

HIGH VOLTAGE ULTRAFAST RECTIFIER
MAIN PRODUCT CHARACTERISTICS

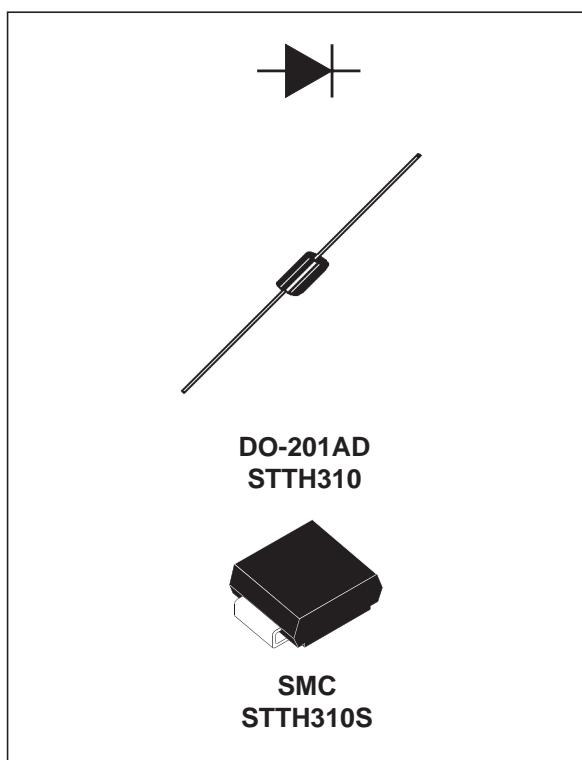
I_{F(AV)}	3 A
V_{RRM}	1000 V
T_j (max)	175 °C
V_F (max)	1.42 V

FEATURES AND BENEFITS

- Low forward voltage drop
- High reliability
- High surge current capability
- Soft switching for reduced EMI disturbances
- Planar technology

DESCRIPTION

The STTH310, which is using ST ultrafast high voltage planar technology, is specially suited for free-wheeling, clamping, snubbing, demagnetization in power supplies and other power switching applications.


ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit	
V _{RRM}	Repetitive peak reverse voltage		1000	V	
V _(RMS)	RMS voltage		700	V	
I _{F(AV)}	Average forward current	TI = 75°C δ = 0.5	DO-201AD	3	A
		TI = 75°C δ = 0.5	SMC	3	
I _{FSM}	Forward surge current t = 8.3 ms		DO-201AD	55	A
			SMC	45	
T _{stg}	Storage temperature range		- 50 + 175	°C	
T _j	Maximum operating junction temperature		+ 175	°C	

THERMAL PARAMETERS

Symbol	Parameter			Value	Unit
$R_{th(j-l)}$	Junction to lead	L = 10 mm	DO-201AD	20	°C/W
			SMC	20	
$R_{th(j-a)}$	Junction to ambient	L = 10 mm	DO-201AD	75	

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Tests conditions		Min.	Typ.	Max.	Unit
I_R	Reverse leakage current	$V_R = 1000V$	$T_j = 25^\circ C$			10	μA
			$T_j = 125^\circ C$			50	
V_F	Forward voltage drop	$I_F = 3 A$	$T_j = 25^\circ C$			1.7	V
			$T_j = 150^\circ C$		0.98	1.42	

To evaluate the maximum conduction losses use the following equation :

$$P = 1.20 \times I_{F(AV)} + 0.075 \times I_{F(RMS)}^2$$

DYNAMIC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Tests conditions		Min.	Typ.	Max.	Unit
t_{rr}	Reverse recovery time	$I_F = 0.5 A$ $I_{rr} = 0.25 A$ $I_R = 1A$	$T_j = 25^\circ C$			75	ns
t_{fr}	Forward recovery time	$I_F = 3 A$ $dI_F/dt = 50 A/\mu s$ $V_{FR} = 1.1 \times V_F \text{ max}$	$T_j = 25^\circ C$			300	ns
V_{FP}	Forward recovery voltage						12

Fig. 1: Conduction losses versus average current.

