

HIGH VOLTAGE ULTRAFAST RECTIFIER
MAIN PRODUCT CHARACTERISTICS

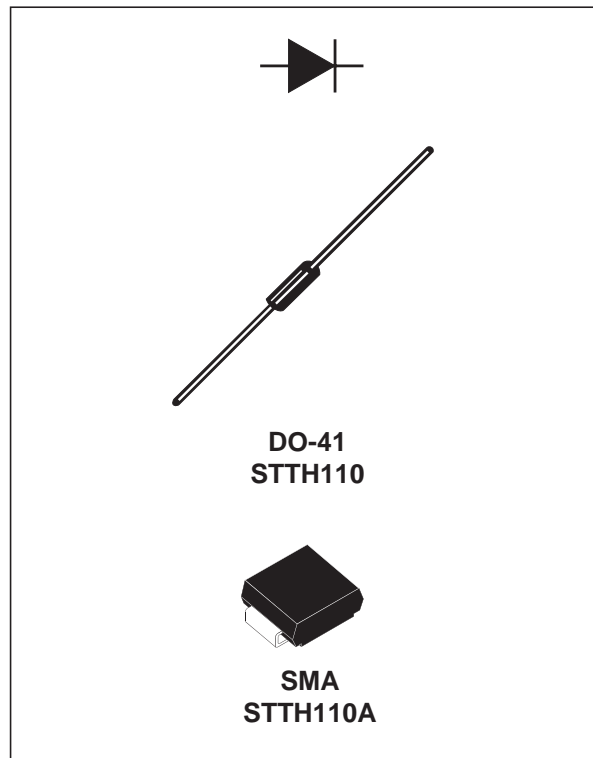
I_{F(AV)}	1 A
V_{RRM}	1000 V
T_j (max)	175 °C
V_F (max)	1.42 V

FEATURES AND BENEFITS

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

DESCRIPTION

The 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 _{RRM}	Repetitive peak reverse voltage			1000	V
V _(RMS)	RMS voltage			700	V
I _{F(AV)}	Average forward current	TI = 100°C δ = 0.5	DO-41	1	A
		TI = 125°C δ = 0.5	SMA	1	
I _{FSM}	Forward surge current t = 8.3 ms	DO-41		20	A
		SMA		18	
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-41	45	°C/W
			SMA	30	
$R_{th(j-a)}$	Junction to ambient	L = 10 mm	DO-41	110	

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	$I_F = 1 A$	$T_j = 25^\circ C$			1.7	V
			$T_j = 150^\circ C$		0.98	1.42	

To evaluate the maximum conduction losses use the following equation :

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

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	$I_F = 1 A$ $dI_F/dt = 50 A/\mu s$ $V_{FR} = 1.1 \times V_{Fmax}$	$T_j = 25^\circ C$			300	ns
V_{FP}	Forward recovery voltage						18

Fig. 1: Conduction losses versus average current.

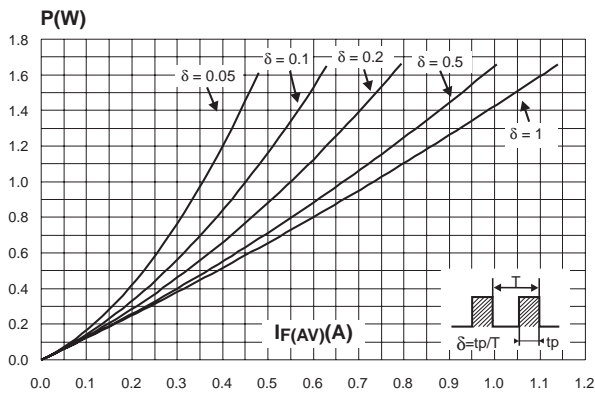


Fig. 2: Forward voltage drop versus forward current.

