STTH302

HIGH EFFICIENCY ULTRAFAST DIODE

MAIN PRODUCT CHARACTERISTICS

$I_{F(AV)}$	3A
V_{RRM}	200 V
Tj (max)	175 °C
V_F (max)	0.75 V
trr (max)	35 ns

DO-201AD
STTH302

FEATURES AND BENEFITS

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

DESCRIPTION

The STTH302 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	Tl = 107°C	$\delta = 0.5$	3	A
I_{FSM}	Surge non repetitive forward current	t_p = 10ms	Sinusoidal	130	A
T_{stg}	Storage temperature range			- 65 to + 175	°C
Tj	Maximum operating junction temperature			175	°C

THERMAL PARAMETERS

Symbol	Parameter	Value	Unit
Rth (j-a)	Junction-ambient*	25	°C/W

* On infinite heatsink with 10mm lead length.

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
I_R *	Reverse leakage current	T_j = 25°C	$V_R = V_{RRM}$			3	µA
		T_j = 125°C			4	75	
V_F **	Forward voltage drop	T_j = 25°C	I_F = 3A			0.95	V
		T_j = 125°C			0.66	0.75	

Pulse test : * tp = 5 ms, δ < 2 %

** tp = 380 µs, δ < 2 %

To evaluate the maximum conduction losses use the following equations:

$P = 0.60 \times I_{F(AV)} + 0.05\ I_F{}^2{}_{(RMS)}$

DYNAMIC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Test conditions		Min.	Typ.	Max.	Unit
trr	Reverse recovery time	I_F = 1A dI_F/dt = - 50A/µs V_R = 30V	T_j = 25°C			35	ns
tfr	Forward recovery time	I_F = 3A dI_F/dt = 50A/µs $V_{FR} = 1.1 \times V_F$ max	T_j = 25°C		70		ns
V_{FP}	Forward recovery voltage		T_j = 25°C		1.6		V

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

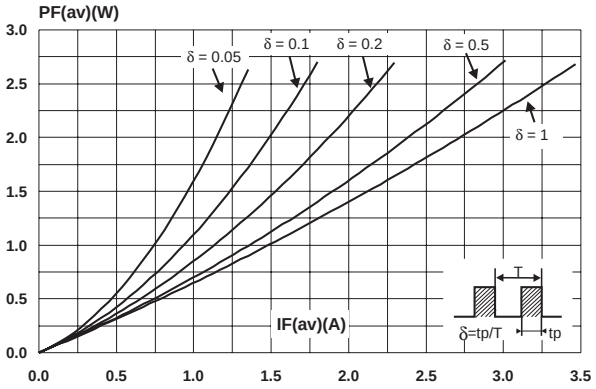


Fig. 2: Average forward current versus ambient temperature (δ=0.5).

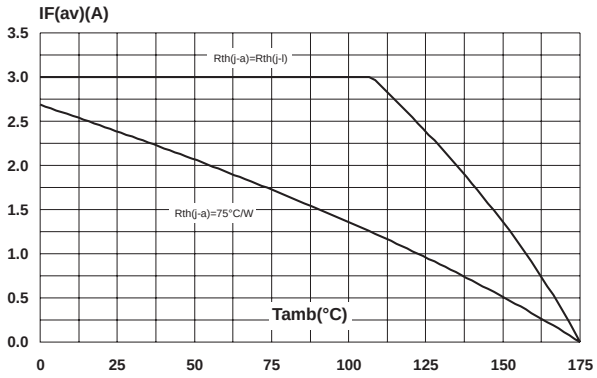


Fig. 3: Thermal resistance versus lead length.

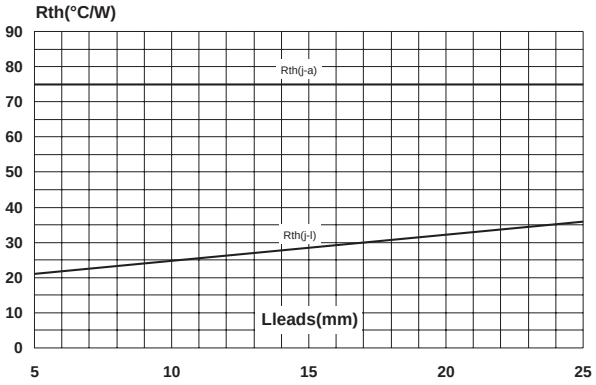


Fig. 4: Relative variation of thermal impedance junction ambient versus pulse duration (printed circuit board epoxy FR4, LIeads = 10mm).