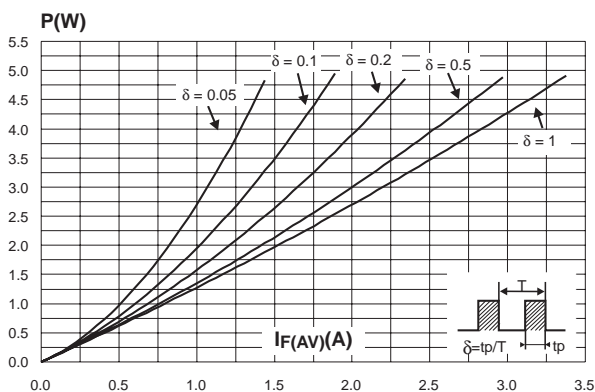


Fig. 2: Forward voltage drop versus forward current.

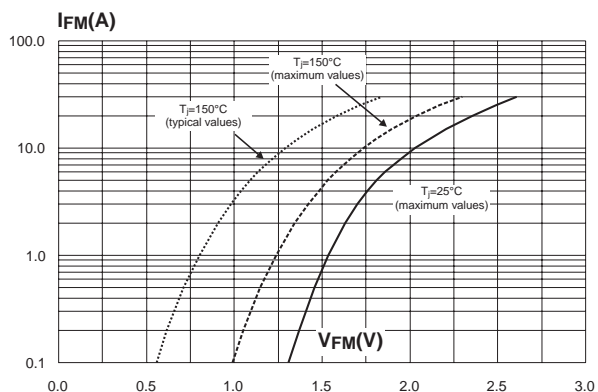


Fig. 3-1: Relative variation of thermal impedance junction ambient versus pulse duration (epoxy FR4, $L_{leads} = 10\text{mm}$) (DO-201AD).

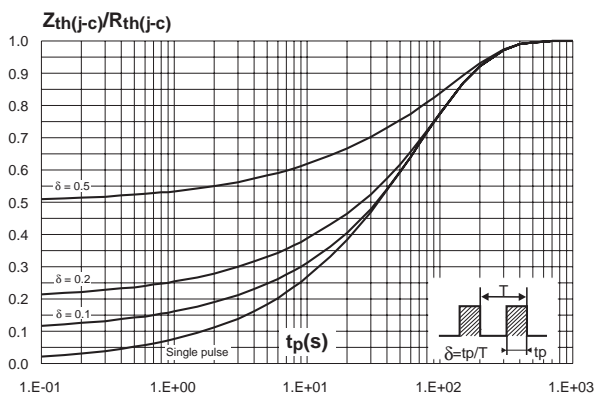


Fig. 3-2: Relative variation of thermal impedance junction ambient versus pulse duration (epoxy FR4, $S=1\text{cm}^2$) (SMC).