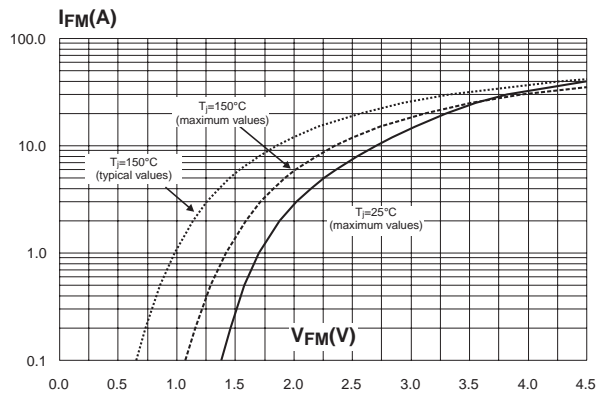


Fig. 3-1: Relative variation of thermal impedance junction ambient versus pulse duration (epoxy FR4, $L_{leads} = 10\text{mm}$) (DO-41).

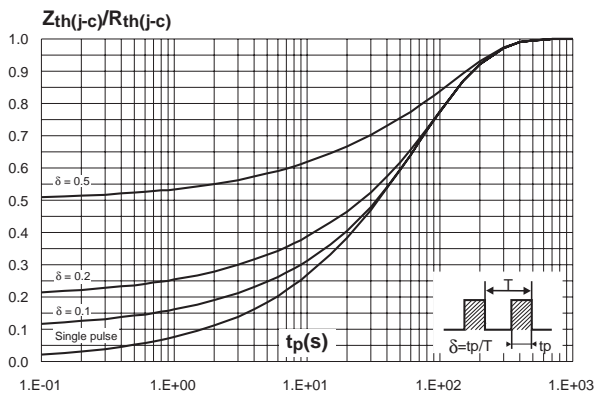


Fig. 3-2: Relative variation of thermal impedance junction ambient versus pulse duration (epoxy FR4) (SMA).

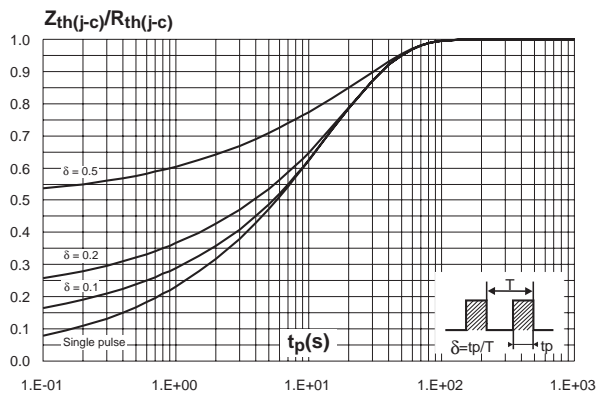


Fig. 4-1: Thermal resistance junction to ambient versus copper surface under each lead (epoxy printed circuit board FR4, copper thickness: $35\mu\text{m}$) (DO-41).

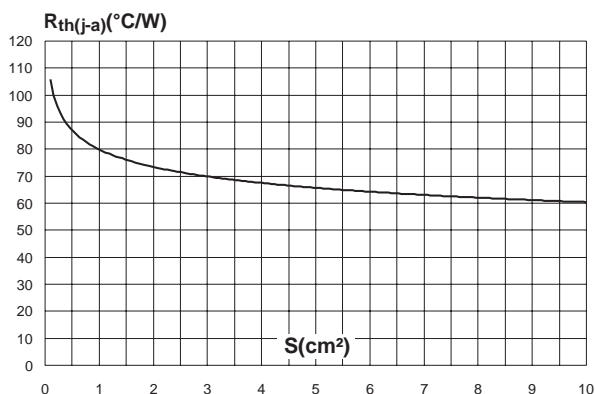
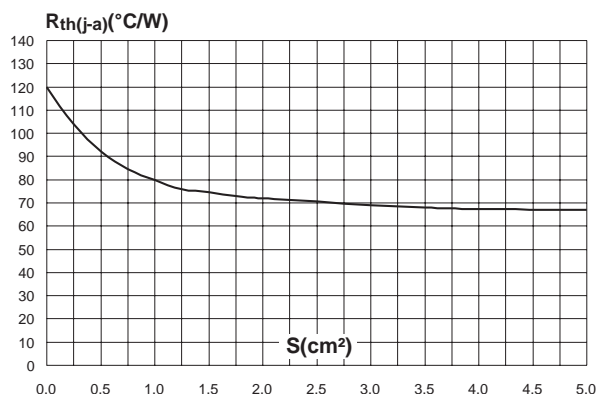


