

**HIGH VOLTAGE ULTRAFAST RECTIFIER**
**MAIN PRODUCT CHARACTERISTICS**

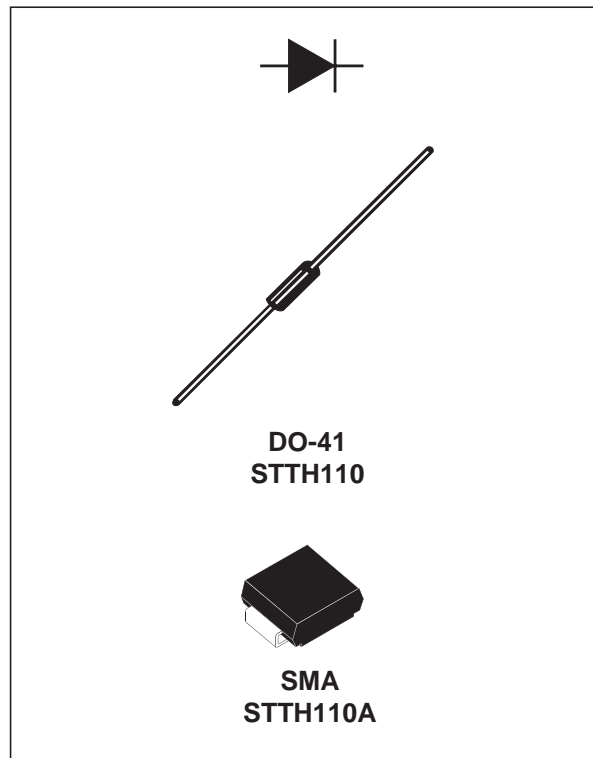
<b>I<sub>F(AV)</sub></b>	<b>1 A</b>
<b>V<sub>RRM</sub></b>	<b>1000 V</b>
<b>T<sub>j</sub> (max)</b>	<b>175 °C</b>
<b>V<sub>F</sub> (max)</b>	<b>1.42 V</b>

**FEATURES AND BENEFITS**

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

**DESCRIPTION**

The STTH110, 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 <sub>RRM</sub>	Repetitive peak reverse voltage			1000	V
V <sub>(RMS)</sub>	RMS voltage			700	V
I <sub>F(AV)</sub>	Average forward current	TI = 100°C δ = 0.5	DO-41	1	A
		TI = 125°C δ = 0.5	SMA	1	
I <sub>FSM</sub>	Forward surge current t = 8.3 ms	DO-41		20	A
		SMA		18	
T <sub>stg</sub>	Storage temperature range			- 50 + 175	°C
T <sub>j</sub>	Maximum operating junction temperature			+ 175	°C

## THERMAL PARAMETERS

Symbol	Parameter			Value	Unit
R <sub>th(j-l)</sub>	Junction to lead	L = 10 mm	DO-41	45	°C/W
			SMA	30	
R <sub>th(j-a)</sub>	Junction to ambient	L = 10 mm	DO-41	110	

## STATIC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Tests conditions		Min.	Typ.	Max.	Unit
I <sub>R</sub>	Reverse leakage current	V <sub>R</sub> = 1000V	T <sub>j</sub> = 25°C			10	μA
			T <sub>j</sub> = 125°C			50	
V <sub>F</sub>	Forward voltage drop	I <sub>F</sub> = 1 A	T <sub>j</sub> = 25°C			1.7	V
			T <sub>j</sub> = 150°C		0.98	1.42	

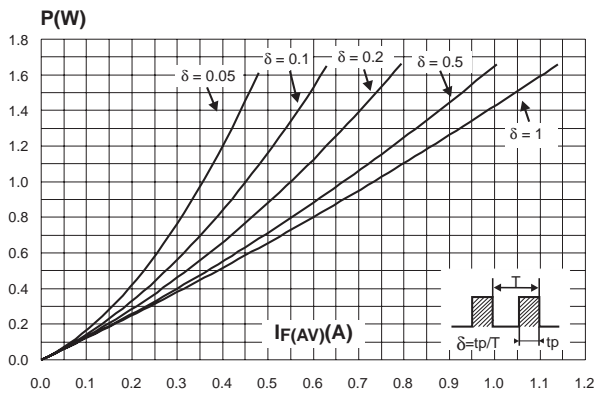
To evaluate the maximum conduction losses use the following equation :