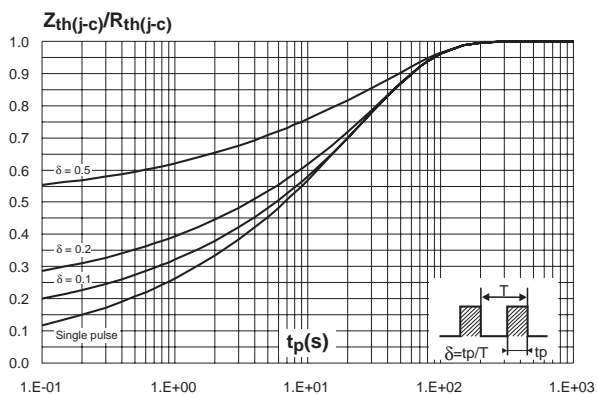
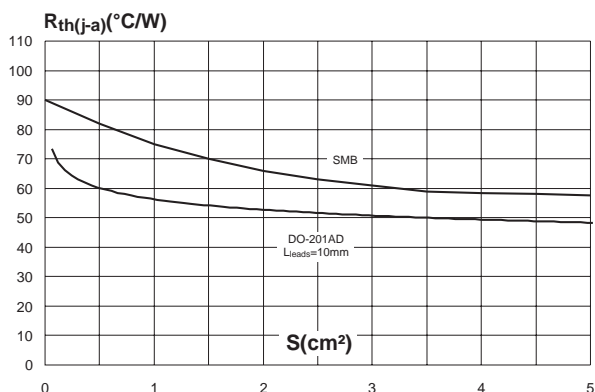
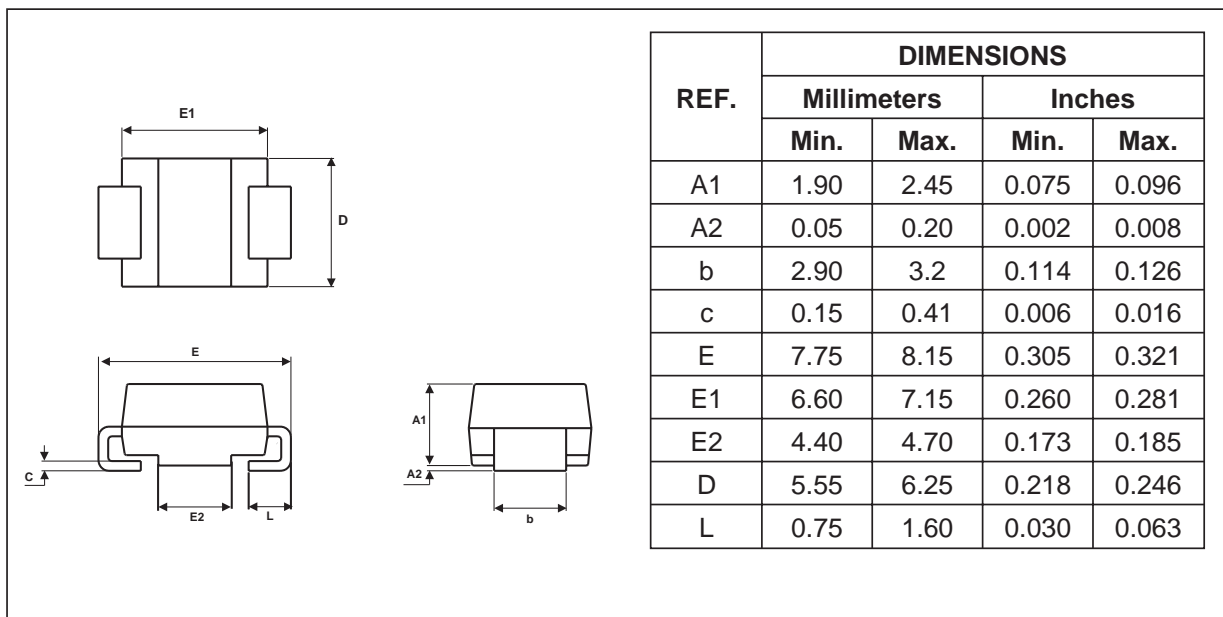


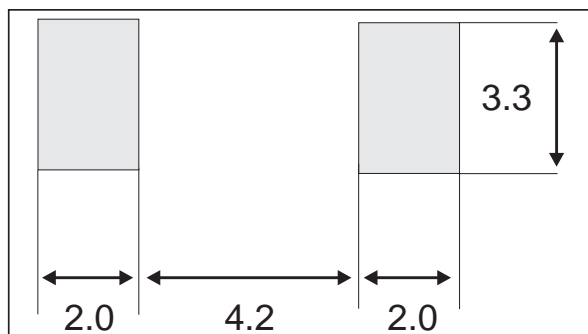
Fig. 4: Thermal resistance junction to ambient versus copper surface under each lead (epoxy printed circuit board FR4, copper thickness: $35\mu\text{m}$).

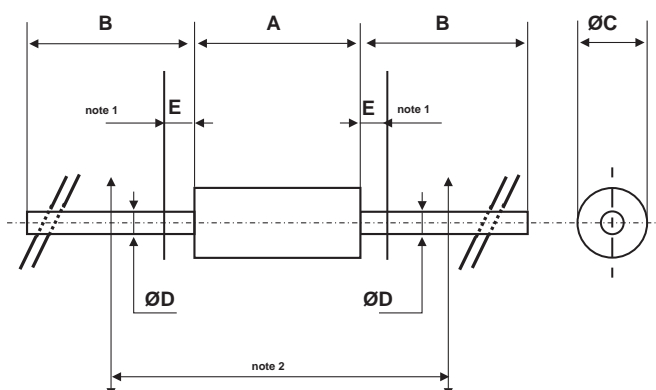


PACKAGE MECHANICAL DATA
SMC



FOOTPRINT (in millimeters)



PACKAGE MECHANICAL DATA
 DO-201AD


REF.	DIMENSIONS				NOTES
	Millimeters		Inches		
	Min.	Max.	Min.	Max.	
A		9.50		0.374	1 - The lead diameter $\varnothing D$ is not controlled over zone E 2 - The minimum length which must stay straight between the right angles after bending 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
STTH310	STTH310	DO-201AD	1.12 g	600	Ammopack
STTH310S	S10	SMC	0.245 g	2500	Tape & reel
STTH310RL	STTH310	DO-201AD	1.12 g	1900	Tape & reel

- Epoxy meets UL 94,V0

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