STTH108

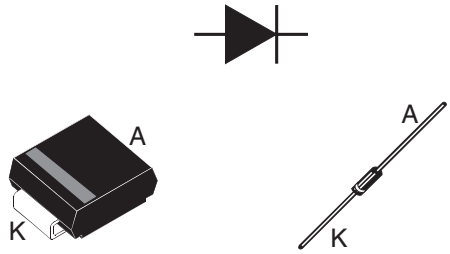
High voltage ultrafast rectifier

Features

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

Description

The STTH108, 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.



SMA
(JEDEC DO-214AC)
STTH108A

DO-41
STTH108

Table 1. Device summary

Symbol	Value
$I_{F(AV)}$	1 A
V_{RRM}	800 V
T_j (max)	175 °C
V_F(max)	1.25 V

1 Characteristics

Table 2. Absolute ratings (limiting values)

Symbol	Parameter				Value	Unit
V_{RRM}	Repetitive peak reverse voltage				800	V
$V_{(RMS)}$	Voltage rms				560	V
$I_{F(AV)}$	Average forward current	SMA	T_L = 110 °C δ = 0.5		1	A
		DO-41	T_L = 130 °C δ = 0.5			
I_{FSM}	Forward Surge current	t = 8.3 ms		SMA	20	A
				DO-41	25	
T_{stg}	Storage temperature range				-50 to + 175	°C
T_j	Maximum operating junction temperature				175	°C

Table 3. Thermal resistance

Symbol	Parameter			Value	Unit
$R_{th(j-l)}$	Junction to lead		SMA	30	°C/W
		Lead length = 10 mm	DO-41	45	
$R_{th(j-a)}$	Junction to ambient	Lead length = 10 mm	DO-41	110	

Table 4. Static electrical characteristics

Symbol	Parameter	Tests conditions		Min.	Typ.	Max.	Unit
I_R	Reverse leakage current	T_j = 25 °C	V_R = 800 V			5	µA
		T_j = 125 °C			1	50	
V_F	Forward voltage drop	T_j = 25 °C	I_F = 1 A			1.65	V
		T_j = 125 °C			0.89	1.25	

To evaluate the conduction losses use the following equation:
$P = 1.05 \times I_{F(AV)} + 0.20\ I_{F}^{2}{}_{(RMS)}$

Table 5. Dynamic electrical characteristics

Symbol	Parameter	Tests conditions		Min.	Typ.	Max.	Unit
t_{rr}	Reverse recovery time	T_j = 25 °C	I_F = 0.5 A, I_{rr} = 0.25 A I_R = 1 A			75	ns
t_{fr}	Forward recovery time	T_j = 25 °C	I_F = 1 A, dI_F/dt = 50 A/ms V_{FR} = 1.1 x $V_F$max			200	ns
V_{FP}	Forward recovery voltage	T_j = 25 °C	I_F = 1 A, dI_F/dt = 50 A/ms			12	V

Figure 1. Conduction losses versus average current

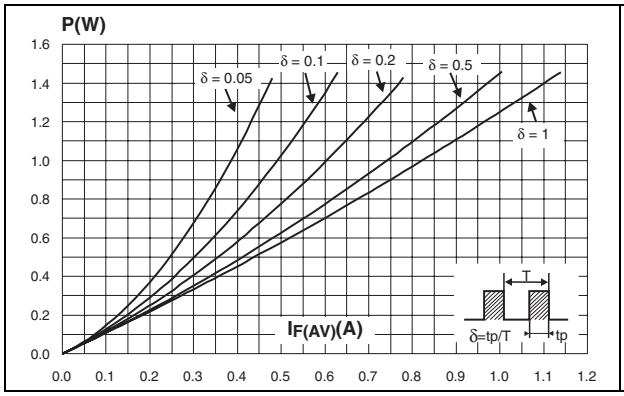


Figure 2. Forward voltage drop versus forward current

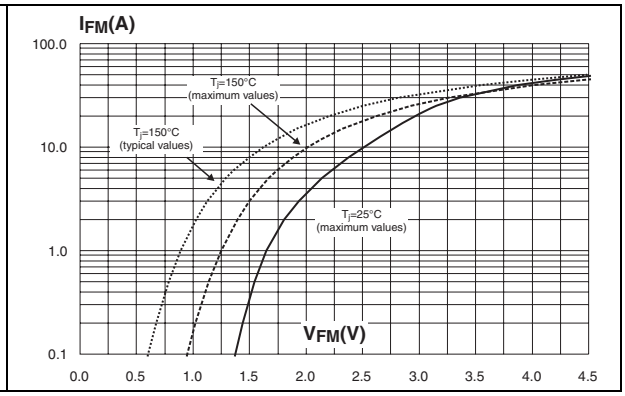


Figure 3. Relative variation of thermal impedance junction ambient versus pulse duration (DO-41)

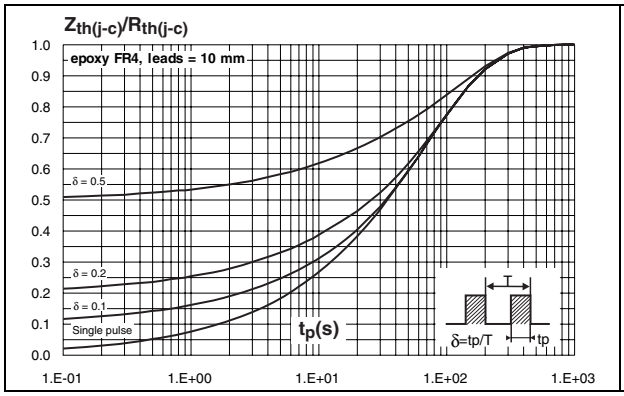


Figure 4. Relative variation of thermal impedance junction ambient versus pulse duration (epoxy FR4) (SMA)