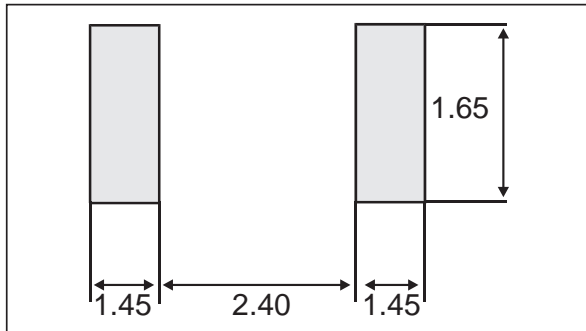
Fig. 4-2: Thermal resistance junction to ambient versus copper surface under each lead (epoxy printed circuit board FR4, copper thickness: $35\mu\text{m}$) (SMA).

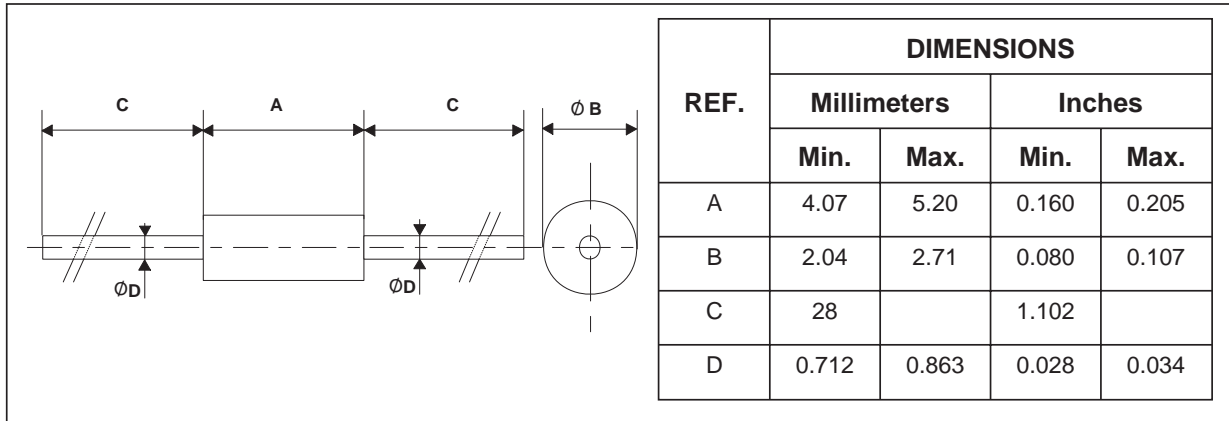


PACKAGE MECHANICAL DATA
SMA

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

Information furnished is believed to be accurate and reliable. However, STMicroelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of STMicroelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. STMicroelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of STMicroelectronics.

The ST logo is a registered trademark of STMicroelectronics

© 2003 STMicroelectronics - Printed in Italy - All rights reserved.

STMicroelectronics GROUP OF COMPANIES

Australia - Brazil - Canada - China - Finland - France - Germany
 Hong Kong - India - Israel - Italy - Japan - Malaysia - Malta - Morocco - Singapore
 Spain - Sweden - Switzerland - United Kingdom - United States.

<http://www.st.com>