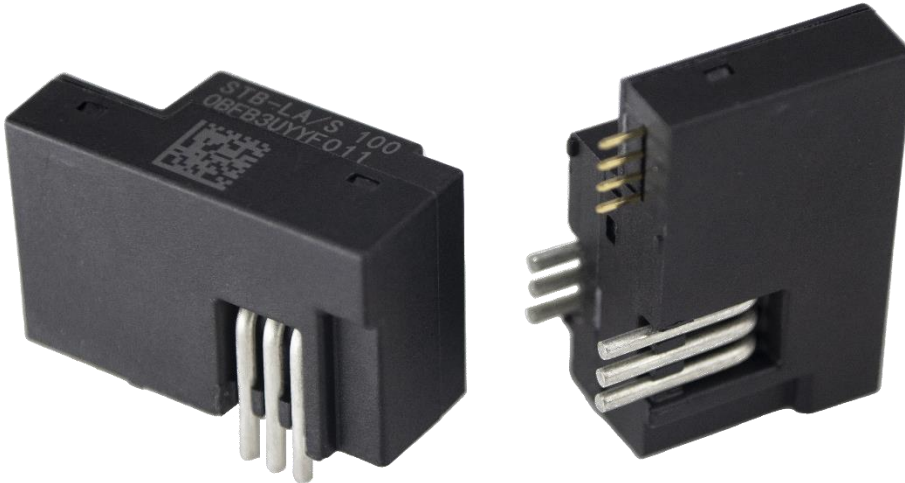


CURRENT SENSOR

PRODUCT SERIES: STB-LA/S

PRODUCT PART NUMBER: STB-100LA/S

VERSION: Ver 1.9



Sinomags Technology Co., Ltd.

Web site: www.sinomags.com

CONTENT

1.	Description	2
2.	Electrical parameters (STB-100LA/S).....	3
3.	Dimensions: STB-xxxLA/S	4
4.	PCB footprint (STB-xxxLA/S)	5
5.	Schematic diagram.....	6
6.	Delay times.....	6

1. Description

STB-LA/S series current sensors are based on close loop principle with TMR technology. The sensor can detect the current with DC, AC, pulse and irregular wave shape.

Typical application

- Solar inverter
- Direct-current dynamo
- Uninterruptible Power Supplies (UPS)
- Switched model power supplies (SMPS)
- Variable frequency converter

General parameters

Parameter	Symbol	Unit	Value	Remark
Working environment temperature	T_A	°C	-40 ~ 85	
Sensor operating limit temperature	T_{SL}	°C	-40 ~ 105	
Storage temperature	T_S	°C	-40 ~ 85	
Limit temperature of primary conductor	T_{LP}	°C	105	STB-xxxLA/S
Mass	m	g	15.3	STB-xxxLA/S

Absolute parameters

Parameters	Symbol	Unit	Value
Supply voltage	$V_{CC_{max}}$	V	6
Maximum primary current	$I_{PN_{max}}$	A	10*I _{pn}
ESD rating (HBM)	U_ESD_HBM	kV	4

Remark: the unrecoverable damage may occur when the product works on the conditions over the absolute maximum ratings. Long-time working on the absolute maximum ratings may cause the degradation on performance and reliability.

