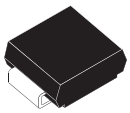
STTH112/A/U

HIGH VOLTAGE ULTRAFAST RECTIFIER

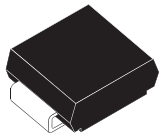
MAIN PRODUCT CHARACTERISTICS

$I_{F(AV)}$	1 A
V_{RRM}	1200 V
Tj (max)	175 °C
V_F (max)	1.65 V

DO-41
STTH112



SMA
STTH112A



SMB
STTH112U

FEATURES AND BENEFITS

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

DESCRIPTION

The STTH112, which is using ST ultrafast high voltage planar technology, is specially suited for free-wheeling, clamping, snubbering, demagnetization in power supplies and other power switching applications.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter			Value	Unit
V_{RRM}	Repetitive peak reverse voltage			1200	V
$V_{(RMS)}$	RMS voltage			850	V
$I_{F(AV)}$	Average forward current	Tl = 85°C δ =0.5	DO-41	1	A
		Tl = 115°C δ =0.5	SMA		
		Tl = 125°C δ =0.5	SMB		
I_{FSM}	Forward surge current t = 8.3 ms		DO-41	20	A
			SMA	18	
			SMB		
T_{stg}	Storage temperature range			- 50 + 175	°C
Tj	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	
			SMB	25	
$R_{th\ (j-a)}$	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 = 1200V	Tj = 25°C			5	µA
			Tj = 125°C			50	
V_F	Forward voltage drop	I_F = 1 A	Tj = 25°C			1.9	V
			Tj = 125°C		1.17	1.65	

To evaluate the maximum conduction losses use the following equation :
$P = 1.35 \times I_{F(AV)} + 0.3 \times I_F{}^2{}_{(RMS)}$

DYNAMIC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Tests conditions		Min.	Typ.	Max.	Unit
t_{rr}	Reverse recovery time	I_F = 0.5 A Irr = 0.25 A I_R = 1A	Tj = 25°C			75	ns
t_{fr}	Forward recovery time	I_F = 1 A dI_F/dt = 50 A/µs $V_{FR} = 1.1 \times V_F max$	Tj = 25°C			500	ns
V_{FP}	Forward recovery voltage					30	V

Fig. 1: Conduction losses versus average current.

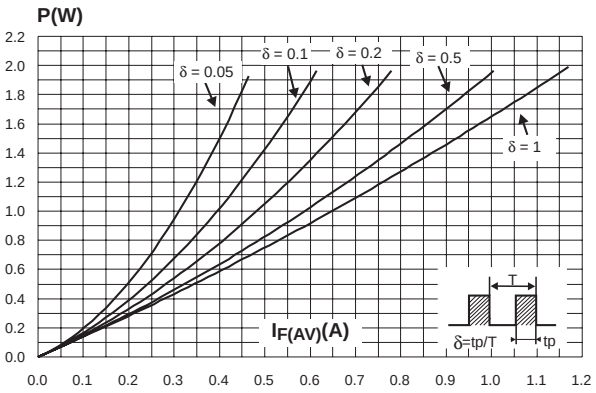


Fig. 2: Forward voltage drop versus forward current.

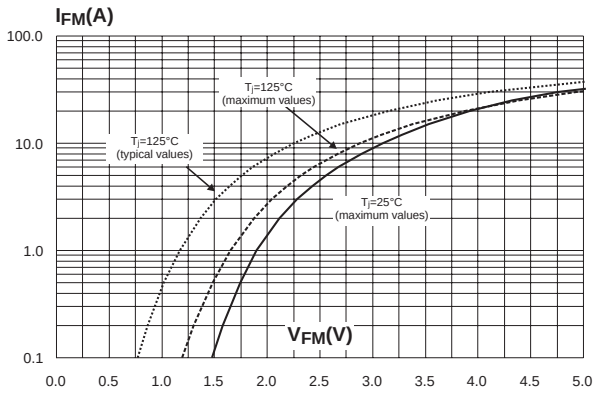


Fig. 3-1: Relative variation of thermal impedance junction ambient versus pulse duration (epoxy FR4, L_{leads} = 10mm) (DO-41).

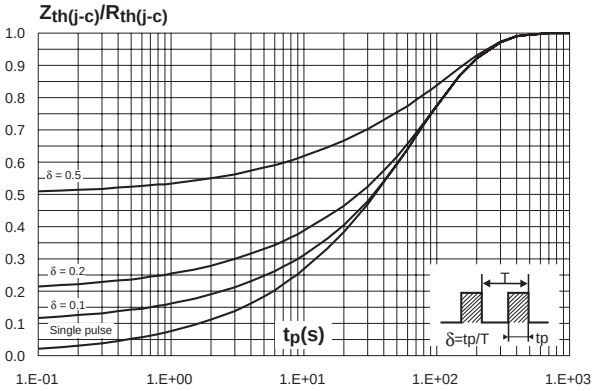


Fig. 3-2: Relative variation of thermal impedance junction ambient versus pulse duration (epoxy FR4) (SMA).

