

## CURRENT SENSOR

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PRODUCT SERIES: STB-LA/D  
PRODUCT PART NUMBER: STB-25LA/D,  
STB-50LA/D,  
STB-100LA/D  
VERSION: Ver 1.6



Sinomags Technology Co., Ltd.

Web site: [www.sinomags.com](http://www.sinomags.com)

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## 1. Description

STB-LA/D 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
- Uninterruptible Power Supplies (UPS)
- Variable frequency converter
- Direct-current dynamo
- Switched model power supplies (SMPS)

### General parameters

Parameter	Symbol	Unit	Value
Working environment temperature	T <sub>A</sub>	°C	-40 ~ 105
Sensor operating limit temperature	T <sub>L</sub>	°C	-40 ~ 105
Storage temperature	T <sub>stg</sub>	°C	-40 ~ 105
Mass	m	g	20

### Absolute parameters

Parameters	Symbol	Unit	Value
Supply voltage	V <sub>cc_max</sub>	V	±18
Maximum primary current	I <sub>p_max</sub>	A	10*I <sub>pn</sub>
ESD rating (HBM)	U <sub>ESD_HBM</sub>	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 <sub>d</sub>	kV	4	
Impulse withstand voltage 1.2/50μs	Ū <sub>w</sub>	kV	8	
Clearance distance (pri. -sec)	d <sub>Cl</sub>	mm	10.2	Shortest distance through air
Creepage distance (pri. -sec)	d <sub>Cp</sub>	mm	10.2	Shortest path along device body
Case material			V0	According to UL 94

## 2. Electrical parameters (STB-25LA/D)

Condition:  $V_{cc} = \pm 15V$ ,  $T_A = 25^\circ C$ , unless specified.

Parameters	Symbol	Unit	Min.	Typ.	Max.	Remark
Primary nominal rms current	$I_{pn}$	A		25		
Primary current measuring range	$I_{pm}$	A		55		@ $V_C = \pm 12V$ , $R_M = 10\Omega$ @ $V_C = \pm 15V$ , $R_M = 22\Omega$
Supply voltage	$V_{cc}$	V	$\pm 12$		$\pm 15$	
Turns ratio	$N_s$	NT		1000		
Secondary coil resistance	$R_s$	$\Omega$		80		@ $T_A = 85^\circ C$
Measuring resistance	$R_m$	$\Omega$	10		400	
Secondary nominal r.m.s. current	$I_{sn}$	mA		25		
Current consumption	$I_{cc}$	mA		$10 + I_s$		$I_s = ABS(I_p / N_s)$
Accuracy $T_A = 25^\circ C$	X	%			$\pm 0.3$	within $I_{pn}$
Linearity error within $I_{pn}$	$\xi_L$	% of $I_{pn}$			$\pm 0.20$	
offset	$I_{OE}$	mA			$\pm 0.15$	@ $I_p = 0A$
Offset current temperature drift	$I_{OT}$	mA		$\pm 0.15$	$\pm 0.30$	$-40^\circ C \sim 85^\circ C$
Reaction time @ 10 % of $I_p$	$t_{ra}$	$\mu s$		0.5		@ 10% of $I_{pn}$
Step response time @ 90 % of $I_p$	$t_{res}$	$\mu s$		0.5		@ 90% of $I_{pn}$
-3 dB band width	BW	kHz		150		
Accuracy $T_A = 105^\circ C$	$X_{TRange}$	% of $I_{pn}$	-1.5		1.5	$T_A = -40^\circ C \sim 105^\circ C$

### 3. Electrical parameters (STB-50LA/D)

Condition:  $V_{cc} = \pm 15V$ ,  $T_A = 25^\circ C$ , unless specified.