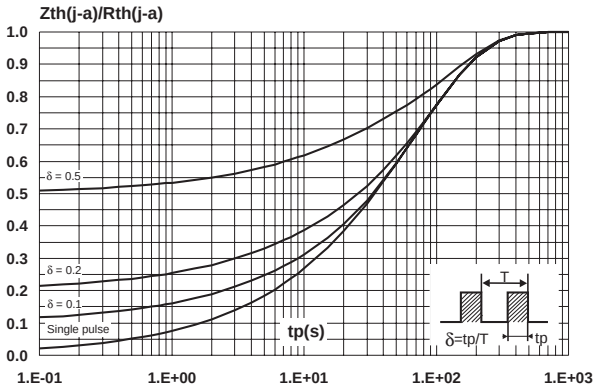


Fig. 5: Forward voltage drop versus forward current.

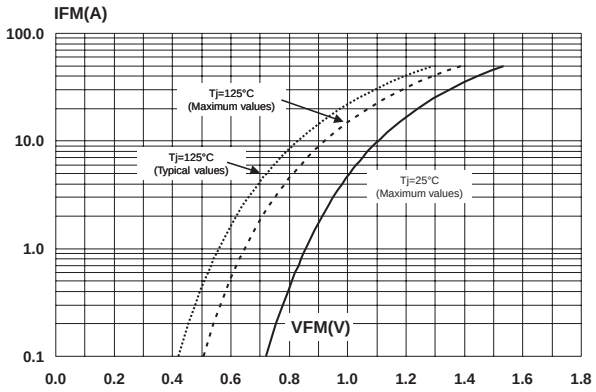


Fig. 6: Junction capacitance versus reverse voltage applied (typical values).

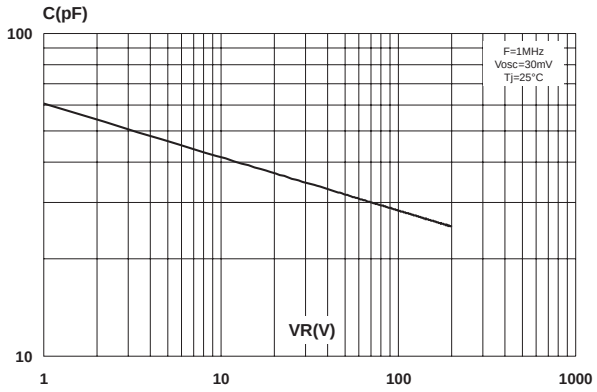


Fig. 7: Reverse recovery time versus dI_F/dt (90% confidence).

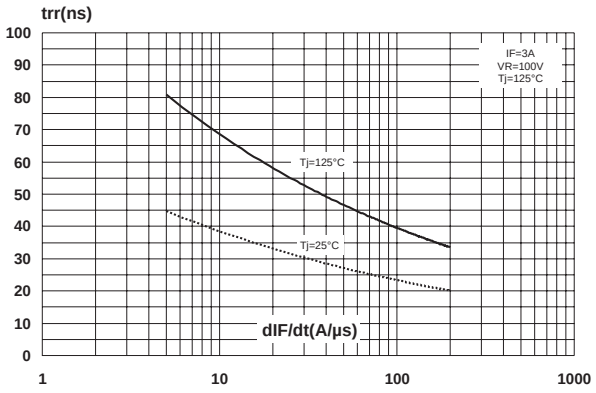


Fig. 8: Peak reverse recovery current versus dI_F/dt (90% confidence).