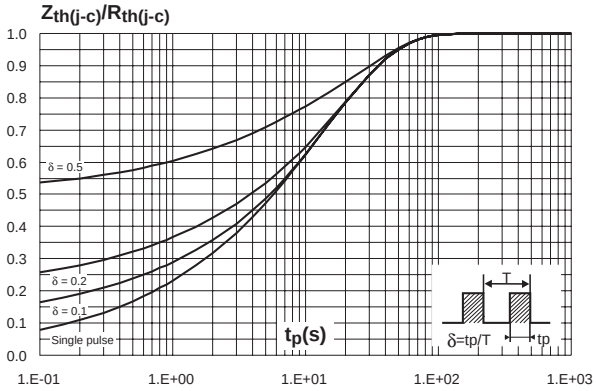


Fig. 3-3: Relative variation of thermal impedance junction ambient versus pulse duration (epoxy FR4)(SMB).

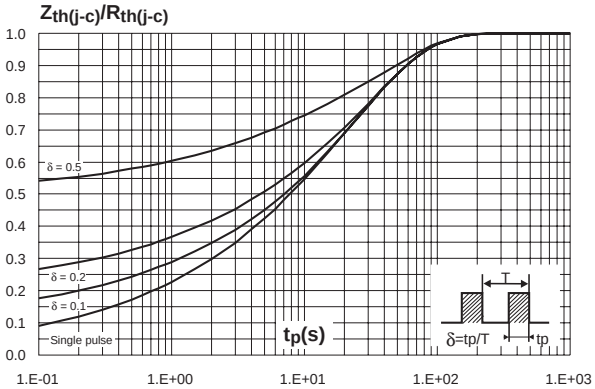


Fig. 4-1: Thermal resistance junction to ambient versus copper surface under each lead (epoxy printed circuit board FR4, copper thickness: 35µm) (DO-41, SMB).

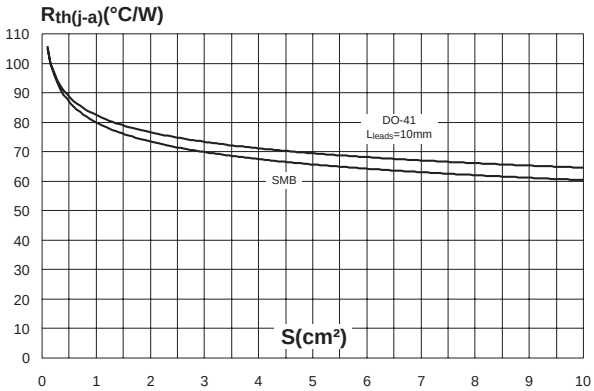
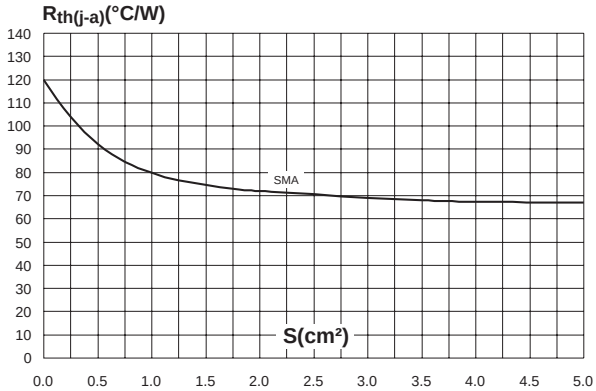
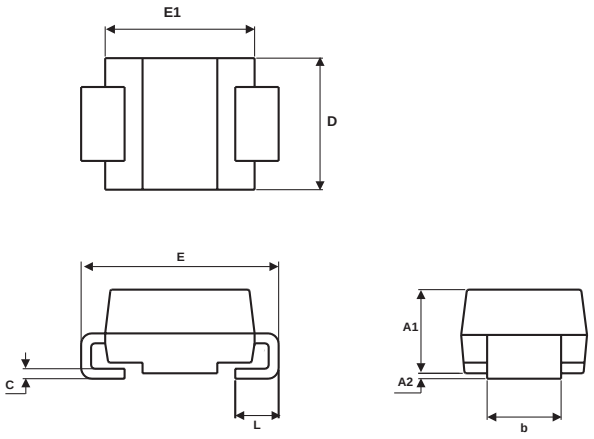


Fig. 4-2: Thermal resistance junction to ambient versus copper surface under each lead (epoxy printed circuit board FR4, copper thickness: 35µm) (SMA).