Isolation parameters

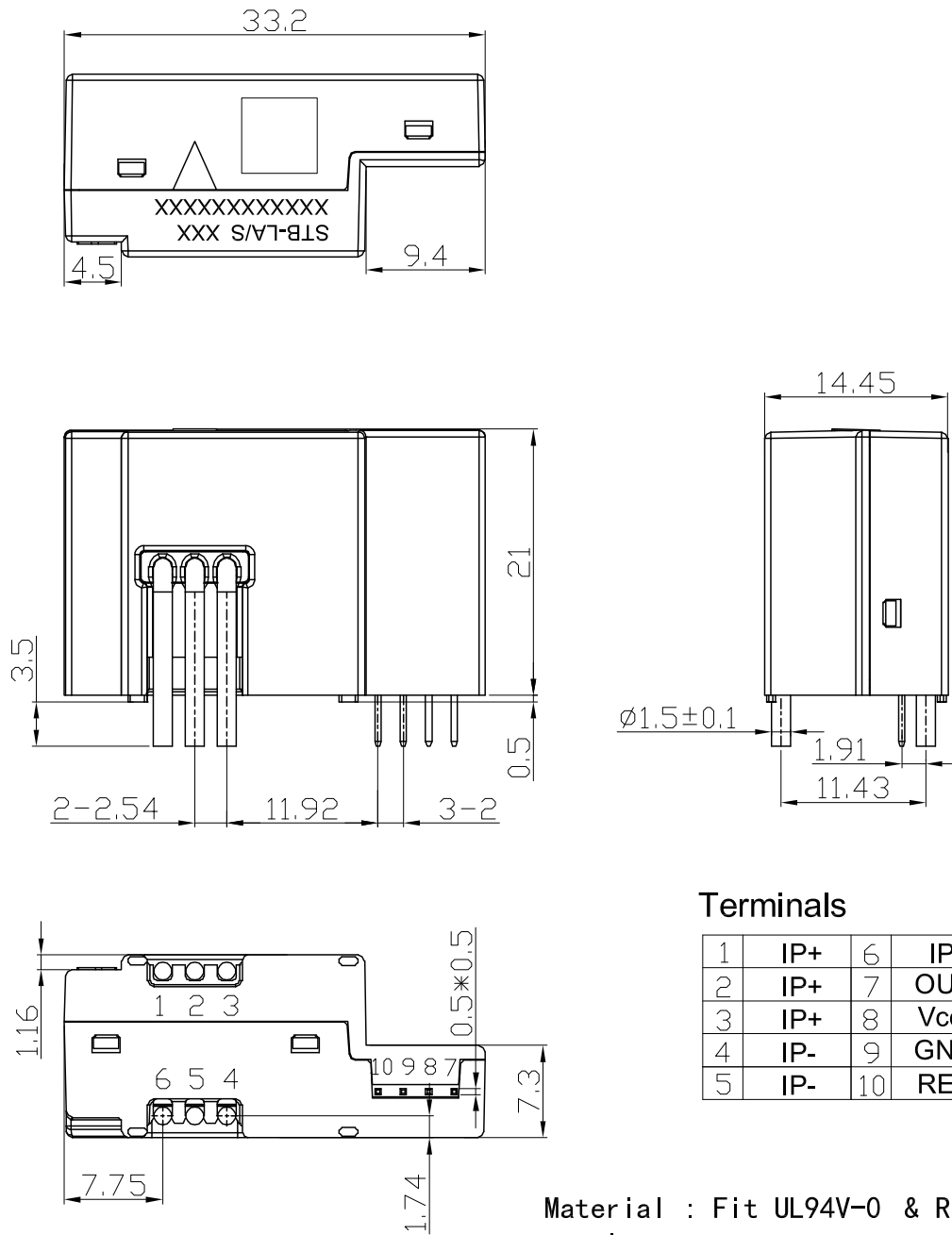
Parameter	Symbol	Unit	Value	Remark
RMS voltage for AC test 50Hz/1 min	U_d	kV	4	
Impulse withstand voltage 1.2/50μs	U_W	kV	8	
Clearance distance (pri. -sec)	dCl	mm	10.2	Shortest distance through air
Creepage distance (pri. -sec)	dCp	mm	10.2	Shortest path along device body
Case material			V0	According to UL 94
Comparative tracking index	CTI	V	600	

2. Electrical parameters (STB-100LA/S)

Condition: $V_{CC} = 5.0\text{ V}$, $R_L = 10\text{ k}\Omega$, $T_A = 25^\circ\text{C}$, unless specified.