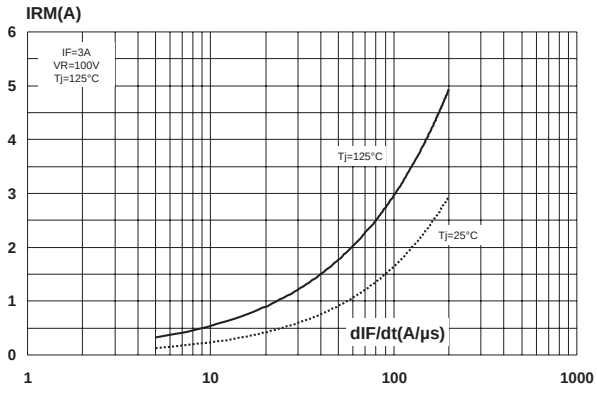
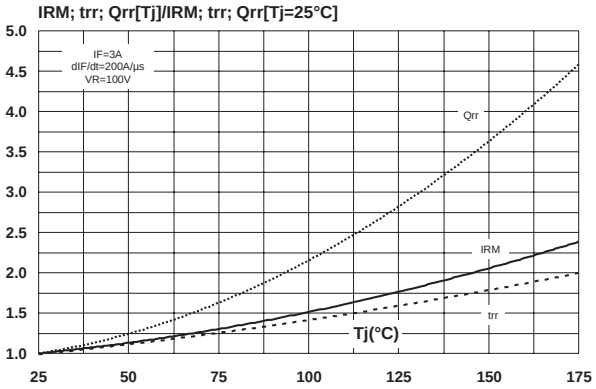
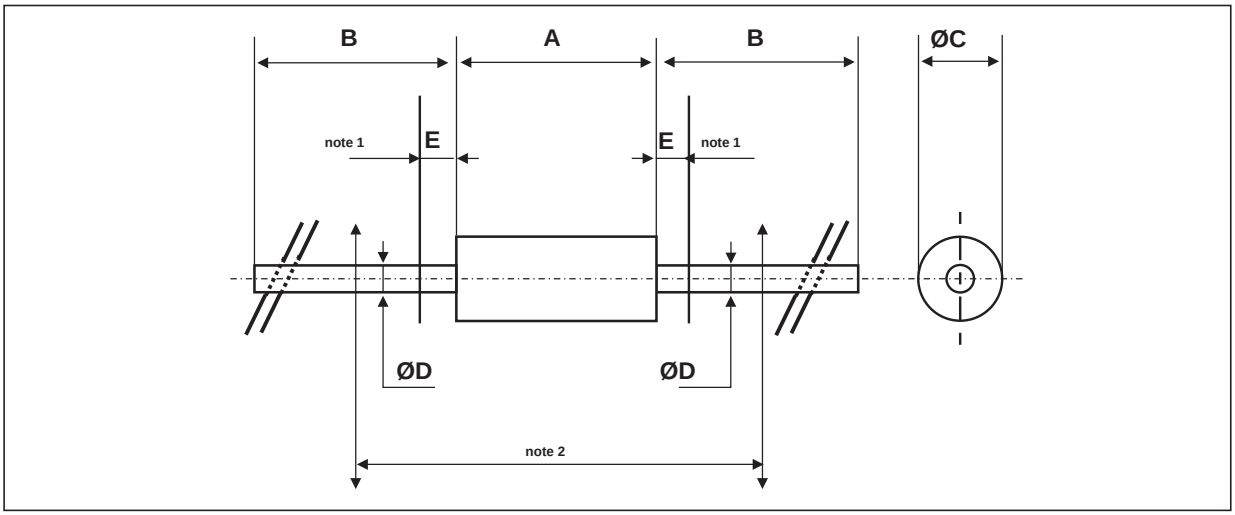


Fig. 9: Relative variations of dynamic parameters versus junction temperature.



PACKAGE MECHANICAL DATA

DO-201AD



REF.	DIMENSIONS				NOTES
	Millimeters		Inches		
	Min.	Max.	Min.	Max.	
A		9.50		0.374	1 - The lead diameter ∅ D is not controlled over zone E 2 - The minimum axial length within which the device may be placed with its leads bent at right angles is 0.59"(15 mm)
B	25.40		1.000		
∅ C		5.30		0.209	
∅ D		1.30		0.051	
E		1.25		0.049	

Ordering code	Marking	Package	Weight	Base qty	Delivery mode
STTH302	STTH302	DO-201AD	1.16 g	600	Ammopack
STTH302RL	STTH302	DO-201AD	1.16 g	1900	Tape and reel

- White band indicates cathode
- Epoxy meets UL94,V0

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STMicroelectronics:

STTH302 STTH302RL