

HIGH VOLTAGE ULTRAFAST RECTIFIER
MAIN PRODUCT CHARACTERISTICS

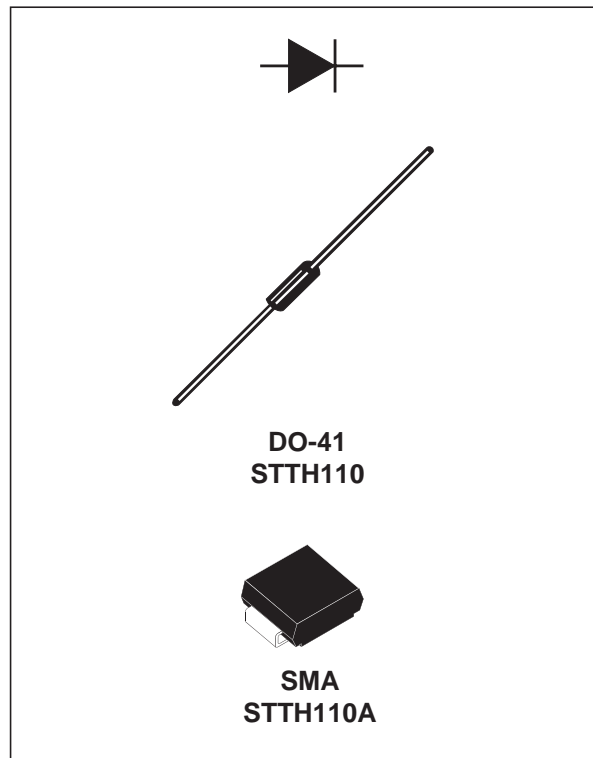
I_{F(AV)}	1 A
V_{RRM}	1000 V
T_j (max)	175 °C
V_F (max)	1.42 V

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°C			10	μA
			T _j = 125°C			50	
V _F	Forward voltage drop	I _F = 1 A	T _j = 25°C			1.7	V
			T _j = 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 _{rr}	Reverse recovery time	I _F = 0.5 A I _{rr} = 0.25 A I _R = 1A	T _j = 25°C			75	ns
t _{fr}	Forward recovery time	I _F = 1 A dI _F /dt = 50 A/μs V _{FR} = 1.1 x V _{Fmax}	T _j = 25°C			300	ns
V _{FP}	Forward recovery voltage						18

Fig. 1: Conduction losses versus average current.

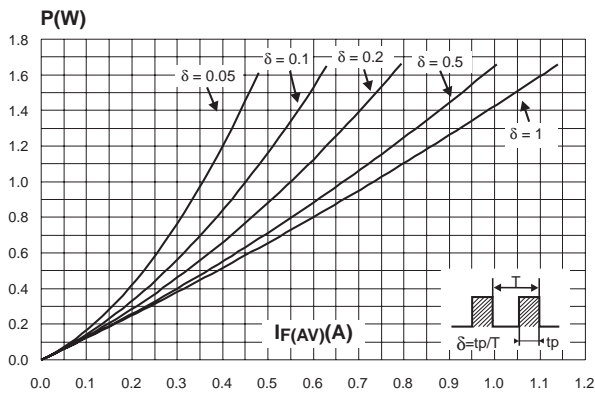


Fig. 2: Forward voltage drop versus forward current.

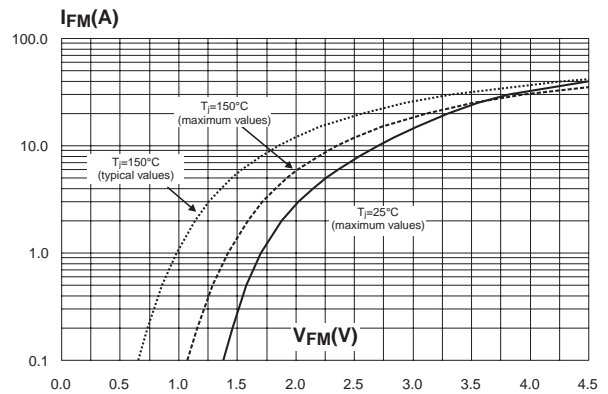


Fig. 3-1: Relative variation of thermal impedance junction ambient versus pulse duration (epoxy FR4, L_{leads} = 10mm) (DO-41).

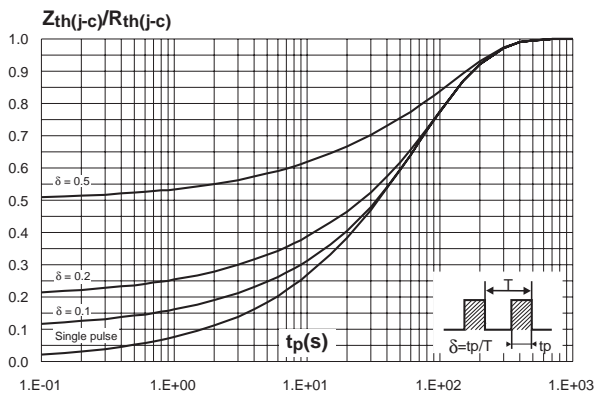


Fig. 3-2: Relative variation of thermal impedance junction ambient versus pulse duration (epoxy FR4) (SMA).