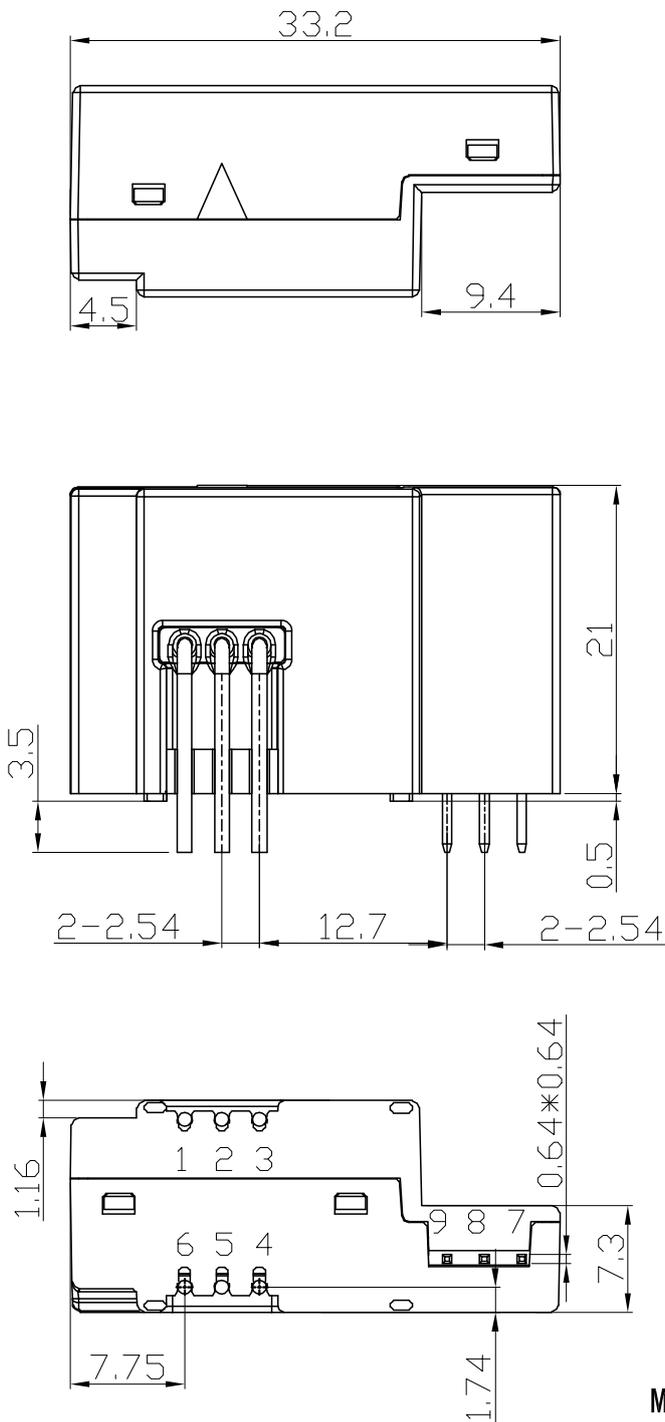
Parameters	Symbol	Unit	Min.	Typ.	Max.	Remark
Primary nominal rms current	$I_{pn}$	A		50		
Primary current measuring range	$I_{pm}$	A	128			@ $V_C = \pm 12V$ , $R_M = 10\ \Omega$ @ $V_C = \pm 15V$ , $R_M = 22\ \Omega$
Supply voltage	$V_{cc}$	V	$\pm 12$		$\pm 15$	
Turns ratio	$N_s$	NT		2000		
Secondary coil resistance	$R_s$	$\Omega$		90		@ $T_A = 85^\circ C$
Measuring resistance	$R_m$	$\Omega$	10		400	
Secondary nominal r.m.s. current	$I_{sn}$	mA		25		
Current consumption	$I_{cc}$	mA		$10 + I_s$		$I_s = \text{ABS}(I_p / N_s)$
Accuracy $T_A = 25^\circ C$	X	%			$\pm 0.5$	within $I_{pn}$
Linearity error within $I_{pn}$	$\xi_L$	% of $I_{pn}$			$\pm 0.10$	
offset	$I_{OE}$	mA			$\pm 0.10$	@ $I_p = 0\ A$
Offset current temperature drift	$I_{OT}$	mA		$\pm 0.15$	$\pm 0.30$	$-40^\circ C \sim 85^\circ C$
Reaction time @ 10 % of $I_p$	$t_{ra}$	$\mu s$		0.5		@ 10% of $I_{pn}$
Step response time @ 90 % of $I_p$	$t_{res}$	$\mu s$		0.5		@ 90% of $I_{pn}$
-3 dB band width	BW	kHz		150		
Accuracy $T_A = 105^\circ C$	$X_{TRange}$	% of $I_{pn}$	-1.5		1.5	$T_A = -40^\circ C \sim 105^\circ C$

#### 4. Electrical parameters (STB-100LA/D)

Condition:  $V_{cc} = \pm 15V$ ,  $T_A = 25^\circ C$ , unless specified.