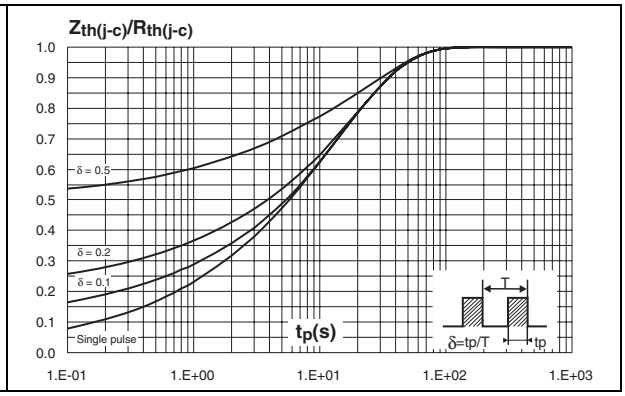


Figure 5. Thermal resistance junction to ambient versus copper surface under each lead (DO-41)

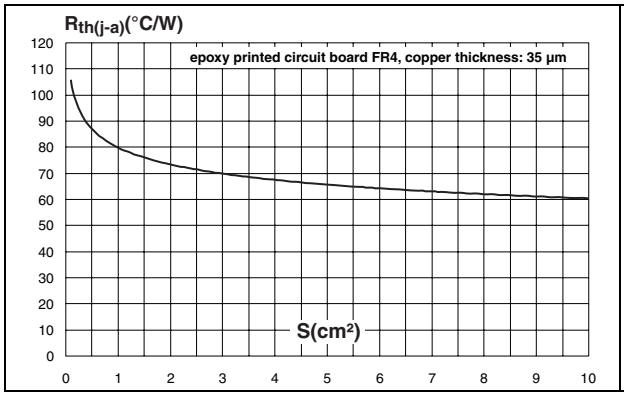
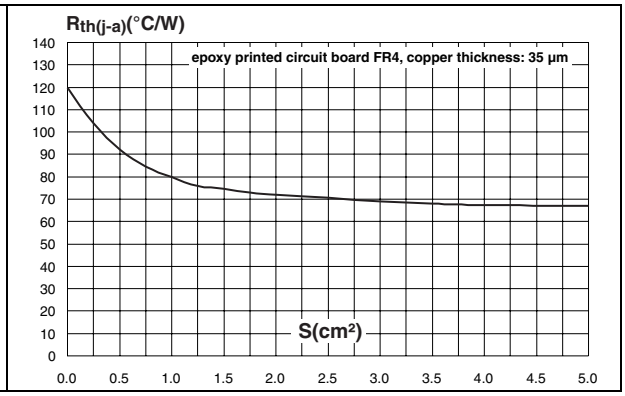


Figure 6. Thermal resistance junction to ambient versus copper surface under each lead (SMA)

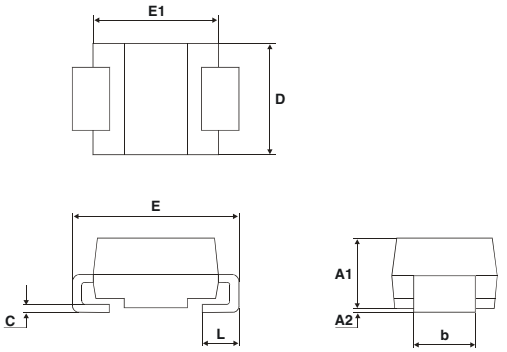


2 Package information

- Epoxy meets UL 94, V0
- Band indicates cathode
- Bending method (DO-41): see Application note AN1471

In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK® packages, depending on their level of environmental compliance. ECOPACK® specifications, grade definitions and product status are available at: www.st.com. ECOPACK® is an ST trademark.

Table 6. SMA dimensions



Ref.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A1	1.90	2.45	0.075	0.094
A2	0.05	0.20	0.002	0.008
b	1.25	1.65	0.049	0.065
c	0.15	0.40	0.006	0.016
D	2.25	2.90	0.089	0.114
E	4.80	5.35	0.189	0.211
E1	3.95	4.60	0.156	0.181
L	0.75	1.50	0.030	0.059

Figure 7. Footprint (dimensions in mm)

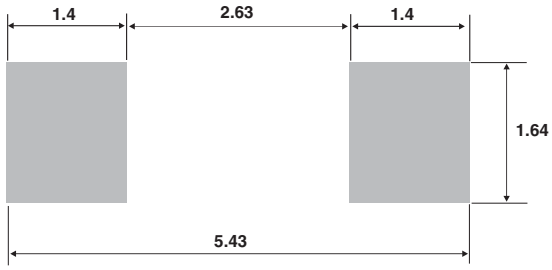
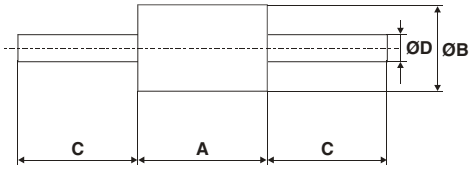


Table 7. DO-41 (plastic) package dimensions



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	25.4		1	
D	0.71	0.86	0.028	0.034

3 Ordering information

Table 8. Ordering information

Order code	Marking	Package	Weight	Base qty	Delivery mode
STTH108	STTH108	DO-41	0.34 g	2000	Ammopack
STTH108A	H08	SMA	0.068 g	5000	Tape and reel
STTH108RL	STTH108	DO-41	0.34 g	5000	Tape and reel

4 Revision history

Table 9. Document revision history

Date	Revision	Changes
Jan-2003	2	Last update.
30-Sep-2009	3	Updated table 7 package dimensions.

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