

STTH112

High voltage ultrafast rectifier

Main product characteristics

I _{F(AV)}	1 A
V _{RRM}	1200 V
T _{j (max)}	175° C
V _{F (max)}	1.65 V

Features and benefits

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

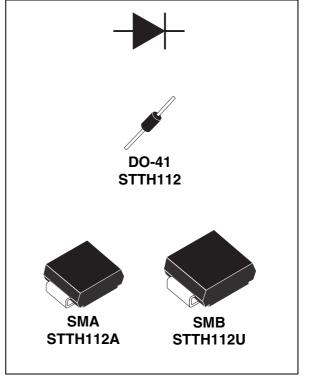
Description

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

Symbol	Paramete	Value	Unit			
V _{RRM}	Repetitive peak reverse voltage					V
V _(RMS)	RMS voltage				850	V
			$\delta = 0.5$	DO-41		
I _{F(AV)}	I _{F(AV)} Average forward current	TI = 115° C	$\delta = 0.5$	SMA	1	А
		TI = 125° C	δ=0.5	SMB		
				DO-41	20	
I _{FSM}	Forward surge current t = 8.3 ms			SMA	18	A
				SMB	10	
T _{stg}	Storage temperature range					°C
Тj	Maximum operating junction temperature				+ 175	°C

Table 1. Absolute ratings (limiting values)





1 Electrical characteristics

Table 2.Thermal parameters

Symbol	Parameter			Value	Unit
		L = 10 mm	DO-41	45	
R _{th (j-l)}	Junction to lead		SMA	30	°C/W
			SMB	25	0/11
R _{th (j-a)}	Junction to ambient	L = 10 mm	DO-41	110	

Table 3. Static electrical characteristics

Symbol	Parameter	Tests conditions		Min.	Тур.	Max.	Unit
I _R Reverse leakage current	Deveras laskage surrent	V 1000V	T _j = 25° C			5	
	V _R = 1200V	T _j = 125° C			50	μA	
			T _j = 25° C			1.9	
V _F Forward voltage drop	I _F = 1 A	T _j = 125° C		1.17	1.65	V	
			T _j = 150° C		1.10	1.55	

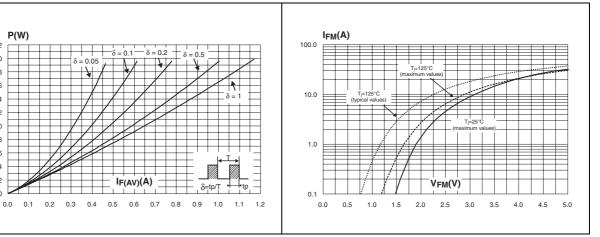
 Table 4.
 Dynamic electrical characteristics

Symbol	Parameter	Tests conditions		Min.	Тур.	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	$I_F = 1 A$	$T_j = 25^\circ C$			500	ns
V _{FP}	Forward recovery voltage	dl _F /dt = 50 A/µs V _{FR} = 1.1 x V _{Fmax}				30	V

Figure 1. Conduction losses versus average Figure 2. current

Forward voltage drop versus forward current.

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2.2

2.0

1.8 1.6

1.4 1.2 1.0 0.8

0.6 0.4 0.2

0.0

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

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

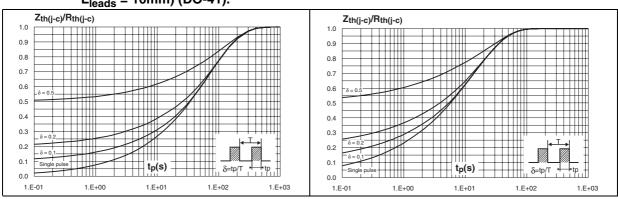
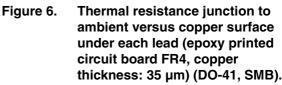


Figure 5. Relative variation of thermal Figure 5. In Figure 5. Relative variation of thermal Figure 5. Fig



