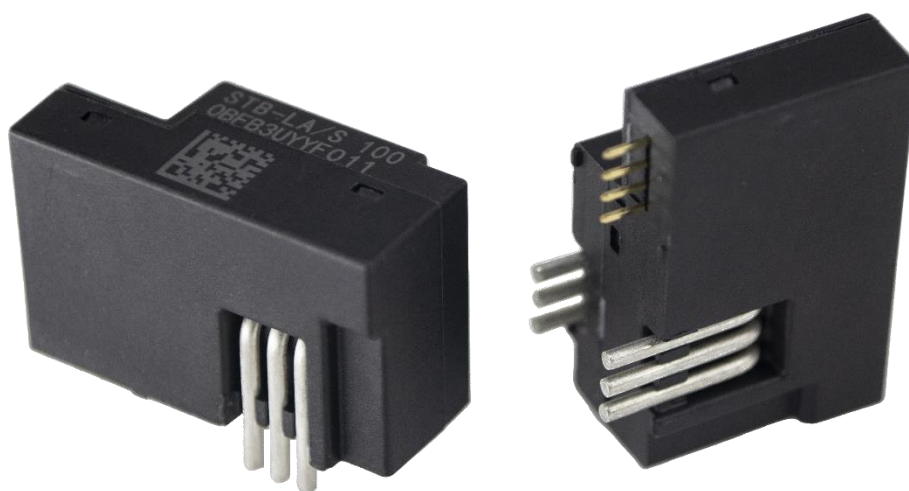


CURRENT SENSOR

PRODUCT SERIES: STB-LA/S

PRODUCT PART NUMBER: STB-100LA/S

VERSION: Ver 1.7



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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_L	°C	-40 ~ 105	
Storage temperature	T_stg	°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	Vcc_max	V	6
Maximum primary current	I_p_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

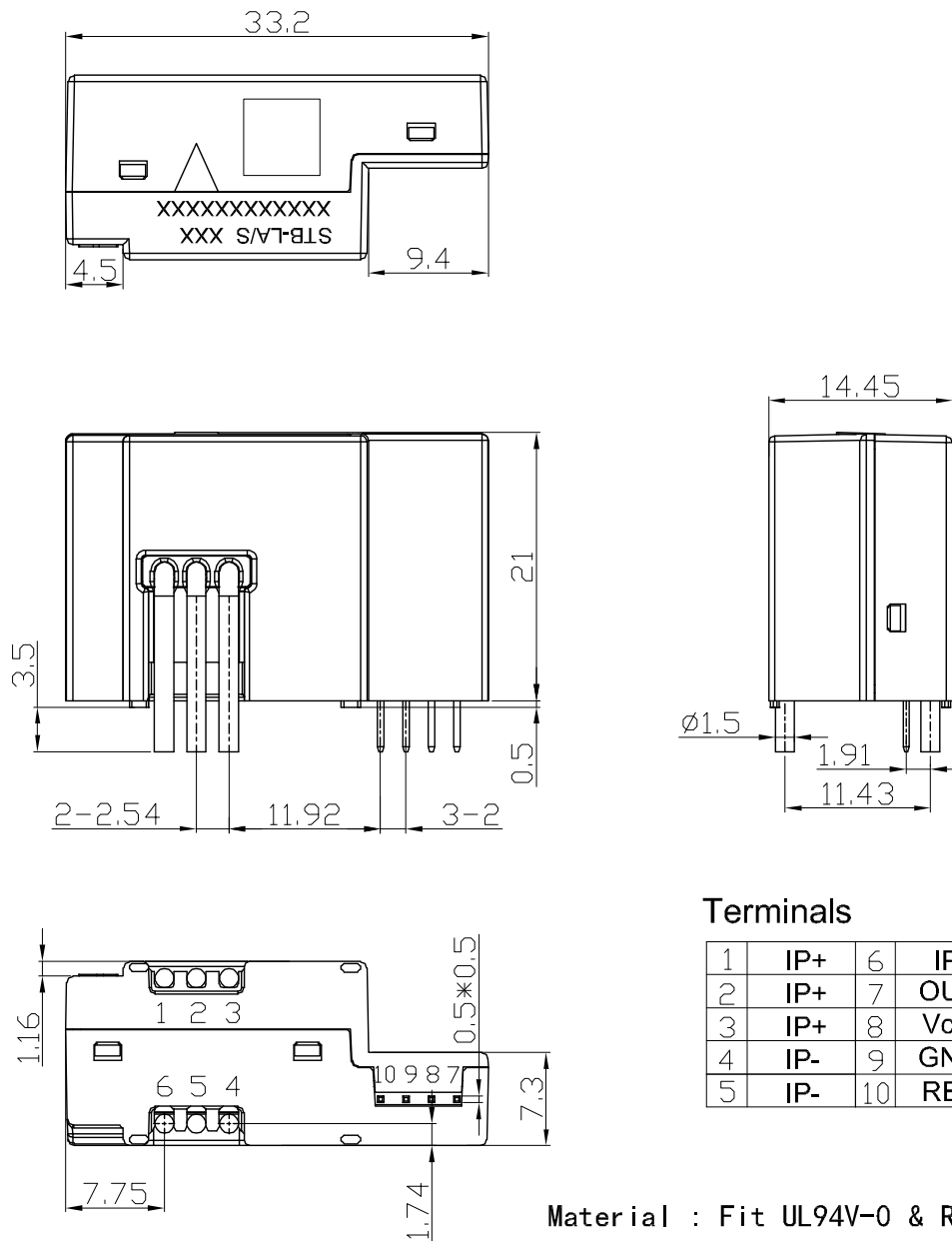
Parameter	Symbol	Unit	Value	Remark
RMS voltage for AC test 50Hz/1 min	Ud	kV	4	
Impulse withstand voltage 1.2/50μs	Ūw	kV	8	
Clearance distance (pri. -sec)	dCl	mm	10.2	Shortest distance through air
Creepage distance (pri. -sec)	dCp	mm	10.2	Shortest path along device body
Case material			V0	According to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

