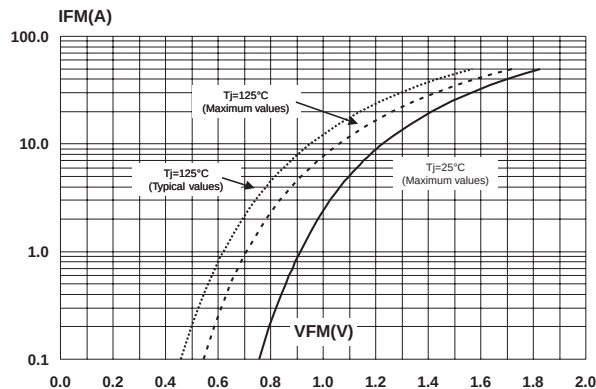


Fig. 6: Junction capacitance versus reverse voltage applied (typical values).

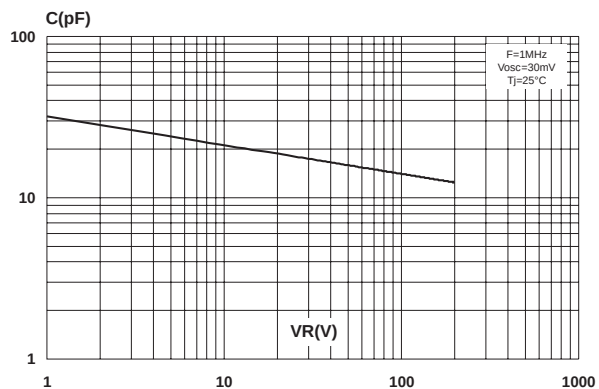


Fig. 7: Reverse recovery time versus di_F/dt (90% confidence).

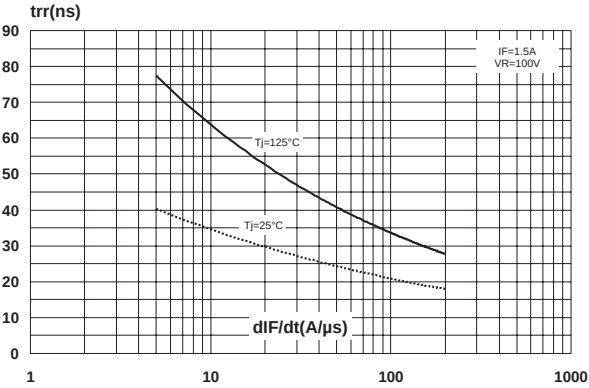


Fig. 8: Peak reverse recovery current versus di_F/dt (90% confidence).

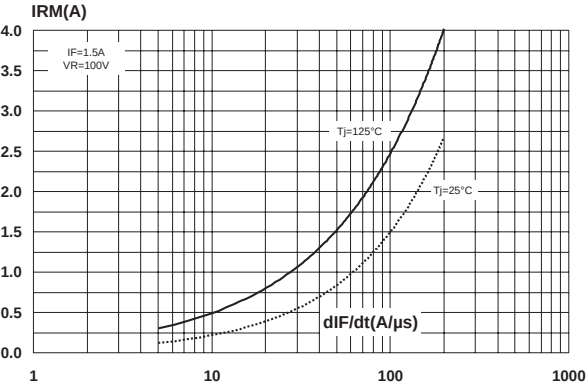
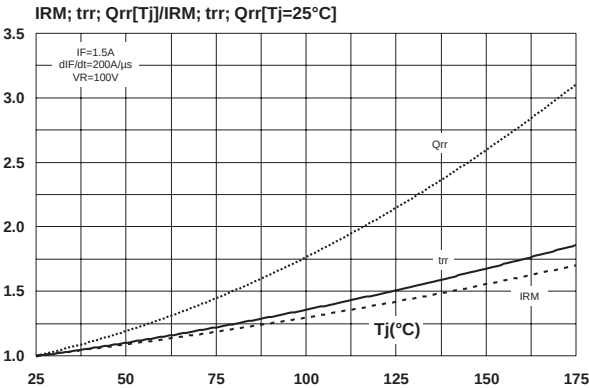
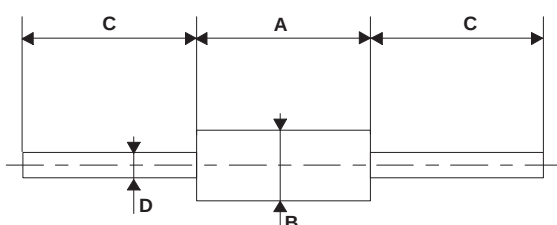


Fig. 9: Relative variations of dynamic parameters versus junction temperature.



PACKAGE MECHANICAL DATA
DO-15

	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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