

CURRENT SENSOR

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

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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 _A	°C	-40 ~ 105
Sensor operating limit temperature	T _L	°C	-40 ~ 105
Storage temperature	T _{stg}	°C	-40 ~ 105
Mass	m	g	20

Absolute parameters

Parameters	Symbol	Unit	Value
Supply voltage	V _{cc_max}	V	±18
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	U _d	kV	4	
Impulse withstand voltage 1.2/50μs	Ū _w	kV	8	
Clearance distance (pri. -sec)	d _{Cl}	mm	10.2	Shortest distance through air
Creepage distance (pri. -sec)	d _{Cp}	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	± 12		± 15	
Turns ratio	N_s	NT		1000		
Secondary coil resistance	R_s	Ω		80		@ $T_A = 85^\circ C$
Measuring resistance	R_m	Ω	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	%			± 0.3	within I_{pn}
Linearity error within I_{pn}	ξ_L	% of I_{pn}			± 0.20	
offset	I_{OE}	mA			± 0.15	@ $I_p = 0A$
Offset current temperature drift	I_{OT}	mA		± 0.15	± 0.30	$-40^\circ C \sim 85^\circ C$
Reaction time @ 10 % of I_p	t_{ra}	μs		0.5		@ 10% of I_{pn}
Step response time @ 90 % of I_p	t_{res}	μs		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.

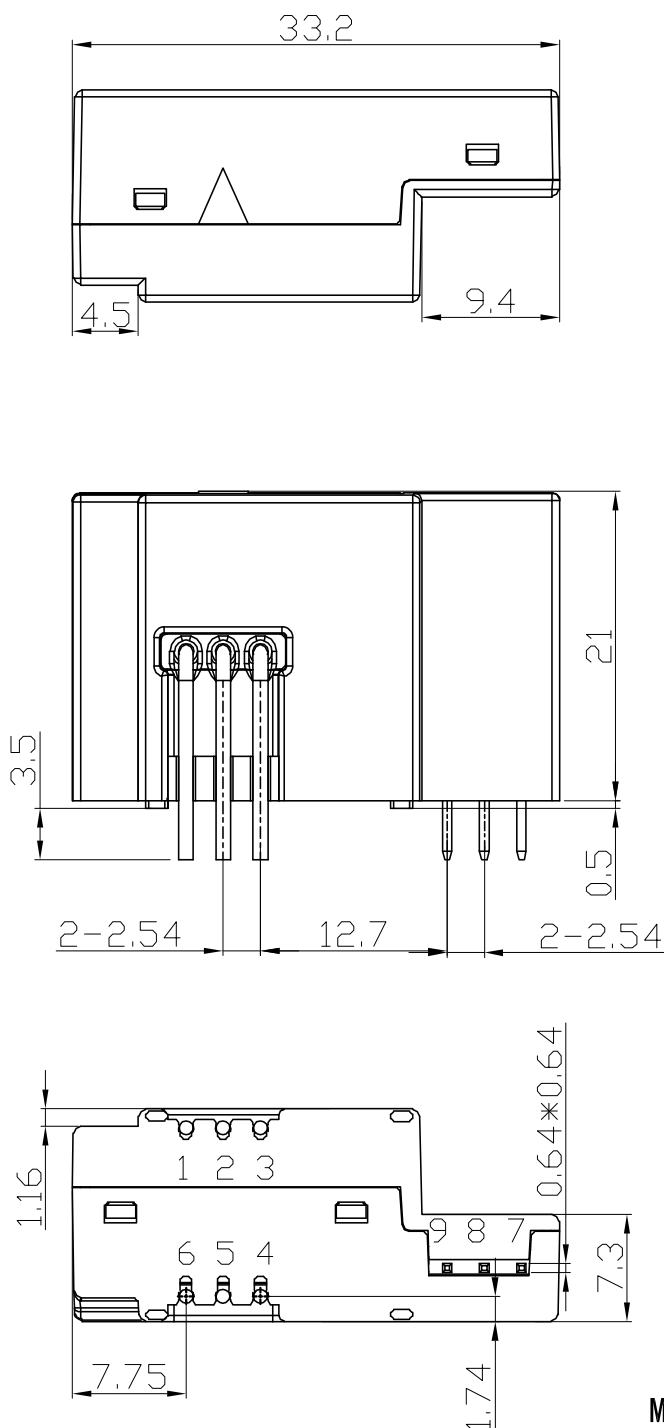
Parameters	Symbol	Unit	Min.	Typ.	Max.	Remark
Primary nominal rms current	I_{pn}	A		50		
Primary current measuring range	I_{pm}	A	128			@ $V_C = \pm 12V$, $R_M = 10\Omega$ @ $V_C = \pm 15V$, $R_M = 22\Omega$
Supply voltage	V_{cc}	V	± 12		± 15	
Turns ratio	N_s	NT		2000		
Secondary coil resistance	R_s	Ω		90		@ $T_A = 85^\circ C$
Measuring resistance	R_m	Ω	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	%			± 0.5	within I_{pn}
Linearity error within I_{pn}	ξ_L	% of I_{pn}			± 0.10	
offset	I_{OE}	mA			± 0.10	@ $I_p = 0 A$
Offset current temperature drift	I_{OT}	mA		± 0.15	± 0.30	$-40^\circ C \sim 85^\circ C$
Reaction time @ 10 % of I_p	t_{ra}	μs		0.5		@ 10% of I_{pn}
Step response time @ 90 % of I_p	t_{res}	μs		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	± 12		± 15	
Turns ratio	N_s	NT		2000		
Secondary coil resistance	R_s	Ω		90		@ $T_A = 85^\circ C$
Measuring resistance	R_m	Ω	10		100	
Secondary nominal r.m.s. current	I_{sn}	mA		50		
Current consumption	I_{cc}	mA		$10 + I_s$		$I_s = \text{ABS}(I_p / N_s)$
Accuracy $T_A = 25^\circ C$	X	%			± 0.5	within I_{pn}
Linearity error within I_{pn}	ξ_L	% of I_{pn}			± 0.10	
offset	I_{OE}	mA			± 0.10	@ $I_p = 0 A$
Offset current temperature drift	I_{OT}	mA		± 0.15	± 0.30	$-40^\circ C \sim 85^\circ C$
Reaction time @ 10 % of I_p	t_{ra}	μs		0.5		@ 10% of I_{pn}
Step response time @ 90 % of I_p	t_{res}	μs		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