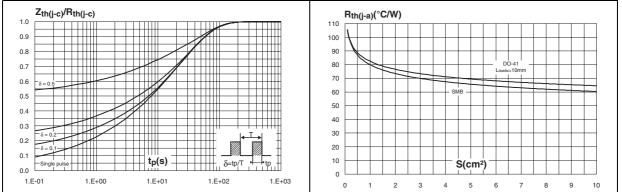
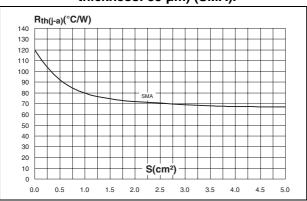


Figure 7. Thermal resistance junction to ambient versus copper surface under each lead (epoxy printed circuit board FR4, copper thickness: 35 µm) (SMA).





2 Package mechanical data

• Epoxy meets UL 94, V0

Table 5. SMA dimensions

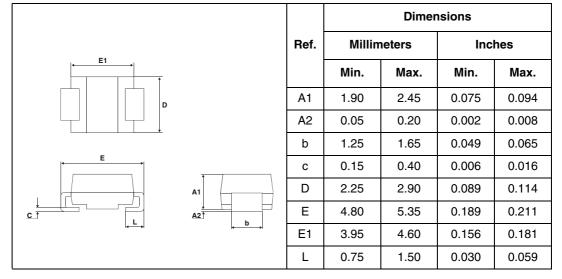


Figure 8. Footprint (dimensions in mm)

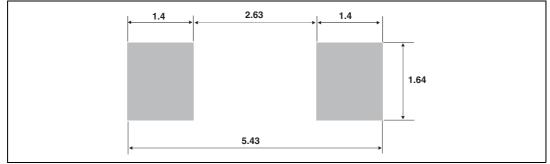


Table 0. Si		15						
				Dimensions				
E1			Ref.	Millim	neters	Inc	hes	
▲				Min.	Max.	Min.	Max.	
			A1	1.90	2.45	0.075	0.096	
			A2	0.05	0.20	0.002	0.008	
			b	1.95	2.20	0.077	0.087	
		С	0.15	0.40	0.006	0.016		
		D	3.30	3.95	0.130	0.156		
		E	5.10	5.60	0.201	0.220		
	l ∢ ≽	E1	4.05	4.60	0.159	0.181		
l			L	0.75	1.50	0.030	0.059	

Table 6.SMB dimensions

Figure 9. Footprint (dimensions in mm)

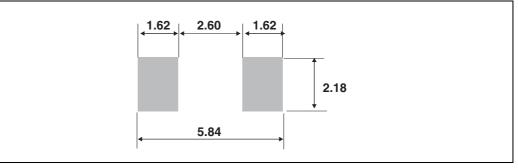
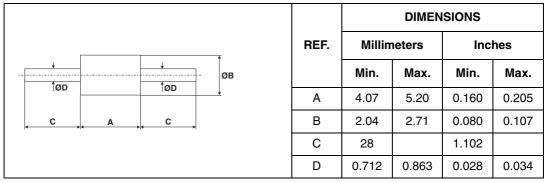


Table 7. DO-41 dimensions



In order to meet environmental requirements, ST offers these devices in ECOPACK® packages. These packages have a lead-free second level interconnect. The category of second level interconnect is marked on the package and on the inner box label, in compliance with JEDEC Standard JESD97. The maximum ratings related to soldering conditions are also marked on the inner box label. ECOPACK is an ST trademark. ECOPACK specifications are available at: www.st.com.

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3 Ordering information

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 and reel
STTH112U	U12	SMB	0.11 g	2500	Tape and reel
STTH112RL	STTH112	DO-41	0.34 g	5000	Tape and reel

4 Revision history

Date	Revision	Changes
Jan-2003	2	Initial release.
22-Jun-2005	3	New value of $T_j = 150^{\circ}$ C added to table 2. Dimensions A1 E and D updated in Table 4. Data sheet reformatted. No other technical changes
20-Mar-2007	4	Reformatted to current standards. Updated dimensions and footprints for SMA and SMB packages.



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