$$P = 1.20 \times I_{F(AV)} + 0.225 \times I_{F(RMS)}^2$$

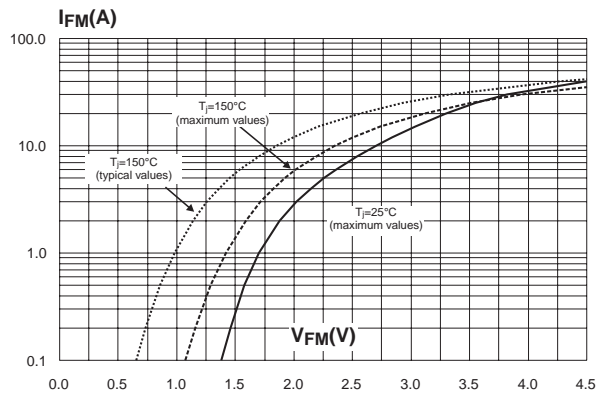
## DYNAMIC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Tests conditions		Min.	Typ.	Max.	Unit
t <sub>rr</sub>	Reverse recovery time	I <sub>F</sub> = 0.5 A I <sub>rr</sub> = 0.25 A I <sub>R</sub> = 1A	T <sub>j</sub> = 25°C			75	ns
t <sub>fr</sub>	Forward recovery time	I <sub>F</sub> = 1 A dI <sub>F</sub> /dt = 50 A/μs V <sub>FR</sub> = 1.1 x V <sub>Fmax</sub>	T <sub>j</sub> = 25°C			300	ns
V <sub>FP</sub>	Forward recovery voltage						18

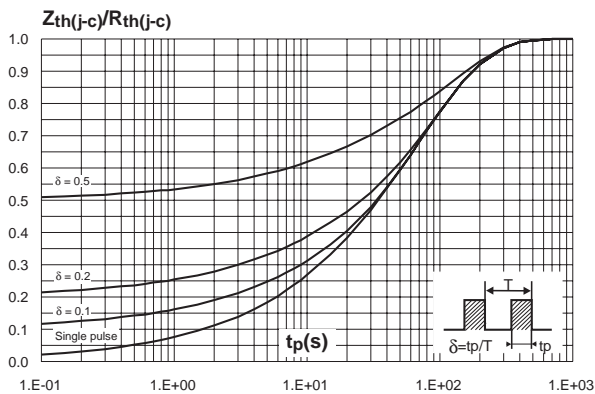
**Fig. 1:** Conduction losses versus average current.



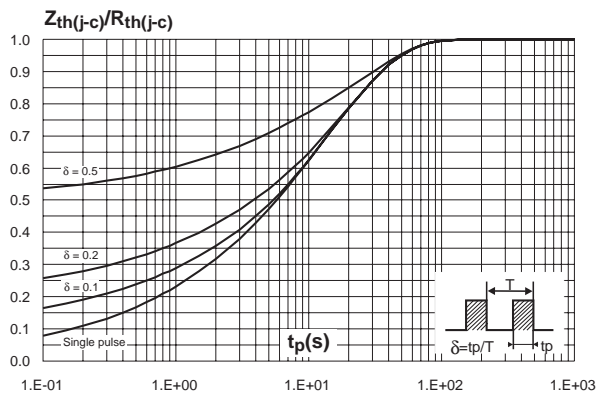
**Fig. 2:** Forward voltage drop versus forward current.



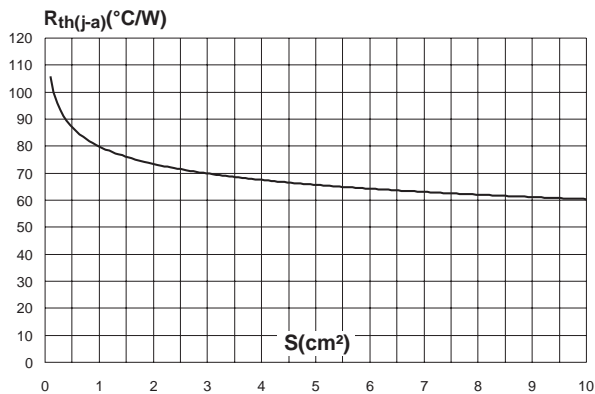
**Fig. 3-1:** Relative variation of thermal impedance junction ambient versus pulse duration (epoxy FR4,  $L_{leads} = 10\text{mm}$ ) (DO-41).