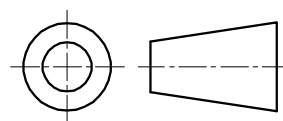
Terminals

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

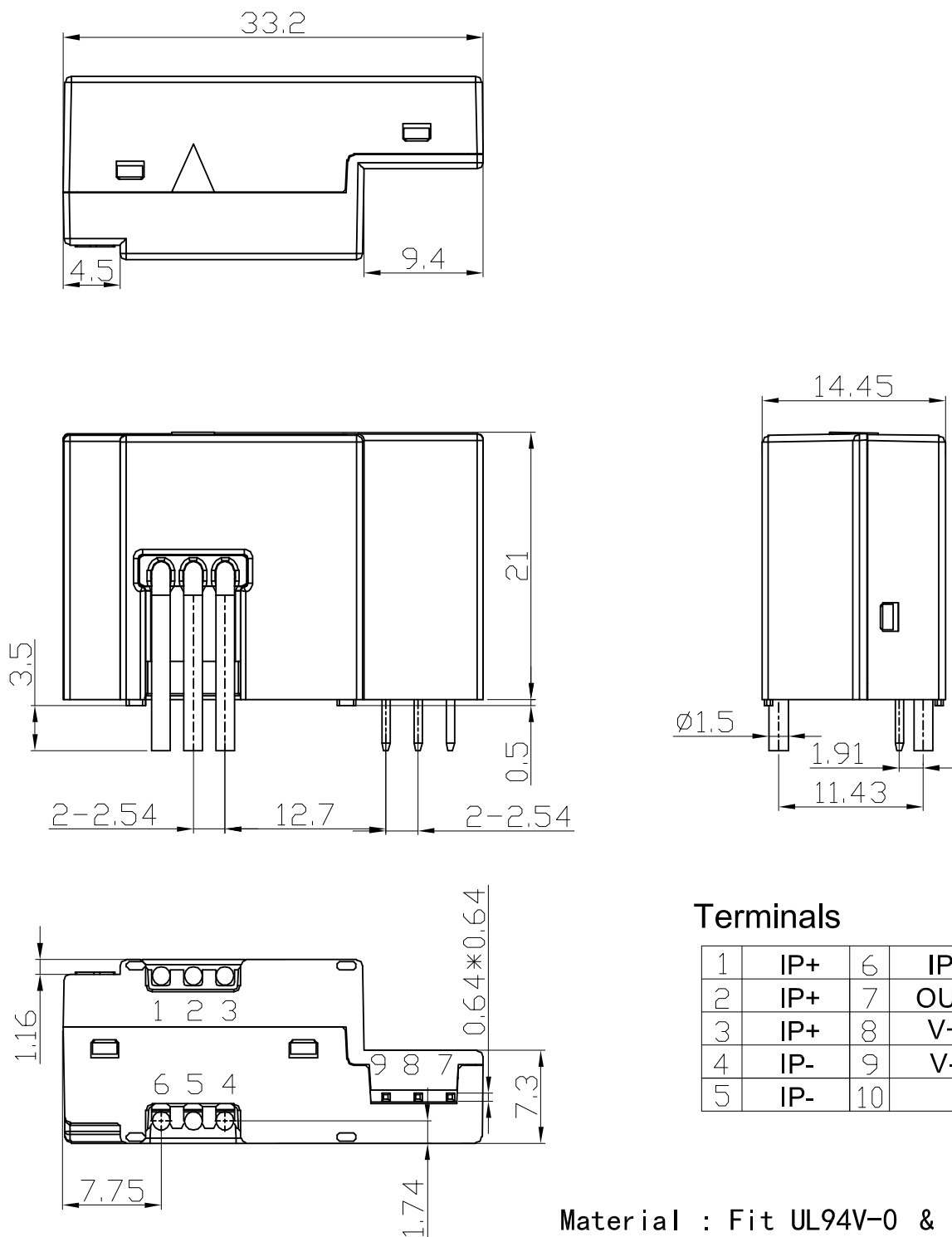
Material : Fit UL94V-0 & RoHS requirements ;