Parameters	Symbol	Unit	Min.	Typ.	Max.	Remark
Primary nominal rms current	I_{PN}	A		100		@-40°C~105°C $V_{CC} = 5\text{V}$
Primary current measuring range	I_{PM}	A	-220		220	@25°C $V_{CC} = 5\text{V}$,
			-170		170	@85°C $V_{CC} = 5\text{V}$,
Supply voltage	V_{CC}	V	4.75	5	5.25	
Consumption current	I_{CC}	mA	7	9+ $I_p/NS*10$ 00	350	NS = 1000
Reference voltage	V_{ref}	V	2.48	2.5	2.52	
Output voltage	V_{out}	V	2.475		2.525	$V_{out}@ 0\text{ A}$
Electrical offset voltage	V_{oe}	mV	-5		5	100 % tested ($V_{out} - V_{ref}$)@ 0 A
Full-scale voltage	V_{FS}	V		± 0.625		($V_{out} - V_{ref}$)@ I_{PN}
Theoretical sensitivity	G_{th}	mV/A		6.25		0.625 V @ I_{PN}
Internal resistance of Reference input	ohm	R_i, R_{ef}		670		
Output resistance of Vout	ohm	R_L		1		
Sensitivity error	G_{ree}	% of I_{PN}	-0.7		0.7	
Linearity error within I_{pn}	ε_L	% of I_{PN}	-0.1		0.1	@25°C
Reaction time @ 10 % of I_p	t_{d10}	μs		0.5		
Step response time @ 90 % of I_p	t_{d90}	μs		0.5		
-3 dB band width	BW	kHz		300		
Noise DC ~ 10 kHz DC ~ 100 kHz	V_{noise}	mVpp		5 6		
Accuracy @ 25°C	X	% of I_{PN}	-0.8		0.8	
Accuracy @ 85 °C	X_T	% of I_{PN}	-1.1		1.1	
Capacitive Load	CL	pF			100	

3. Dimensions: STB-xxxLA/S



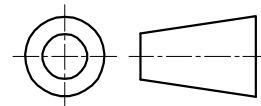
Terminals

1	IP+	6	IP-
2	IP+	7	OUT
3	IP+	8	Vcc
4	IP-	9	GND
5	IP-	10	REF

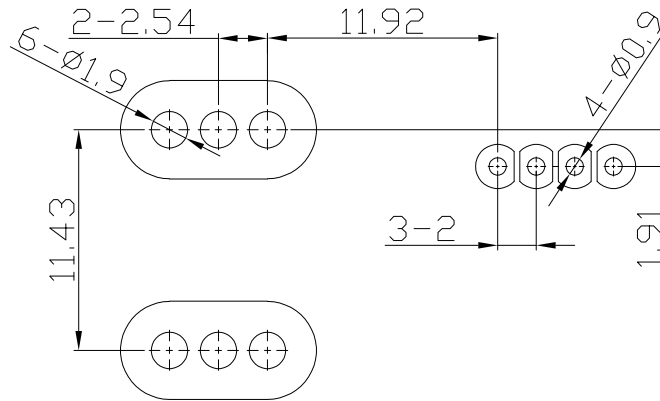
Material : Fit UL94V-0 & RoHS requirements ;