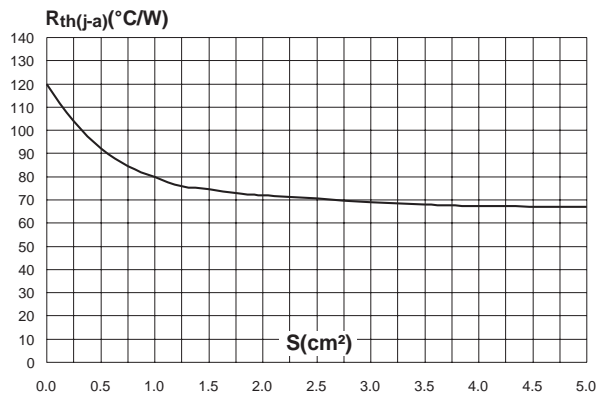
**Fig. 3-2:** Relative variation of thermal impedance junction ambient versus pulse duration (epoxy FR4) (SMA).



**Fig. 4-1:** Thermal resistance junction to ambient versus copper surface under each lead (epoxy printed circuit board FR4, copper thickness:  $35\mu\text{m}$ ) (DO-41).



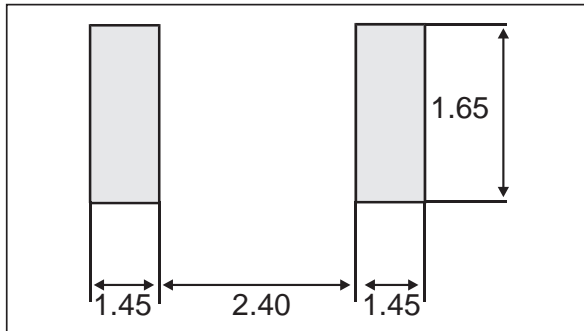
**Fig. 4-2:** Thermal resistance junction to ambient versus copper surface under each lead (epoxy printed circuit board FR4, copper thickness:  $35\mu\text{m}$ ) (SMA).

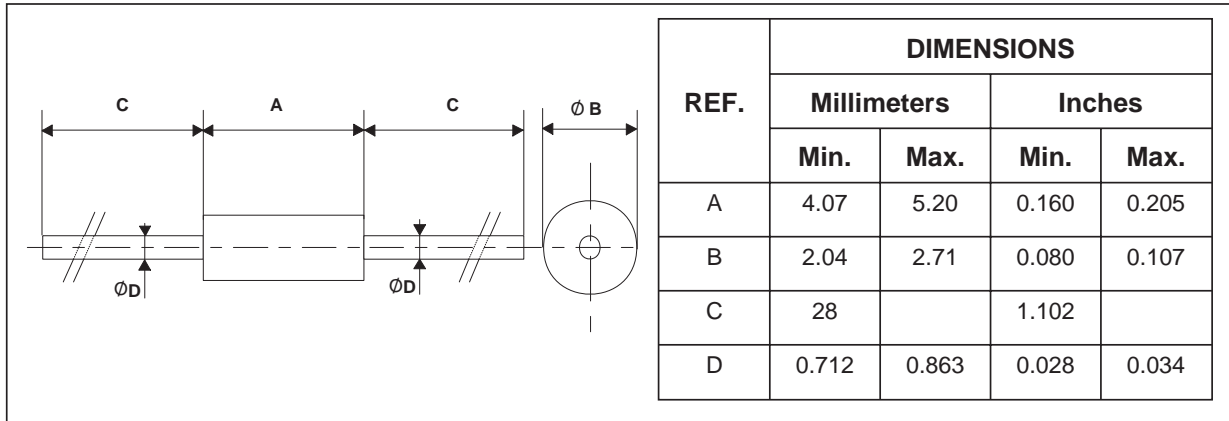


**PACKAGE MECHANICAL DATA**  
SMA

REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A1	1.90	2.70	0.075	0.106
A2	0.05	0.20	0.002	0.008
b	1.25	1.65	0.049	0.065
c	0.15	0.41	0.006	0.016
E	4.80	5.60	0.189	0.220
E1	3.95	4.60	0.156	0.181
D	2.25	2.95	0.089	0.116
L	0.75	1.60	0.030	0.063

**FOOTPRINT (in millimeters)**



**PACKAGE MECHANICAL DATA**  
 DO-41


Ordering code	Marking	Package	Weight	Base qty	Delivery mode
STTH110	STTH110	DO-41	0.34 g	2000	Ammopack
STTH110A	H10	SMA	0.068 g	5000	Tape & reel
STTH110RL	STTH110	DO-41	0.34 g	5000	Tape & reel

- Epoxy meets UL 94,V0

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