

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.

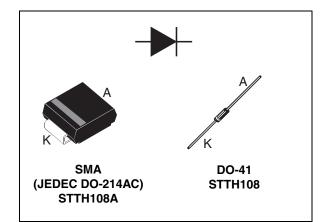


Table 1. Device summary

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))
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Symbol	Parameter			Value	Unit	
V _{RRM}	Repetitive peak reverse vol	Repetitive peak reverse voltage			800	V
V _(RMS)	Voltage rms				560	V
	Average forward ourrent	SMA	T _L = 110 °C	$\delta = 0.5$	1	А
IF(AV)	Average forward current	DO-41	T _L = 130 °C	$\delta = 0.5$	I	
	Forward Surge current	t = 8.3 ms	SMA		20	A
IFSM	Forward Surge current	t = 8.3 ms		DO-41	25	
T _{stg}	Storage temperature range				-50 to + 175	°C
Тj	Maximum operating junction temperature				175	°C

Table 3. Thermal resistance

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

Table 4. Static electrical characteristics

Symbol	Parameter	Tests conditions		Min.	Тур.	Max.	Unit	
1_	Reverse leakage	T _j = 25 °C	V _B = 800 V			5	μA	
'R	IR current	T _j = 125 °C	v _R – 000 v		1	50	μΑ	
V _F	V- Forward valtage drop	$T_j = 25 \text{ °C}$				1.65	V	
۴F	Forward voltage drop	$T_j = 125 \ ^{\circ}C$ $I_F = 1 \ A$	$T_j = 125 \text{ °C}$	IF = I A		0.89	1.25	V

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

Table 5. Dynamic electrical characteristics

Symbol	Parameter	Tests conditions		Min.	Тур.	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	$\label{eq:IF} \begin{array}{l} I_F = 1 \text{ A}, \\ dI_F/dt = 50 \text{ A/ms} \\ V_{FR} = 1.1 \text{ x } V_F \text{max} \end{array}$			200	ns
V _{FP}	Forward recovery voltage	T _j = 25 °C	I _F = 1 A, dI _F /dt = 50 A/ms			12	V



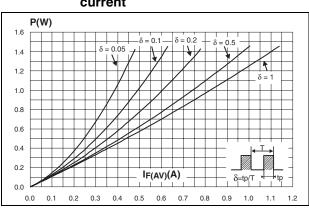


Figure 1. Conduction losses versus average Figure 2. Forward voltage drop versus current forward current

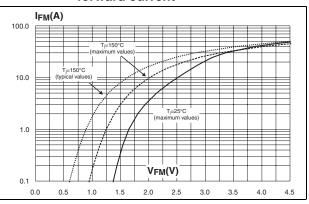


Figure 3. Relative variation of thermal Figure 4. impedance junction ambient versus pulse duration (DO-41)

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

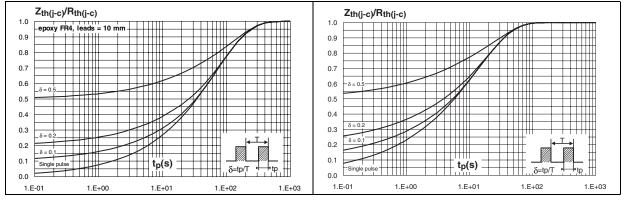
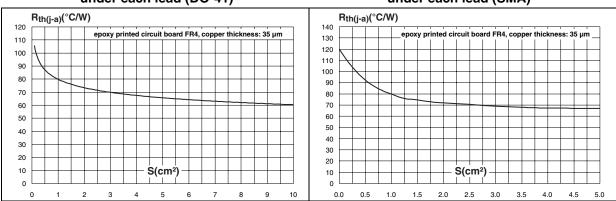


Figure 5. Thermal resistance junction to ambient versus copper surface under each lead (DO-41)

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: <u>www.st.com</u>. ECOPACK[®] is an ST trademark.

Table 6. SMA dimensions

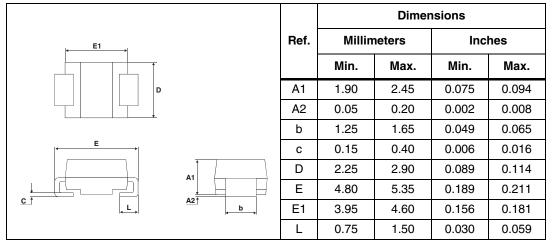


Figure 7. Footprint (dimensions in mm)

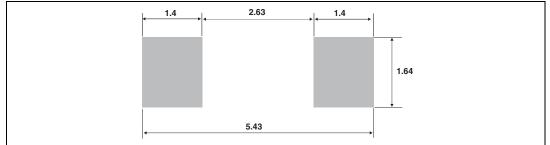


Table 7. DO-41 (plastic) package dimensions

			Dimer	nsions	
_	Ref.	Millim	neters	Inc	hes
фор Øв		Min.	Max.	Min.	Max.
	Α	4.07	5.20	0.160	0.205
	В	2.04	2.71	0.080	0.107
	С	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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