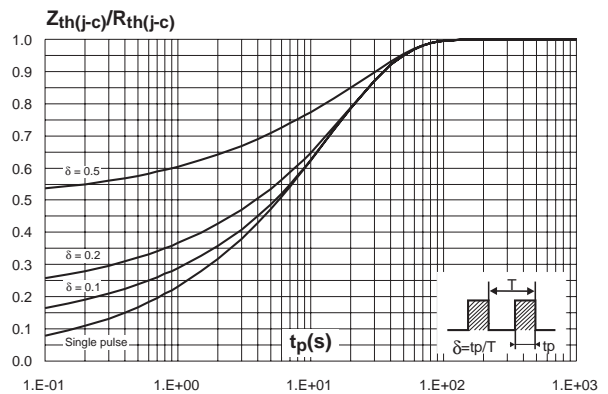


Fig. 4-1: Thermal resistance junction to ambient versus copper surface under each lead (epoxy printed circuit board FR4, copper thickness: 35µm) (DO-41).

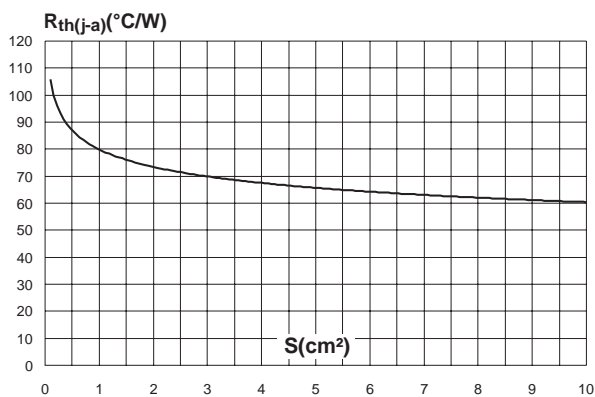
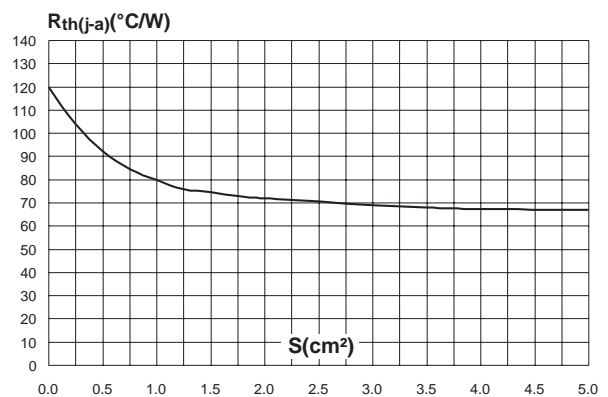


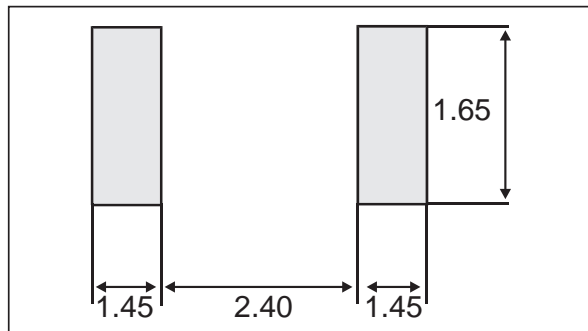
Fig. 4-2: Thermal resistance junction to ambient versus copper surface under each lead (epoxy printed circuit board FR4, copper thickness: 35µm) (SMA).



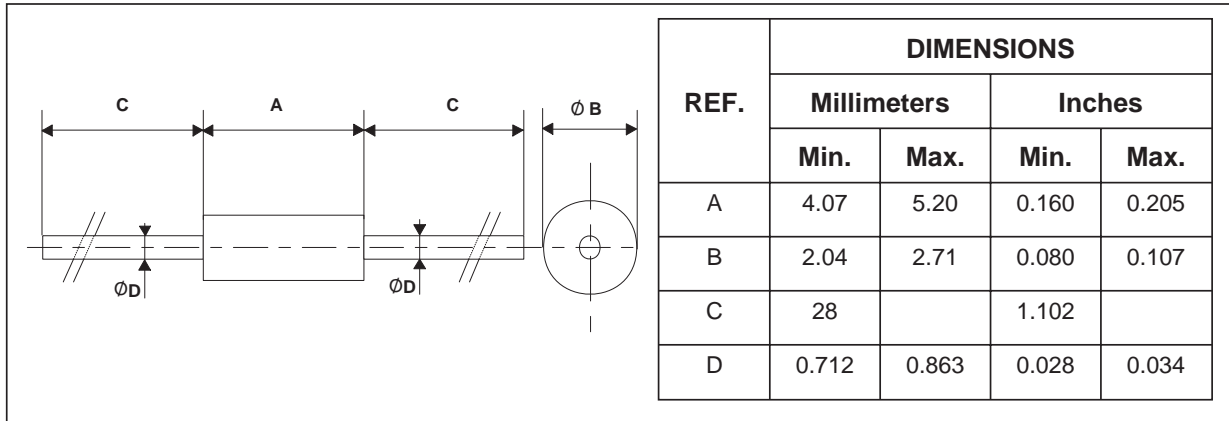
PACKAGE MECHANICAL DATA
SMA

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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