General tolerance : ± 0.5

Unit :mm



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



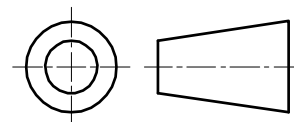
Terminals

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

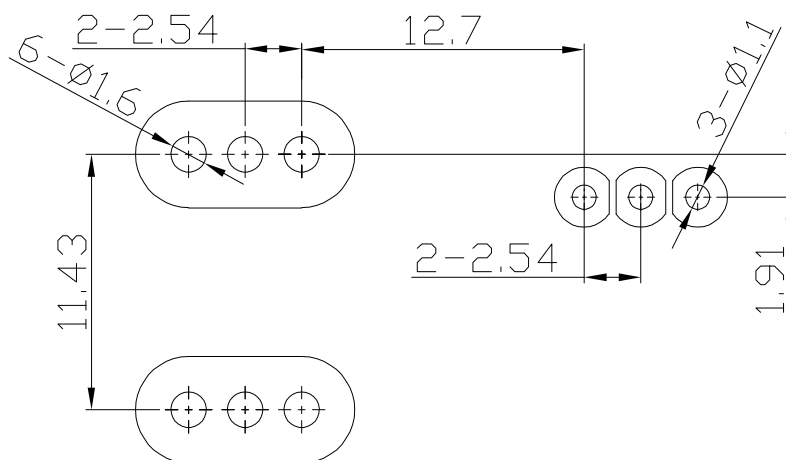
Material : Fit UL94V-0 & RoHS requirements ;

General tolerance : ± 0.5

Unit :mm



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

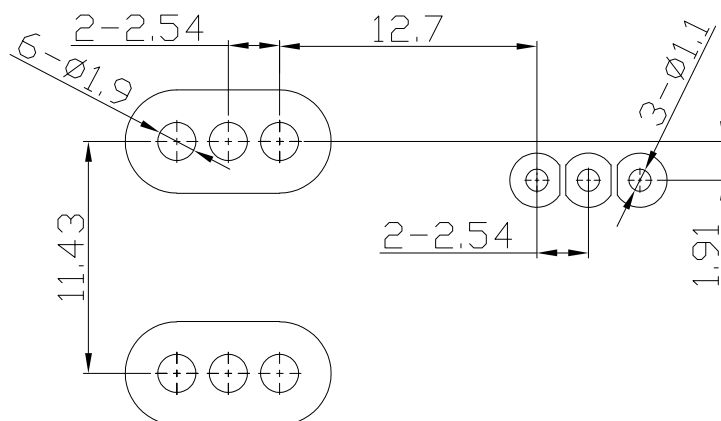


TOP side view

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.

编写	审核	版本	日期	备注
吴越		1.3	2020.12.8	去掉 25 规格（尺寸不一致），存储温度到 105℃
吴越	朱海华	1.4	2021.1.18	整合 25、50、100 量程。
吴越	朱海华	1.5	2021.9.10	修正 25LA/D 三视图为正确图纸
吴越	朱海华	1.6	2022.4.11	增加全温区精度，优化部分格式