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

Condition: Vcc = 5.0 V, RL = 10 kΩ, TA = 25°C, unless specified.

Parameters	Symbol	Unit	Min.	Typ.	Max.	Remark
Primary nominal rms current	I _{pn}	A		100		
Primary current measuring range	I _{pm}	A	-220		220	@25°C VCC =5V,
Supply voltage	Vcc	V	4.75	5	5.25	
Consumption current	Ic	mA	9+ I _p /NS*1000			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 A
Electrical offset voltage	V _{oe}	mV		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 _{err}	% of I _{pn}	-0.7		0.7	
Linearity error within I _{pn}	ξ _L	% of I _{pn}	-0.1		0.1	@25°C
Reaction time @ 10 % of I _p	t _{D90}	μs		0.5		
Step response time @ 90 % of I _p	t _{D10}	μs		0.5		
-3 dB band width	BW	kHz		300		
Noise DC ~ 10 kHz DC ~ 100 kHz	Vnoise	mVpp		5 6		
Accuracy @ 25°C	X	% of I _{pn}	-0.8		0.8	
Accuracy @ 85 °C	X _{TRange}	% of I _{pn}	-1.1		1.1	
Capacitive Load	CL	pF			100	

3. Dimensions: STB-xxxLA/S



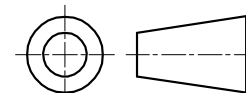
Terminals

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

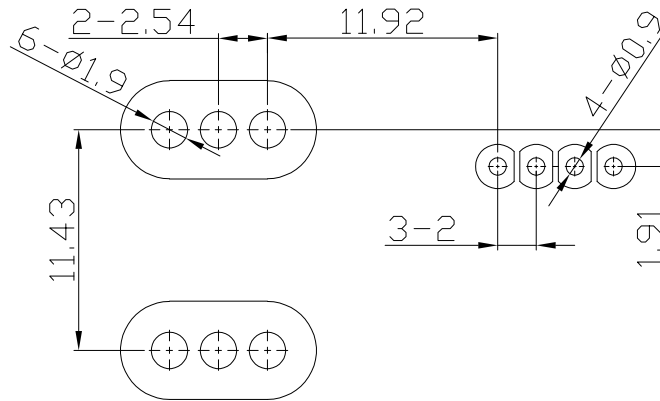
Material : Fit UL94V-0 & RoHS requirements ;

General tolerance : ± 0.5

Unit :mm



4. PCB footprint (STB-xxxLA/S)

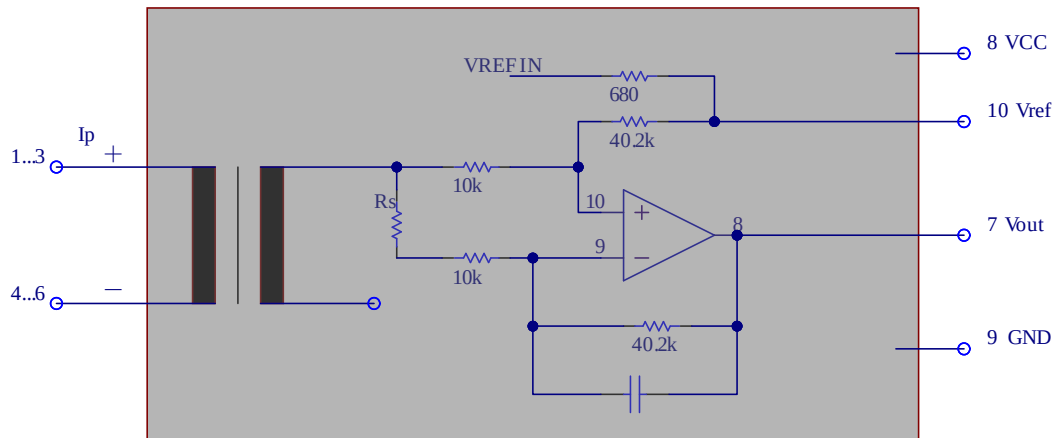


TOP side view

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.