Parameters	Symbol	Unit	Min.	Typ.	Max.	Remark
Primary nominal rms current	$I_{pn}$	A		100		
Primary current measuring range	$I_{pm}$	A		175		@ $V_C = \pm 12V$ , $R_M = 10\Omega$ @ $V_C = \pm 15V$ , $R_M = 20\Omega$
Supply voltage	$V_{cc}$	V	$\pm 12$		$\pm 15$	
Turns ratio	$N_s$	NT		2000		
Secondary coil resistance	$R_s$	$\Omega$		90		@ $T_A = 85^\circ C$
Measuring resistance	$R_m$	$\Omega$	10		100	
Secondary nominal r.m.s. current	$I_{sn}$	mA		50		
Current consumption	$I_{cc}$	mA		$10 + I_s$		$I_s = ABS(I_p / N_s)$
Accuracy $T_A = 25^\circ C$	X	%			$\pm 0.5$	within $I_{pn}$
Linearity error within $I_{pn}$	$\xi_L$	% of $I_{pn}$			$\pm 0.10$	
offset	$I_{OE}$	mA			$\pm 0.10$	@ $I_p = 0 A$
Offset current temperature drift	$I_{OT}$	mA		$\pm 0.15$	$\pm 0.30$	$-40^\circ C \sim 85^\circ C$
Reaction time @ 10 % of $I_p$	$t_{ra}$	$\mu s$		0.5		@ 10% of $I_{pn}$
Step response time @ 90 % of $I_p$	$t_{res}$	$\mu s$		0.5		@ 90% of $I_{pn}$
-3 dB band width	BW	kHz		150		
Accuracy $T_A = 105^\circ C$	$X_{TRange}$	% of $I_{pn}$	-1.5		1.5	$T_A = -40^\circ C \sim 105^\circ C$

### 5. Dimensions: STB-25LA/D



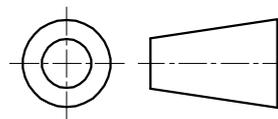
#### Terminals

1	IP+	6	IP-
2	IP+	7	OUT
3	IP+	8	V+
4	IP-	9	V-
5	IP-		

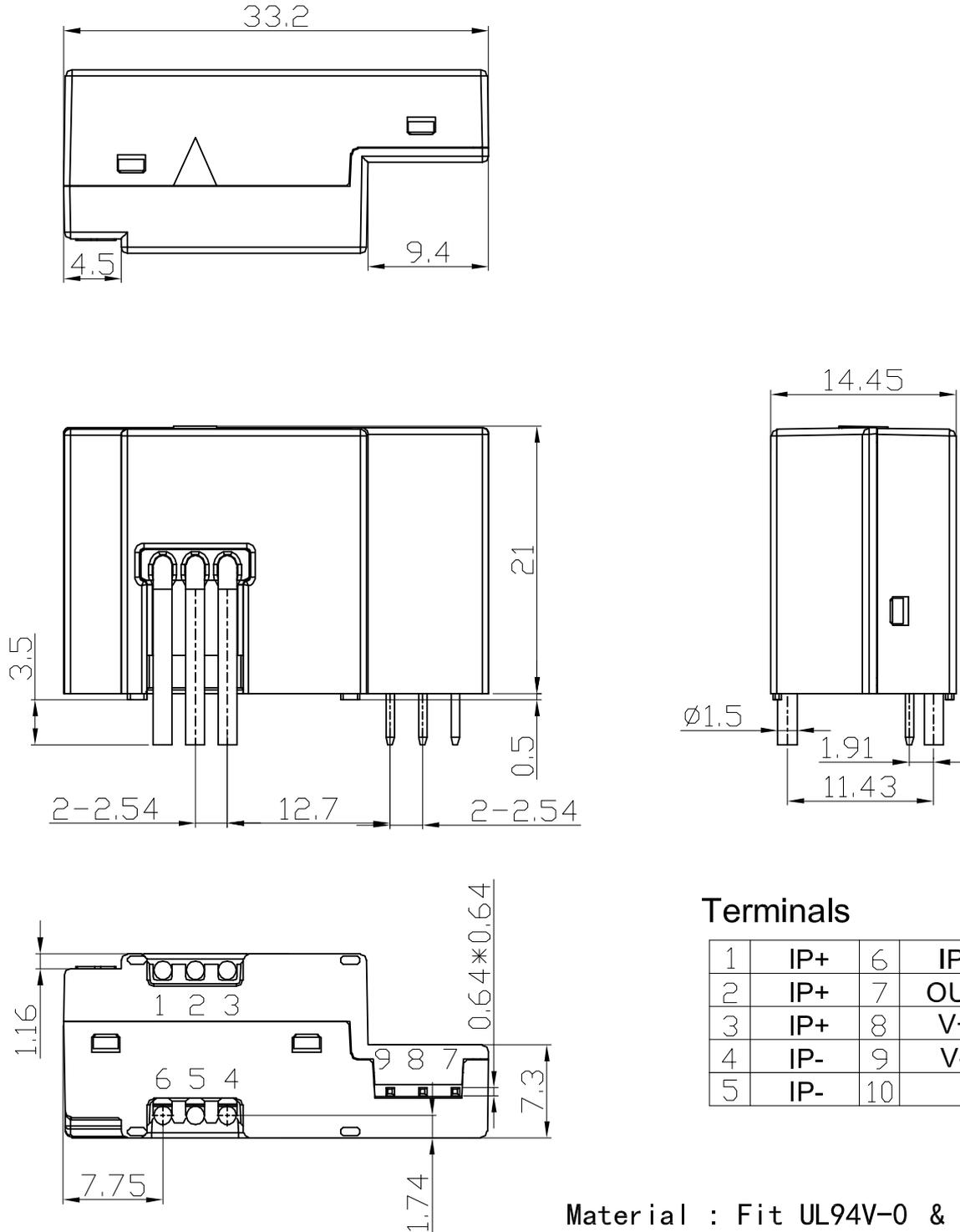
Material : Fit UL94V-0 & RoHS requirements ;