General tolerance : ± 0.5

Unit :mm



4. PCB footprint (STB-xxxLA/S)

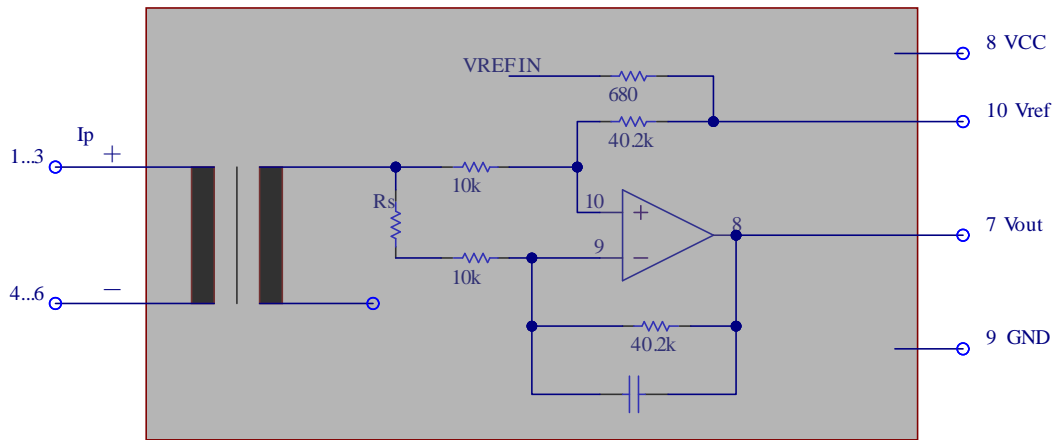


TOP side view

Assembly on PCB

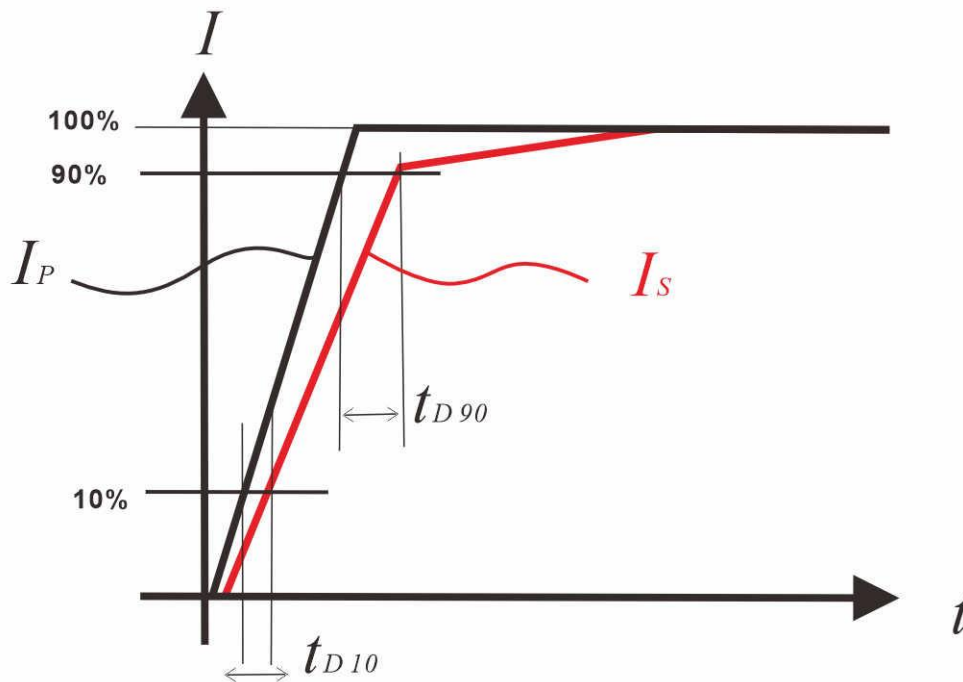
- Recommended PCB hole diameter: 1.1mm for secondary pins,
- Maximum PCB thickness: 2.4 mm (can be customized per request).
- Wave soldering profile: maximum 260°C for 10 seconds.

5. Schematic diagram



6. Delay times

The delay time t_{D10} @ 10% and the delay time t_{D90} @ 90% with respect to the primary are shown in the next figure. Both slightly depend on the primary current di/dt . They are measured at nominal current.



7. High temperature derating curve

When the test condition is $V_{CC}=5V$, $T_A=25^{\circ}C$, the maximum current of the primary side can be accepted as 220A DCI.

When the test condition is $V_{CC}=5V$, $T_A=85^{\circ}C$, the maximum current of the primary side can be accepted as 170A DCI.