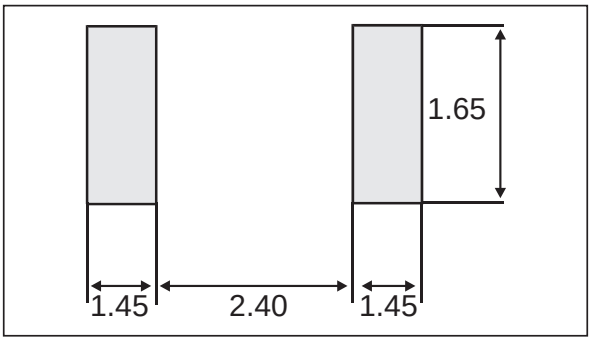
PACKAGE MECHANICAL DATA

SMA



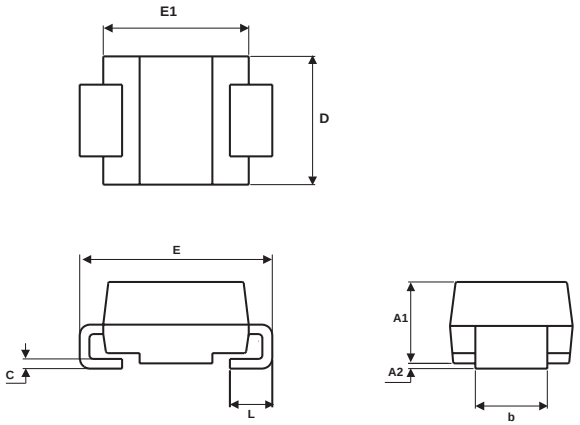
REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A1	1.90	2.70	0.075	0.106
A2	0.05	0.20	0.002	0.008
b	1.25	1.65	0.049	0.065
c	0.15	0.41	0.006	0.016
E	4.80	5.60	0.189	0.220
E1	3.95	4.60	0.156	0.181
D	2.25	2.95	0.089	0.116
L	0.75	1.60	0.030	0.063

FOOTPRINT (in millimeters)



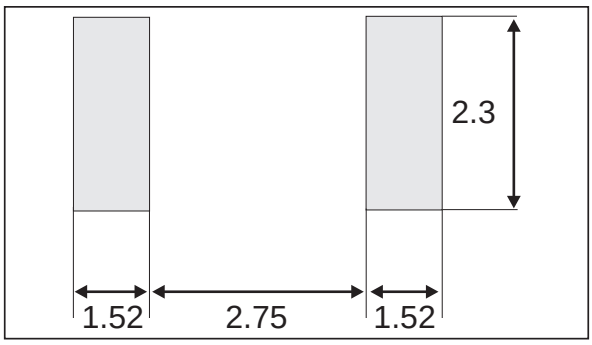
PACKAGE MECHANICAL DATA

SMB



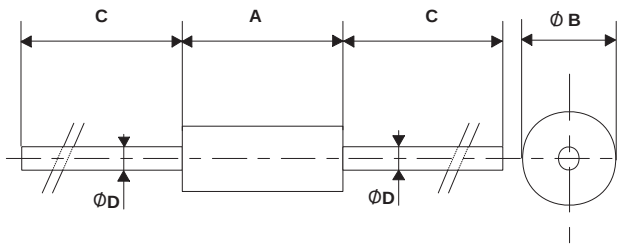
REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A1	1.90	2.45	0.075	0.096
A2	0.05	0.20	0.002	0.008
b	1.95	2.20	0.077	0.087
c	0.15	0.41	0.006	0.016
E	5.10	5.60	0.201	0.220
E1	4.05	4.60	0.159	0.181
D	3.30	3.95	0.130	0.156
L	0.75	1.60	0.030	0.063

FOOTPRINT (in millimeters)



PACKAGE MECHANICAL DATA

DO-41



REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.07	5.20	0.160	0.205
B	2.04	2.71	0.080	0.107
C	28		1.102	
D	0.712	0.863	0.028	0.034

Ordering code	Marking	Package	Weight	Base qty	Delivery mode
STTH112	STTH112	DO-41	0.34 g	2000	Ammopack
STTH112A	H12	SMA	0.068 g	5000	Tape & reel
STTH112U	U12	SMB	0.11 g	2500	Tape & reel
STTH112RL	STTH112	DO-41	0.34 g	5000	Tape & reel

- Epoxy meets UL 94,V0