General tolerance :  $\pm 0.5$

Unit :mm



**6. Dimensions: STB-50..100LA/D**



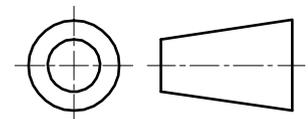
**Terminals**

1	IP+	6	IP-
2	IP+	7	OUT
3	IP+	8	V+
4	IP-	9	V-
5	IP-	10	

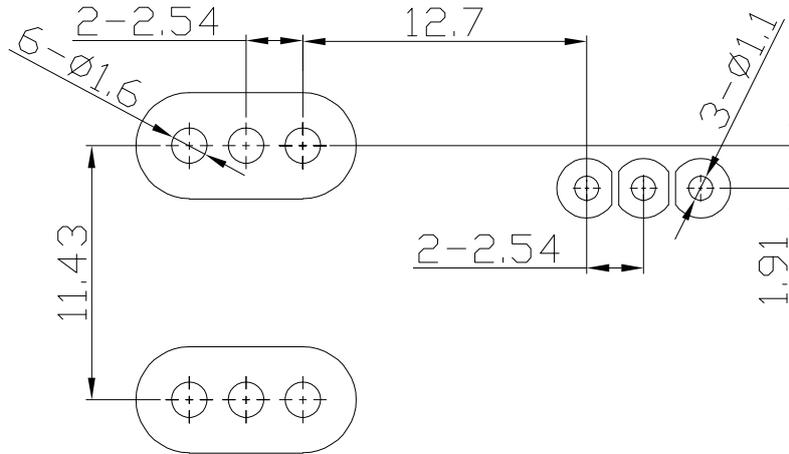
Material : Fit UL94V-0 & RoHS requirements ;

General tolerance :  $\pm 0.5$

Unit :mm



## 7. PCB footprint (STB-25LA/D)

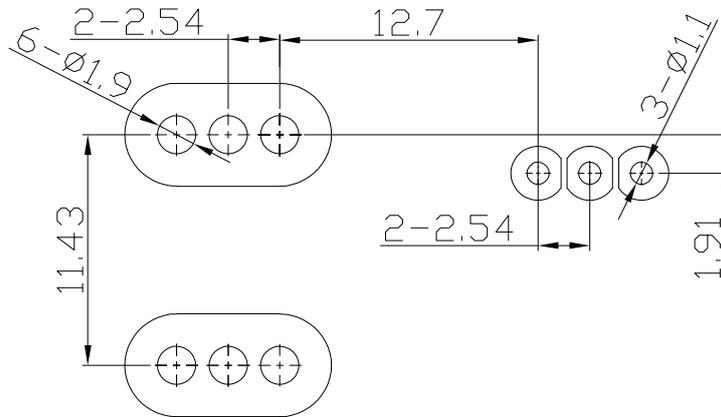


TOP side view

### 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.

## 8. PCB footprint (STB-50..100LA/D)



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.